Communicable Diseases & Immunisation Conference 2024

PROTECTING COMMUNITIES: EMPOWERING HEALTH THROUGH DISEASE CONTROL AND IMMUNISATION

Tuesday 11 to Thursday 13 June 2024

Brisbane Convention and Exhibition Centre

BRISBANE, QUEENSLAND

#CDIC2024

Public Health Association AUSTRALIA

ABSTACT BOOK

1E -
Sexually transmitted infections, Mezzanine 3, June 11, 2024, 11:00 - 12:30

214

Risk perception and prevention practices towards sexually transmissible infections among Australian travellers

Mr Wondimeneh Shiferaw[1], Dr Deborah Mills[1,2], Dr Kenneth Koh[3], A/Prof. Judith Dean[4], Dr Stanley Khoo[5], Dr David Rutherford[6], Professor Colleen Lau[1], Dr Luis Furuya-Kanamori[1]
[1]UQ Centre for Clinical Research, Faculty of Medicine, The University of Queensland, Herston, Australia. , [2]Dr Deb The Travel Doctor, Travel Medicine Alliance, Brisbane, Australia , [3]Gladstone Road Medical Centre, Brisbane, Australia , [4]School of Public Health, Faculty of Medicine, The University of Queensland, Herston, Australia., [5]Travel Medicine Centre Perth, Travel Medicine Alliance, Perth, Australia , [6]Travel Health Plus, Travel Medicine Alliance, Beaconsfield, Australia

1E - Sexually transmitted infections, Mezzanine 3, June 11, 2024, 11:00 - 12:30

Background: Current evidence suggests that travellers' behaviours, driven by the opportunities presented during travel, significantly contribute to the acquisition of sexually transmissible infections (STIs). However, limited research has evaluated travellers' perceptions of risk and prevention behaviours towards STIs. This study assessed the STI risk perception, attitudes, and prevention practices among Australians travelling overseas who attended pre-travel medicine consultation.
Methods: A cross-sectional online survey was conducted between July 1st, 2023, to January 25th, 2024. Convenience sampling was used to recruit travellers (i.e., Australian residents aged over 18 years, who plan to travel overseas within 6 months) attending the Travel Medicine Alliance (TMA) network of clinics and a sexual health clinic in Australia. Sensitivity analysis, restricted to participants travelling without their partners, was performed to estimate the intention to engage in sexual activity with a new partner while overseas. Subgroup analysis was conducted by type of clinics to compare the intention of engaging in sexual activity and socio-demographics.
Results: A total of 85 respondents were included in the analysis, 46 (54.1%) were male (9 [75.0%] sexual health clinics; 37 [50.7%] TMA clinics). The mean age of the participants was 40.3 ± 15.5 years (46.3±12.1yrs sexual health clinic; 39.4 ± 15.8yrs TMA clinics). Sixteen (28.1%) respondents reported the intention to be involved in sexual activity while travelling overseas (13 [26%] TMA clinics; 3 [42.8%] sexual health clinic). Among them, 11 (68.7%) perceived themselves to be at a low risk of contracting STIs, 4 (28.6%) did not plan to use condoms while having sex with a new partner, and 3 (20%) intended to have sex with bar girls.
Conclusion: Overall, our study found that nearly one in three of the surveyed travellers intended to have sex with new partner while overseas. Most travellers perceived themselves to be at a low risk of acquiring STIs and showed little intention to practice prevention measures. Providing comprehensive sexual health education during pre-travel consultations is necessary to mitigate the risk of STI acquisition.

Infectious syphilis in women of reproductive age, and congenital syphilis trends, 2011–2021

Dr Belinda Hengel[1], Dr Hamish McManus[1], Mr Robert Monaghan[1], Professor Donna Mak[2], Ms Amy Bright[3], Dr Ximena Tolosa[4], Dr Lorraine Anderson[5], Mrs Jackie Thomas[1], Dr Nathan Ryder[6], Dr Louise Causer[1], Professor Rebecca Guy[1], Dr Skye McGregor[1]
[1]Kirby Institute, [2]Communicable Disease Control Directorate, WA Department of Health, [3]Public Health and Surveillance Branch, Australian Government Department of Health and Aged Care, [4]Public Health Intelligence, Queensland Department of Health, [5]Kimberley Aboriginal Medical Services, [6]Hunter New England LHD, NSW Health

Background: Syphilis in pregnancy can cause serious complications such as stillbirth. Since 2011 there has been a substantial increase in infectious syphilis rates among young women of reproductive age in Australia.

Objective: To understand the distribution of diagnosed infectious syphilis cases in Australia among women of reproductive age (aged 15-44 years), and subsequent congenital syphilis cases.

Design: Using national surveillance data (2011–2021), we calculated infectious syphilis notification counts, rates and time trends. Using enhanced congenital syphilis notification data, we calculated case counts, outcomes, and antenatal care history.

Results: Between 2011–2021 there were 5011 infectious syphilis notifications in women. The notification rate was 9 per 100,000 population, with an upward trend over time ($p<0.001$). Highest rates were in 15–34-year-old women (11 per 100,000), women living in remote areas (136 per 100,000) and Aboriginal and Torres Strait Islander women (140 per 100,000). There were 74 cases of congenital syphilis, increasing from 6 in 2011 to a peak of 17 in 2020. Rates were highest among Aboriginal and Torres Strait Islander infants (38.3 per 100,000 births in 2021). For congenital syphilis cases, 23% were stillborn, and 56% of mothers resided in major cities, while 43% had not received antenatal care.

Conclusions: Between 2011–2021, infectious syphilis cases increased in reproductive aged women in Australia, with an associated increase in congenital syphilis. A quarter of infants with congenital syphilis were stillborn. To reduce congenital syphilis numbers, we urgently need to understand barriers to antenatal care and syphilis screening to ensure effective prevention strategies are developed.

Aboriginal and Torres Strait Islander approvals:
This is a national review of notification data; therefore individual community approval has not been sought. The study was overseen by the Kirby Institute Aboriginal and Torres Strait Islander Reference Group who have approved this abstract, as well as the Aboriginal Health and Medical Research Council of New South Wales.

Streamlining Syphilis investigation, management and documentation in a metropolitan ACCHO setting

Dr Daniel Hunt[1], Dr Richelle Douglas[1]
[1]Derbarl Yerrigan Health Services

Streamlining Syphilis investigation, management and documentation in a metropolitan ACCHO setting

In Western Australia, there has been a 127% increase in notification of infectious syphilis in women and 14 cases of congenital syphilis from June 2014 to December 2023 (60% cases were Aboriginal and of all stillbirths/death 80% were Aboriginal), In the two decades preceding 2013 – 5 cases of congenital syphilis had been reported. Derbarl recognised the need for something to be done to stop the spread of syphilis in Perth and prevent catastrophic consequences of congenital syphilis.

Derbarl partnered with the Western Australian Department of Health and Flinders University International Centre for Point of Care Testing to participate in a Syphilis Point of Care Testing (POCT) Program as part of the WA Syphilis outbreak Response. Since the start of the program, at-risk patients were identified during the pre-consultation screening for eligibility for syphilis POCT. Patients testing positive to syphilis were offered same-day treatment and further investigation in a culturally appropriate environment. Additionally, a Syphilis Clinical Audit was created, and documentation of syphilis was streamlined.
Over 1200 Syphilis POCTs have been conducted, and 19 infectious cases identified and treated on the same day (2.5% diagnostic rate). A further 25 cases were identified as having been previously treated for syphilis. 6 pregnant women have been tested and treated on the same day and there have been no further cases of congenital syphilis among Derbarl patients. There has been an 80% increase in syphilis serology testing ad through clinical auditing, more than 460 current and historical Syphilis cases have been identified with cases significantly rising since 2019.

Derbarl established that culturally appropriate primary care has led to the diagnosis of previously undetected Syphilis through the use of syphilis POC testing. The test and treat model has been successful in identifying people at risk, increasing awareness and reducing congenital syphilis. In the inception of this model Derbarl has not experienced a case of congenital syphilis.

Epidemiological profile of syphilis in the Ovens Murray region, Victoria

Ms Mashael Alghamdi[1], Ms Stephanie C Tran[2], Mr Michael Enright[1], Ms Hirukshi Bennett[1], Ms Holly Caldwell[1], Ms Samantha Percy[1], Ms Emily Ozolins[1], Ms Terri Gallacher[1], Ms Jessica Ceeney[1], Ms Jenny Keogh[1], Ms Terri Foyel[3], Dr Brendon Quinn[2], Dr Anthony Zheng[1,4], Dr Elizabeth Peach[1,4]
[1]Ovens Murray Public Health Unit, Albury Wodonga Health, [2]The Victorian Department of Health, [3]Regional Partnerships and Planning, Albury Wodonga Health, [4]The School of Clinical Medicine, The University of New South Wales

Background: Syphilis has re-emerged as a public health threat in Australia. Victoria has recently established Local Public Health Units to deliver place-based responses to public health problems. To inform targeted prevention measures in the Ovens Murray Public Health Unit catchment area (hereafter OM), we examined epidemiological characteristics of notified syphilis cases in comparison with Victorian characteristics. No epidemiological analysis of syphilis in OM currently exists.

Methods: Syphilis notifications data (2017-2023) in Victoria were analysed and differences between geographical regions were assessed using chi-squared tests. Population rates were calculated using Australian Bureau of Statistics census data.

Results: Between 2017-2023, Victoria reported 16,742 syphilis notifications, with 108 in OM. Rates per 100,000 (5-year averages 15.4, 14.3, and 14.2 in 2017-2021, 2018-2022, and 2019-2023, respectively) were substantially lower in OM and relatively stable in both OM and Victoria (5-year averages 44.2, 38.3, and 39.6 in 2017-2021, 2018-2022, and 2019-2023, respectively). Both regions had a majority of cases in the 15-44 age group (65.7% and 72.8%; p=0.266). Compared to Victoria, OM cases were more likely to identify as female (25.0% vs 15.2%; p=0.004) and exclusively heterosexual (34.3% vs 18.8%; p<0.001). OM cases were more likely to be Australian-born (63.9% vs 45.3%; p=<0.001), diagnosed late (47.2% vs 35.1%; p=0.031), and less likely to report acquisition from casual sex partners (38.0% vs 45.3%; p=0.041). Despite a lower Aboriginal population proportion, OM cases were more likely to identify as Aboriginal/Torres Strait Islander (6.5% vs 2.5%; p=0.006).

Conclusion: A higher proportion of late infections, and infections in women of childbearing age and among exclusively heterosexual people, pose an elevated risk of congenital syphilis in our region and more broadly. Tailored interventions are essential to increase public awareness and testing for both same-sex and opposite-sex partners. It is imperative that interventions are culturally safe and relevant to Aboriginal people.

Gonorrhoea in Women: A Study of Direct Online Data Collection

Dr Indira Datta[1], Ms Deeksha Sharma[1], Dr Adelaide Nyinawingeri[1], Ms Ella Dullard[1], Dr Michael Staff[1]
[1]Northern Sydney Local Health District Public Health Unit

After a temporary reduction in Neisseria gonorrhoea infection rates during the COVID-19 pandemic, cases continue to rise across NSW and the nation.1 Most local literature on transmission risk factors focuses on targeted populations such as men who have sex with men, sex workers and clients attending sexual health clinics, and is indirectly collected from clinicians or databases.

Given the increasing diagnoses amongst females, a cohort more likely to be diagnosed in General Practice2, we sought to understand women's risk factors and clinical journey from reasons prompting testing to contact tracing advice received, through information provided by women themselves.

Northern Sydney Local Health District's Public Health Unit (PHU) commenced an enhanced surveillance project from 1st January 2023. Notification data were extracted to identify adult females diagnosed with Neisseria gonorrhoea infection by a General Practitioner (GP). PHUs and clinicians collaboratively recruit cases to complete an online survey. Combining a qualitative and quantitative approach, the survey seeks to understand personal risk factors, reasons prompting testing, time to treatment, and contact tracing advice received.

Interim findings suggest over 50% of women seek testing due to symptoms, and almost a quarter due to contact tracing. All receive treatment within a week of testing. Over 60% of cases recall receiving contact tracing advice from GPs, noting almost 50% of women report having a single partner in the two months preceding diagnosis. Almost half of women report regular condom use with vaginal sex although 75% report never using barrier protection for oral or anal intercourse.

This enhanced surveillance program will provide greater understanding of risk factors, contact tracing and General Practitioner management for an under-researched population often managed outside of Sexual Health-specific clinical settings.

1. Kirby institute. Annual Surveillance Report, 2022.
2. Ingleton et al. Sexual Health, 2016; 13: 484-488.

Strengthening connectivity and service delivery in Gippsland: sexually transmitted and bloodborne infections.

Mrs Leearna Earwicker[1], Miss Grace Thain[1], Mrs Bethany French[1], Mr Alex Tai[1], Ms Jedda Tyson[1], Ms Katherine Walker[1], A/Prof Alyce Wilson[1,2,3,4], Ms Annelies Titulaer[1]
[1]Gippsland Region Public Health Unit, Latrobe Regional Health, [2]Burnet Institute, [3]Melbourne School of Population and Global Health, The University of Melbourne , [4]School of Public Health and Preventive Medicine, Monash University

Background/Context
The Gippsland region of southeast Victoria has a high incidence of sexually transmitted infections (STIs) and limited service and system connectivity. Chlamydia is the most commonly reported STI in Gippsland, with increasing rates of gonorrhoea and syphilis infections in recent years. Hepatitis C notification rates are above the state average, and there is poor linkage to care for people with hepatitis B. Our program aims to build partnerships, link services, support workforce capacity, and enhance overall system connectivity and service access.

Process
A health needs assessment was conducted to identify local sexual and bloodborne infection needs across Gippsland. This three-stage process included initial data collection and analysis using national and statewide surveillance reports, followed by a service mapping process to identify local clinics and service providers. Lastly, identified service providers and other relevant stakeholders were contacted via phone, email, or face-to-face to understand local referral pathways, services offered, opportunities, gaps, and barriers.

Analysis
Analysis of available data, services, and stakeholder engagement supported identification of strengths and gaps in sexual health and viral hepatitis care in Gippsland. Information gained was used to categorize services in terms of provision of prevention, screening, and/or treatment. Associated service factors including operating hours, costs, local transport accessibility, and acceptability for LGBTQI+ and Aboriginal community members were also collated. The analysis process highlighted opportunities for collaboration to support strengthening the sexual health and viral hepatitis system across Gippsland.

Outcomes
Strengthening the sexual health and viral hepatitis system connectivity and service delivery in Gippsland was achieved through four main streams of collaboration: 1) region-wide forums delivered in partnership with local and state organisations; 2) sharing of information through emails, newsletters, and social media to highlight public health messages, local epidemiology, service support, and opportunities for workforce development; 3) awareness-raising campaigns delivered together with local organizations; and 4) establishment and reinvigoration of local networks, including a viral hepatitis steering committee, to support further connection, networking, and information sharing. Future goals are to maintain our current work while also exploring and integrating user experience.

Vaccine effectiveness and impact of meningococcal vaccines against gonorrhoea: A Systematic Review

Prof Helen Marshall[1,2], Dr Bing Wang[1,2], Dr Hassen Mohammed[1,2], Dr Prabha Andraweera[1,2], Dr Mark McMillan[1,2]
[1]The University Of Adelaide, [2]Women's and Children's Health Network

Background: Gonorrhoea, caused by Neisseria gonorrhoeae, is a global health burden due to rising infection rates and antibiotic resistance, compounded by lack of gonorrhoea-specific vaccines. As N. gonorrhoeae and N. meningitidis show high genetic homology, there is potential for cross-protection against gonorrhoea by meningococcal vaccines.
Methods: Systematic evaluation and meta-analysis of studies estimating vaccine effectiveness (VE) and vaccine impact (VI) of meningococcal vaccines in preventing gonorrhoea. Literature search databases included PubMed, Embase, Cochrane Library, and CINAHL, alongside grey literature resources (Google Scholar and clinical trial registries) and proceedings from major health conferences.
Results: After removing duplicates, 718 articles were screened by title and abstract with 40 full texts reviewed. Among 12 studies included for data extraction, two studies were excluded due to overlapping data. Most studies focussed on 15-30 year olds, with one assessing VE in men living with HIV (37-51 year olds).
Vaccine effectiveness of meningococcal B OMV vaccines was evaluated in six studies; 1. 4CMenB in Italy (n=1), Australia (n=1) and the US (n=2) 2. MeNZB in New Zealand (n=2) with a pooled VE=34% (95%CI 27.3-40.7%) for 2 doses. Pooled VE=37.7% (95%CI 27.6-47.7%) for 4CMenB. Gonorrhoea rates were 46% lower among 4CMenB vs MenACWY recipients (hazard ratio 0.54; 95%CI, 0.34–0.86). MenB-FHbp, a non-OMV meningococcal B vaccine and MenACWY vaccine did not show protection against gonorrhoea.
Vaccine impact was assessed in four meningococcal B vaccine studies; 1. 4CMenB in Canada (n=1) and Australia (n=1) 2. Outer membrane vesicle (OMV) vaccine VA-MENGOC-BC in Cuba (n=1) 3. MenBvac in Norway (n=1). VI ranged from 30%-59% reduction in incidence of gonorrhoea.
Conclusions: 4CMenB and other meningococcal B OMV vaccines show moderate effectiveness against gonorrhoea. Based on this finding, the Joint Committee on Vaccines and Immunisation, UK, recently recommended 4CMenB for individuals at high risk of gonorrhoea.

Evaluation of ACT Health's Gonococcal Enhanced Case Questionnaire

Mr MALIZGANI MHANGO[1,2], Alexandra Marmor[2], Timothy Sloan-Gardner[2], Callum Thirkell[1]
[1]The Australian National University, National Centre for Epidemiology and Population Health,
[2]Australian Capital Territory Health, Preparedness, Planning and Surveillance Branch

Background
Gonorrhoea incidence has steadily increased since 2017 in the Australian Capital Territory (ACT). Since February 2022, ACT Health has asked people diagnosed with Neisseria Gonorrhoea(Ng) to complete an online questionnaire (GECQ) containing questions on risk factors, where and how they met their sexual partners. The GECQ is sent via text message or accessed through a QR code at the Canberra Sexual Health Clinic (CSHC). We report on an evaluation of the GECQ.
Methods
We employed a mixed-methods approach guided by the US CDC updated guidelines for evaluation of a surveillance system. Qualitative data were collected through semi-structured interviews with stakeholders and Ng cases and analysed deductively. A descriptive analysis was conducted on quantitative data extracted from the GECQ.
Results
The GECQ had reasonable acceptability among all Ng cases notified during the study period, with a response rate of 40.5% (196/483). We interviewed internal(n=5) and external(n=14) stakeholders, and a sample of Ng cases(n=27) who were sent the survey. There were eight non-responders in the sample of 27 cases. Reasons for non-response included suspecting the text message was a scam (4/8) and time constraints (2/8). The GECQ was deemed simple and stable by stakeholders and cases who completed it. Overall flexibility was perceived to be excellent by both internal(5/5) and external(14/14), stakeholders as new questions can be integrated easily. Data collected was high-quality and no cases or stakeholder reported any unavailability of the GECQ. In terms of information to targeted public health action, the GECQ identified an unregistered sex work service and a gay beat frequented by cases.
Conclusion
The acceptability of the GECQ could be improved by encouraging stakeholders involved in Ng case management to promote it. Overall, the GECQ provides high-quality data, is simple, flexible, and stable. Despite 40.5% response rate by cases, the system provided information for public health action.
Keywords: enhanced_data, gonorrhoea, surveillance, data systems, ACT.

A collaborative approach to achieving syphilis outbreak control among at-risk populations

Dr Caitlyn White[1], Rosie Jack[1], Naomi Nelson[1], Hannah Vogt[1], Dr Grace Phua[1], Dr Suzanne McEvoy[1]
[1]Metropolitan Communicable Disease Control, North Metropolitan Health Service, Wa Health

Background
There has been a 3.8-fold increase in infectious syphilis notifications in metropolitan Perth since 2015. Significant increases in notifications have occurred in at-risk groups including amongst people experiencing homelessness. This population often has limited access to continuous healthcare and to traditional methods of communication utilised by public health services.

Methods
A state-wide outbreak response has been implemented with a focus on identified at-risk populations. The Syphilis Response Team (SRT) was established in 2022 within Metropolitan Communicable Disease Control (MCDC) to support the response in metropolitan Perth (~2.1 million). The team includes two nurses, part-time doctors, Aboriginal health liaison officers (AHLOs), an epidemiologist and project officer. Inter-agency outbreak groups have also been established.

MCDC lead a collaborative inter-agency program to strengthen case management and follow-up for Syphilis Among People experiencing Homelessness (SAPH). The SAPH program's foundation is a regular case review meeting for the clinical and public health management of syphilis among cases and contacts experiencing homelessness or unstable housing. SAPH meetings include representatives from several government and non-government health services providing primary and specialist sexual healthcare to this population. Further innovative approaches have been embedded within the SAPH collaboration, including joint home and outreach visits, on-the-spot testing and treatment, and maintenance of a "Be on the Lookout" list for high-risk cases and contacts.

Results
The SAPH case review meeting has met regularly since late 2021. It has resulted in strengthened relationships between services, streamlined communication pathways, and enhanced public health follow-up of cases and contacts. Infectious syphilis notifications initially stabilised and have since decreased by 27% from 2022 to 2023 in this population.

Conclusion
To achieve syphilis outbreak control collaborative inter-agency approaches for at-risk populations are required. High-quality public health follow-up of cases in at-risk groups is key to preventing avoidable outcomes, including cases of congenital syphilis.

1F -
Vaccination of priority groups, Mezzanine 4, June 11, 2024, 11:00 - 12:30

354

"Fear of the unknown": Healthcare workers' views vaccinating children with disability, Fiji.

Dr Rosalie Power[1], Ms Unise Vakaloloma[2], Dr Israt Jahan[3], Ms Sureni Perera[4], Dr Ilisapeci Tuibeqa[5], Dr Rachel Devi[6], Litiana Volavola[7], Dr William May[4], Dr Donald Wilson[2], Prof Gulam Khandaker[8], A/Prof Meru Sheel[9]
[1]Translational Health Research Institute, Western Sydney University, [2]Fiji National University, [3]Central Queensland University, [4]Frank Hilton Organization, [5]Colonial War Memorial Hospital, [6]Ministry of Health and Medical Services, [7]National Centre for Immunisation Research and Surveillance (NCIRS), [8]Central Queensland Public Health Unit, Central Queensland Hospital and Health Service, [9]Sydney School of Public Health, The University of Sydney
Context and Aim: Vaccination of children with disability in low- and middle-income countries, such as Fiji, is a challenge. It is important to understand the attitudes and behaviours of health and community workers towards vaccination uptake in these children, as they can impact the success of vaccination programs. This study aimed to identify behavioural and social drivers influencing vaccine uptake in children with disability, as perceived by health and community workers in the Suva-Nausori corridor of Fiji.

Methods: Five focus groups were conducted with 22 participants (female n=17, 77%). Data was thematically analysed, informed by the World Health Organization's Behavioral and Social Drivers of Vaccination framework.

Results: Numerous factors impacted vaccination uptake for children with disability. These included (1) Motivation: lack of intention among families to have their children with disability vaccinated; (2) Thinking and feeling: lack of reliable information about vaccine benefits and safety for children with disability; (3) Social processes: stigma about disability impacting engagement with healthcare; lack of tailored vaccination communication and engagement strategies; and, need for improved disability and health service collaboration; (4) Practical issues: long waiting times and lack of suitable waiting areas for children with disability; financial and time barriers; and, lack of healthcare professional knowledge and confidence in providing vaccines to children with disability, impacting patient-provider trust.

Translational outcomes: The findings from this study should be reflected/integrated into the national guidelines, policies, and action plans for targeted campaigns/interventions to reach the unreached population in the country and leave no one behind.

Future actions: Findings from this study can guide strategic action to overcome the barriers (e.g., lack of motivation, vaccine hesitancy, stigma around disability) and strengthen the existing program to maximize equity in vaccinating children with disability in Fiji. This will eventually reduce the burden of vaccine-preventable diseases in this vulnerable community.

Immunisation in children with disability living in Suva-Nausori, Fiji, 2023

Dr Israt Jahan, Ms Unise Vakaloloma, Ms Sureni Perera, Dr Ilisapeci Tuibeqa, Dr Rachel Devi, Ms Litiana Volavola, Dr Rosalie Power, Dr William May, Dr Donald Wilson, Prof Gulam Khandaker, Associate Prof Meru Sheel[1]
[1]University Of Sydney

Data on vaccination in children with disability are limited, and no prior studies were conducted in Pacific Island Countries. We measured vaccination status in children with disability living in the Suva-Nausori area of Fiji. We also aimed to examine the social and behavioural drivers for vaccination in for children with disability.

From May - September 2023, we conducted a two part study including (A) a cross-sectional survey of 200 caregivers of children with disability living in Fiji; (B) Focus-groups with healthcare service providers and community influencers. We used standardised WHO/UNICEF tools to estimate proportion of vaccinated children and, social and behavioural factors influencing vaccine uptake. Descriptive and regression analyses were conducted for survey data. Thematic analyses was conducted for qualitative data.

Two hundred caregivers of children with disability were recruited. 32.5% were females and 67.5% were males. In our cohort, only 55% of children with disability were vaccinated compared with 90% of overall vaccination coverage for Fiji. The difference for measles and COVID-19 vaccine was even greater. The proportion of vaccination was higher for the first dose and gradually dropped for the subsequent doses. Complete vaccination was significantly lower among older children, children enrolled in special schools, children with hearing difficulties and among those whose caregivers had low confidence in vaccine safety. Five FGDs were conducted with 22 health workers, community influencers and decision-makers. Barriers for vaccination ranged from vaccine confidence to access to vaccines.

The gap in vaccination highlights the need for equitable access to vaccines for children with disability who are vulnerable to hospitalisation and deaths especially during outbreaks. Immunisation policies and plans should emphasize disability inclusiveness of existing vaccination programs. Policies and response plans should be made to ensure people with disability are protected from vaccine-preventable diseases. This is the first ever Pacific study on children with disability.

*Study investigators also include the Australian Disability and Immunisation Investigators (Susan Woolfenden; Margie Danchin; Sarah McIntyre; Hayley Smithers-Sheedy; Nadia Badawi; Kristine Macartney)

Preparing young people with intellectual disability for school vaccinations: Challenges and opportunities

Dr Alexandra Young[1], Professor Iva Strnadova[2], Ms Christiane Klinner[1], Dr Cassandra Vujovich-Dunn[1], Dr Horas Wong[3], Professor Christy E Newman[4], Dr Cristyn Davies[5,6], Dr Allison Carter[1,7,8]
[1]Kirby Institute, UNSW Sydney, [2]School of Education, UNSW Sydney, [3]School of Nursing and Midwifery, University of Sydney, [4]Centre for Social Research in Health, UNSW Sydney, [5]Specialty of Child and Adolescent Health, Faculty of Medicine and Health, University of Sydney, [6]Sydney Infectious Diseases Institute, University of Sydney, [7]Australian Human Rights Institute, UNSW Sydney, [8]Faculty of Health Sciences, Simon Fraser University

Background: Young people with intellectual disability and/or autism can have significant anxiety about vaccination via needle and syringe. Good preparation and education can help them manage their anxiety. Limited evidence exists about the type of information and education they receive regarding vaccines and vaccination. This study aimed to understand whether and how this group is prepared for school-based vaccination in New South Wales special schools.

Methods: Data were collected within the Vax4Health project (www.kirby.unsw.edu.au/vax4health). Semi-structured interviews and focus groups were conducted with fifty participants purposively selected, representing four stakeholder groups, including students with intellectual disability and/or autism, parents, education and health staff. Interviews explored the barriers and facilitators to vaccinating young people with disability in special schools, including student preparation. Inclusive research methods were used with students who were supported during interviews by teaching staff.

Results: Thematic analysis identified five themes related to student preparation: 1) students' knowledge of vaccination, 2) preparing students for vaccination, 3) preparation strategies, 4) challenges to preparation, and 5) student outcomes. Despite assumptions about their cognitive ability, students were aware of the health benefits of vaccines. Yet parents and school staff held differing views about if and how to prepare them for vaccination day, often withholding information from students with needle anxiety or learning difficulties. For those assessed as being receptive to vaccination, adults used a variety of visuals and support materials tailored to students' needs. However, preparation of students was ad hoc, varied from school to school, and did not involve coordination with parents or the school curriculum. Despite intentions to reduce anxiety, surprising students on vaccination day further heightened anxiety.

Conclusion: Young people with intellectual disability and/or autism are not routinely prepared for school vaccinations, and lack of preparation exacerbates anxiety. Resources are needed to enable preparation and minimise their anxiety.

Vaccine hesitancy among parents of adolescents with intellectual disability and/or autism

Dr Allison Carter[1,2,3], Alexandra Young[1], Iva Strnadová[4], Christiane Klinner[1], Horas Wong[5], Christy E Newman[6], Cristyn Davies[7,8], Cassandra Vujovich-Dunn[1], Rachel Skinner[7], Margie Danchin[9], Rebecca Guy[1]

[1]Kirby Institute, UNSW Sydney, [2]Australian Human Rights Institute, UNSW Sydney, [3]Faculty of Health Sciences, Simon Fraser University, [4]School of Education, UNSW Sydney, [5]School of Nursing and Midwifery, University of Sydney, [6]Centre for Social Research in Health, UNSW Sydney, [7]Specialty of Child and Adolescent Health, Faculty of Medicine and Health, University of Sydney, [8]Sydney Infectious Diseases Institute, University of Sydney, [9]Murdoch Children's Research Institute

Background: Vaccination against HPV and other diseases is lower among young people with disability. This study explored vaccine hesitancy among parents of adolescents with intellectual disability and/or autism in New South Wales, and how current vaccine communication strategies could be improved.

Methods: Data were collected within Vax4Health (www.kirby.unsw.edu.au/vax4health), a multi-year study to co-design improvements to the NSW School Vaccination Program in special schools. Semi-structured interviews and focus groups were conducted with 50 participants, including students in four special schools, parents, education and health staff. Interviews explored vaccination of young people with disability and parental consent. Inclusive research principles guided study conduct.

Results: Thematic analysis identified four themes: 1) challenges with standard vaccination information, 2) diverse parental attitudes towards vaccination, 3) reasons for hesitation or refusal of vaccinations, and 4) education needs and communication gaps. Participants believed standard vaccination information was inadequate for the needs of parents of children at special schools, who may have low education levels and additional special needs. While most parents were described as pro-vaccination ("believers"), some were anti-vaccination ("objectors"), and others vaccination-hesitant ("fence-sitters"), suggesting an increased sensitivity and protectiveness regarding their child's health. Reasons for hesitation included the misbelief that vaccines cause or worsen autism, fear of adverse health effects, worries about reactions during administration, caregiver burnout, vaccination fatigue and confusion following COVID-19, and a mistaken assumption that people with intellectual disability do not require sexual health prevention. Despite being seen as "a trusted authority", nurses noted how limited their educational impact was on parents because communication relies on parents proactively contacting public health units. Therefore, parents opting out of school vaccination due to misinformation and concerns fall through the cracks.

Conclusion: Disability-friendly vaccination communication strategies tailored to the sources of hesitancy among parents of adolescents with intellectual disability and/or autism are required to improve uptake.

Developing and promoting tailored HPV vaccination resources for adolescents with disabilities

Ms Judith Slape[1], Ms Alice Batable[1], Ms Danny Baulch[2], Prof Margie Danchin[2], Dr Jane Tuckerman[2]
[1]Cancer Council Victoria, [2]Murdoch Children's Research Institute

Context

Young people with disabilities experience lower HPV vaccination coverage than their mainstream peers. Given additional barriers to cervical screening and treatment later in life, HPV vaccination is vital for safeguarding people with disability against cervical cancer and other HPV-related cancers.

Aim:

To develop, disseminate, and promote a suite of resources to provide clear, accessible, and trusted information about HPV and the HPV vaccine to adolescents and young adults with disability, their parents/carers and schools with the goal of increasing HPV vaccination rates and improving the vaccination experience in this population.

Process

The project was a collaboration between Cancer Council Victoria, Murdoch Children's Research Institute, Scope Australia, young people with disability and their parents/carers.

Using co-design principles, a suite of resources (factsheet, animation and social story) were developed. Community testers discussed what topics should be included in the social story and were presented plain language drafts of the fact sheet and animation script.

Analysis

Community testers generally found the draft content clear and suitable in tone. They offered valuable suggestions regarding word choices, layout, images and animation.

There was consistent feedback to remove images of needles in the resources. Deliberation surrounded the inclusion of a line about sexual activity and disability in the resources. However, feedback from testers and collaborating organisations led us to omit it.

We directly engaged key stakeholders like government agencies, disability organisations, and local councils to disseminate and promote our resources. Through these conversations, we provided detailed explanations and identified the best promotion channels.

Outcome:

Resources are housed on the hpvvaccine.org.au/disability website. The utilisation of co-design principles in the development of these resources was fundamental to ensure they are acceptable, appropriate, and relevant to the intended target audience. Direct engagement with stakeholders has proven effective in driving promotion. Evaluation of their uptake will follow.

Constructing trauma-informed guidance for vaccine delivery services

Ms Maria Christou-Ergos[1], Dr Kerrie Wiley[1,2], Prof Julie Leask[1,2]
[1]School of Public Health, University Of Sydney, [2]Sydney Infectious Diseases Institute

Background: Negative experiences within a health care setting can shape the way people engage with the medical establishment. People enter a vaccination service with existing beliefs and expectations based on their own and others' experiences and can be hesitant as a result. Vaccine hesitancy that is shaped by past experiences can be intensified by damaged patient-provider relationships and adverse events following immunization, including both real and perceived vaccine threats. Negative vaccination experiences can also influence discourse around vaccines which can decrease vaccine willingness. To allay concerns that result from negative vaccination experiences, there is a need to foster positive patient-provider relationships and create safe and welcoming service environments.

Methods: We constructed an evidence-based trauma-informed guidance for vaccine delivery services. It was based on four empirical studies of the relationship between traumatic experiences and vaccine hesitancy,(1-4) and the six core principles of trauma-informed care: patient empowerment, safety, trust, choice, collaboration, and respect. A guidance was drafted from these and observations within vaccination services and feedback from a provider reference group.

Results: The Trauma-Informed Vaccination Checklist combined existing vaccine protocols with trauma-informed procedures. It suggests key areas within vaccine delivery services that may be considered when implementing a trauma-informed approach to vaccination. These include: staff training, preparation of the vaccination space, minimisation of triggers, availability of same-gender staff, implementation of supportive behaviours, informed decision-making, respect for personal space, transparency, and post-vaccination support.

Conclusion: Within the limits of feasibility, implementing trauma-informed approaches when interacting with patients before, during and after vaccination, can improve service delivery and foster positive vaccination experiences.

1. Christou-Ergos M et al. How the experience of medical trauma shapes Australian non-vaccinating parents' vaccine refusal for their children: A qualitative exploration. SSM - Qualitative Research in Health. 2022;2:100143.
2. Christou-Ergos M et al. Traumatic Events and Vaccination Decisions: A Systematic Review. Vaccines (Basel). 2022;10(6).
3. Christou-Ergos M, Wiley KE, Leask J. Association between traumatic life events and vaccine hesitancy: A cross-sectional Australian study. Public Health. 2023;216:1-6.
4. Christou-Ergos M, Wiley KE, Leask J. Willingness to receive a vaccine is influenced by adverse events following immunisation experienced by others. Vaccine. 2023;41:246-50.

352

Vaccination status of special-risk groups presenting to an Outpatient Specialised Immunisation Service

Ms Mary Barnett[1,2,3,10], Dr (PhD) Sabrina Oishi[1,2,3,4], A/Prof Krispin Hajkowicz[1,2,3,4,6], Dr. Michael Lane[1,2,5,4], Ms Madeline Hall[1,2,3,8], A/Prof Andrew Redmond[1,2,3,4], Adj Associate Professor Michael Nissen[1,2,3,4,9]

[1]Royal Brisbane and Women's Hospital, [2]Queensland Adult Specialist Immunisation Service, [3]Infectious Diseases, Royal Brisbane and Women's Hospital, [4]University of Queensland, School of Medicine, [5]Immunology & Allergy, Royal Brisbane and Women's Hospital, [6]University of Queensland Centre for Clinical Research, [7]Pharmacy Department, Royal Brisbane and Women's Hospital, [8]University of Queensland, School of Nursing and Midwifery, [9]The Prince Charles Hospital, [10]Metro North Public Health Unit

Context and aim

The Australian Immunisation Handbook (AIH) provides vaccination recommendations for special-risk groups including persons living with Human Immunodeficiency Virus (PLWHIV), men who have sex with men and sex industry workers.

The World Health Organization (WHO) declared the mpox outbreak a public health emergency of international concern on 23 July 2022. In response, the Australian Technical Advisory Group on Immunisation recommended the special risk groups receive primary preventative vaccination against mpox with JYNNEOS®.

The aim was to assess the uptake of recommended AIH vaccinations in an Australian context. This included diphtheria, tetanus, pertussis, pneumococcal, Hepatitis A, B, measles, mumps, rubella, varicella/zoster, meningococcal, influenza and human papillomavirus (HPV). These patients self-identified as belonging to the special-risk groups requiring mpox vaccination.

Process

A retrospective convenience sample of immunisation history and serology was analysed to determine the vaccination uptake and immunity to specific vaccine-preventable diseases.

Analysis

Of PLWHIV, 45% had received a pneumococcal vaccine, there was no evidence of any meningococcal vaccination. Interestingly, seasonal influenza vaccination was 86% amongst this cohort.

In the age range of 18-25 years for the whole sample, 53% had received HPV vaccination. Forty-one percent of the cohort had received a Hepatitis B vaccine with 27% having serological evidence of immunity to Hepatitis B.

Outcomes:

Based on the analysis of vaccination uptake of this combined cohort, rates were low across all recommended vaccines comparatively to influenza vaccination.

Recommended vaccinations which are not listed on the National Immunisation Program (NIP), may create disparities in access and impact public health disease control for these special-risk groups especially PLWHIV.

Further research is required to identify the barriers to vaccination for special-risk groups as well as explore the disparities in the uptake of recommended vaccinations such, hepatitis meningococcal, pneumococcal and HPV.

Re-vaccination following Haematopoietic Progenitor Cell Transplant: review of a collaborative model

Ms Leanne Philips[1,3], Ms Alison Blaikie[1], Dr Chris J Fraser[2], Ms Jill Shergold[2], Dr Sophie CH Wen[1,3]
[1]Queensland Specialist Immunisation Service, [2]Children's Health Queensland Blood and Marrow Transplant Services, [3]University of Queensland

Context: Children's Health Queensland Blood and Marrow Transplant Service and Queensland Specialist Immunisation Service (QSIS) use a collaborative model to re-immunise patients following haematopoietic progenitor cell transplant (HPCT).

Process: Retrospective review of vaccination status of children who received a HPCT in 2016-2021. Demographics, transplant details and vaccination history were obtained from hospital records and Australian Immunisation Register. Recommendations aligned with Australian and local guidelines. Recommended time points included referral and completion of primary vaccine course within 1 month; and completion of 2-year post HPCT vaccines within 6 months of being eligible.

Analysis: 201 patients were transplanted (165 allogeneic, 43 autologous, 2 both allogeneic and autologous). Indications were malignant (66%) and non-malignant (34%). Median transplant age 5.5 years (IQR= 2.7-12.0). Deceased patients (n=58) were not included in the analysis. No deaths were attributed to vaccine preventable diseases.

Influenza vaccine was received by 84% (128/152) following HPCT; with 58% (88/152) administered the recommended 2 dose course first year post HPCT. A primary COVID-19 vaccine course was received by 58% (88/152) patients. In those referred to QSIS (133/152, 88%); 89% (119/133) were referred according to recommendations. Completion of vaccination course was delayed in six patients due to clinical contraindications. In those with no contraindications, 73% (97/133) completed a primary course of inactivated vaccines within the recommended time. Thirty patients (23%) had delayed, or incomplete vaccination schedules due to non-clinical factors. At 2 years post-HPCT, live vaccines were contraindicated in 17 % (23/133); with 56% (74/133) receiving vaccines on time. In those not receiving live vaccines on time (36/133, 27%), vaccine refusal and appointment delays were the most common contributing factors.

Outcomes: This collaborative model is an effective strategy for HPCT patient needs. Referrals are timely. Processes are required to support appointment attendance and further attention addressing vaccine hesitancy.

Needle Phobia & Disability – An Independent Nurse-led Immunisation Sedation Service

Ms Karen Bellamy
[1]Monash Health

Most people don't love needles, others find the prospect of having a needle, debilitating. Needle avoidance has been featured in healthcare during the Covid 19 pandemic. In particular, vaccine mandates have highlighted this issue for both children and adults.

Monash Health have developed an independent, nurse led sedation services for adults and children requiring sedation for immunisation. A nurse practitioner manages patients from consult through to the administration of sedation and vaccines.

Monash Health are the only publicly available adult pathway for sedation in Victoria for needle phobia. Monash Health have developed a number of pathways for adults and children with needle phobias and disability, including:

- Low sensory environment utilising experienced immunisation staff.
- Distraction techniques – needle calm, exocool, VR.
- Nitrous Oxide in outpatient setting.
- Day admission for paediatric patients with Nitrous Oxide +/- premedication at home and midazolam.

A survey is administered after each vaccination episode with a 97% response rate to the survey. The responses from patients and families are overwhelmingly positive. The main reasons for patients attending the service were needle phobia and disability. To date, patient and family impression of the success of their sedation experience is almost 100 %.

There is room for improvement in this service, however at the end of 2022, the Department of Health withdrew the specialist immunisation services funding. Despite the funding withdrawal, Monash Health have maintained the sedation service, as the need is evident with an increase in referrals received over 2023. Families have requested an extension of the service to include phlebotomy. The service has also expanded the sedation platforms used, to include olanzapine & clonidine, which are more suited to a small number of our patients.

Improving rates of immunisation in refugee populations

Dr Abela Mahimbo[1]
[1]UTS

Despite an established Humanitarian Program running for many years – refugees' health needs in Australia, particularly immunisation have not been met adequately. Under-immunisation is one of the top health issues for this group. The COVID-19 pandemic has caused significant disruptions in the delivery of routine and catch-up immunisation likely amplifying the barriers to access and uptake of vaccination services for refugees. To ensure equitable provision of immunisation services to refugees, the 2019 World Health Organisation technical guidance report recommends consideration of key policy options, which are hereby contextualised to the Australian context. These include: a) optimising every healthcare contact and opportunity in primary care settings to immunise refugees immunise refugees as per the National Immunisation Program, including completion of catch-up vaccinations as needed; b) implementing targeted strategies like drive-through vaccine clinics or mobile vaccination clinics in jurisdictions where refugee communities have significant access barriers; c) modifying the Australian Immunisation Register to accurately capture immunisation coverage data for refugees and undertake data linkage using the Commonwealth Personal Level Integrated Data project to estimate vaccine coverage data for refugees; d) gathering rich data on barriers and enablers to vaccination using data collection resources such as the WHO behavioural and social drivers (BeSD) tools and co-producing vaccination programs with refugee communities using practical evidence-based frameworks such as the WHO Tailoring Immunisation Programmes and; e) increasing training opportunities for health care providers that incorporate guidance on inclusive and culturally responsive vaccination service delivery for refugees. An integrated and multifaceted approach involving policymakers, stakeholders in immunisation service delivery and refugee communities is critical to improving immunisation rates for refugees in Australia.

2A –

Maternal health, Great Hall 4 - Plenary, June 11, 2024, 13:30 - 15:00

150

Fighting RSV starts with maternal RSV immunisation: Focus group and DCE findings

Dr Bing Wang[1,2,3], Dr Prabha Andraweera[1,2,3], Associate Professor Zohra Lassi[2,4], Associate Professor Gang Chen[5], Associate Professor Jason Ong[6]
[1]Vaccinology and Immunology Research Trials Unit, Women's and Children's Health Network, [2]Robinson Research Institute, University of Adelaide, [3]Adelaide Medical School, Faculty of Health and Medical Sciences, University of Adelaide, [4]School of Public Health, Faculty of Health and Medical Sciences, University of Adelaide, [5]Centre for Health Economics, Monash University, [6]Central Clinical School, Monash University

Background:
Respiratory Syncytial Virus (RSV) is the leading cause of bronchiolitis and pneumonia in infants and can lead to fatal respiratory distress, especially in very young infants. No specific treatments exist for RSV, however available preventative strategies are likely to become available soon. A new RSV vaccine has received approval in the United States for pregnant women to prevent RSV in infants. This study aims to identify and understand barriers and facilitators to the uptake of a new RSV vaccine in pregnant women and determine their underlying choices for a maternal RSV immunisation program.
Methods:
This study employs a mixed-methods approach: Part I comprises focus group discussions (FGDs) which inform Part II administration of a Discrete Choice Experiment survey (n=400). We are conducting FGDs guided by a critical realist paradigm. Eligible participants are pregnant women residing in Australia and aged 18 years or older.
Results:
To date, two focus groups with five pregnant women from South Australia and Victoria have been held (Part I). The identified themes were categorised into four overarching domains: 1) motivators for vaccinating during pregnancy to safeguard their babies and prevent severe diseases in infants, 2) barriers to vaccinating stemming from safety concerns, uncertainties regarding vaccine effectiveness, and vaccine hesitancy arising from prior COVID-19 vaccination experiences, 3) facilitating easy access to vaccination services, 4) preferred vaccine promotion strategies, including constant reminders/prompts, personalised messages, social norms reinforcement, campaign focusing on serious outcomes and utilising diverse/lay languages, recommendations from local obstetricians and health authorities. In addition, conflicting opinions arose surrounding vaccine mandates.
Conclusions:
Vaccine safety, vaccine effectiveness, disease severity and preferred promotion strategies are important variables to consider in supporting high uptake of RSV vaccines and for incorporation in administration of the DCE, the results of which will be presented in addition to the focus group findings.

Antenatal care access critical for congenital syphilis prevention, Australia 2016 - 2021

Dr Alison Chew[1,2], Professor Donna Mak[3,4], Professor James Ward[5], Dr Lorraine Anderson[6], Ms Emma Sanguineti[7], Ms Rachael Crane[8], Professor Tony Stewart[2], Ms Amy Bright[1]
[1]Australian Government Department of Health and Aged Care, [2]Australian National University, [3]Communicable Disease Control Directorate, Department of Health WA, [4]University of Notre Dame , [5]Poche Centre for Indigenous Health, University of Queensland, [6]Kimberley Aboriginal Medical Services Ltd, [7]Public Health Intelligence Branch, Department of Health, Queensland Health, [8]Preparedness, Planning, and Surveillance; Population Health Division; ACT Health Directorate

Background:
Congenital syphilis, most commonly caused by trans-placental transmission of Treponema pallidum infection from mother to fetus, can result in stillbirth or life-long, serious disabilities. From 2013 to 2022, infectious and congenital syphilis rates in Australia increased 3.2 and 2.2 fold respectively. This study aims to describe gaps in congenital syphilis prevention in Australia.

Methods:
Mixed methods including: a descriptive analysis of gestational syphilis cases; a case-control study; and qualitative analysis of archival and grey literature. The case-control study identified mothers who did not receive adequate treatment for gestational syphilis (cases) and those who did (controls) using national and jurisdictional surveillance databases from January 2016 to December 2021. Cases were matched to controls by age, Aboriginal or Torres Strait Islander status and remoteness area, and their demographic and clinical care characteristics compared.

Results:
53/688 syphilis notifications known to have gestational syphilis resulted in a congenital syphilis outcome. Data completeness for the ‘pregnancy status’ variable was poor overall, and few jurisdictions collected detailed data on clinical care. On multivariable analysis, first presentation for antenatal care after the first trimester (aOR 54.9 95%CI 7.9 - 380, p <0.001), diagnosis on clinical presentation (aOR 9.9, 95%CI 1.5 – 65.1, p = 0.02) and diagnosis in a hospital (aOR 13.9, 95%CI 1.4 - 136, p = 0.02) were associated with inadequate treatment for gestational syphilis. Qualitative analysis identified access to antenatal care for mothers with complex social situations as an important factor.

Conclusion:
Given infectious and congenital syphilis rates are increasing in Australia, it is important to improve completeness of reporting and data availability for women with gestational syphilis. Investing in programs that overcome barriers to antenatal care for women at high risk of congenital syphilis is critical for its prevention.

Pregnancy loss before 24 weeks gestation and maternal vaccination: a pilot study

Ms Alexa Dakiniewich[1]
[1]University Of Queensland

Title: Pregnancy loss before 24 weeks gestation and maternal vaccination: a pilot study

Background: Influenza and COVID-19 related hospitalisations, ICU admissions, and deaths are higher among pregnant individuals compared to non-pregnant individuals. Influenza and COVID-19 vaccinations are free and recommended during pregnancy to reduce the severity of these infections. Despite recommendations, uptake of vaccines in pregnancy remains low, with concerns from prospective parents and vaccine providers about vaccine safety when given earlier in pregnancy and subsequent pregnancy loss such as miscarriage. In Australia, pregnancy loss data are not routinely collected, and the Australian Immunisation Register does not collect pregnancy status, so there is no way to systematically detect a timely safety issue. This remains a huge gap.

Learning Objective: We aim to conduct a 'proof of concept' pilot study to evaluate influenza and/or COVID-19 vaccination when given early in pregnancy and subsequent pregnancy loss before 24 weeks gestation.

Main Outcome Measure(s): An association between early maternal influenza and/or COVID-19 vaccination and pregnancy loss <24 weeks gestation.

Methods: Through collaboration with the Gold Coast Primary Health Network, Queensland Health, and the University of Queensland, we will be analysing linked pregnancy and immunisation primary health records for influenza vaccination between January 2018 and February 2024 and COVID-19 vaccination >2021. Time to event data analyses (cox-proportional hazard ratios) will be used to calculate whether there is an increased risk of pregnancy loss <24 weeks among women who received influenza and/or COVID-19 vaccination in pregnancy compared to pregnancy loss <24 weeks in unvaccinated pregnancies.

Results: This study is in progress. We expect a sample size of ~55,000 pregnancies with a known vaccination status. This study is part of a PhD student project in the NHMRC funded VaxiMums program. Results from this program will contribute to building a safety signal for maternal vaccination.

Q fever in pregnancy: Are we missing cases in high endemicity settings?

Dr Linda Chew[2,3], Dr Priya Janagaraj[1,5,6], Dr Robert Horvath[2,4,5,6]
[1]Darling Downs Public Health Unit , [2]Pathology Queensland , [3]Darling Downs Hospital and Health Services , [4]The Prince Charles Hospital, [5]University of Queensland, [6]Q Fever Interest Group

Context
The Darling Downs and SouthWest region is a Q fever hotpot in Australia, known for its vast cattle and agricultural industry. However, despite the high burden of disease notification among people working with animals or in the animal industry, little is known about the burden of Q fever in pregnancy in the region. We report a case of chronic Q fever in pregnancy identified through public health contact tracing.
Case
An individual was identified as a confirmed case of Q fever as part of a household family contact tracing in December 2023. In reviewing her clinical symptoms and serology, it was noted that her PCR was positive since August 2023 with chronic Q fever developing in the context of pregnancy in December 2023.

Analysis
Pregnant women are significantly more likely to have an asymptomatic acute Q fever which, untreated, has been associated with poor obstetric outcomes including stillbirth, miscarriage, intrauterine growth restriction, and premature delivery. Q fever in pregnancy also predisposes mothers to chronic transformation. Treatment of recently infected women is complex but seems to improve outcomes with optimal duration of treatment and medication preferences remains unclear.

Outcome
Q fever is a potentially underrecognized treatable cause of adverse pregnancy outcomes in regional South East Queensland. In 2021, Q fever PCR testing on placental tissue was added in Qld for the investigation of stillbirth. However, to understand the true burden of Q fever in pregnancy this should be nationally recommended by the Perinatal Society of Australia and New Zealand for Stillbirth. There is no current evidence to support the efficacy of active surveillance during pregnancy, timing and frequency of testing in high endemicity setting. However, as Q fever in pregnancy remains largely asymptomatic, screening in adverse pregnancy outcomes is crucial. Collaborative partnership in research will help answer questions raised to address any public health policy (vaccination, screening in high endemic setting) that will improve disease burden in mothers.

Effect of maternal influenza vaccination on respiratory infections in infants

Dr Nusrat Homaira[1,2,3], Dr Jiahui Qian[4,5], Mr Anish Scaria[4], Ms Sandrine Stepien[4], Professor Kristine Macartney[4,6], Professor Bette Liu[4,5]
[1]Discipline of Pediatrics and Child Health, School of Clinical Medicine, University of New South Wales, , [2]Sydney Children's Hospital, [3]James P. Grant School of Public Health, [4]National Centre For Immunisation Research And Surveillance (NCIRS), [5]School of Population Health, University of New South Wales, [6]Faculty of Medicine and Health, University of Sydney

Background: In Australia, influenza vaccination is recommended for pregnant women but evidence quantifying vaccine effectiveness in prevention of laboratory-confirmed influenza and acute lower respiratory infections (ALRI) in infants is limited.

Methods: A population-based, matched cohort study was conducted using the NSW Perinatal Data Collection (PDC) linked to hospitalisation and notification data. Infants born from 2016-2019 to mothers who received influenza vaccine during pregnancy were matched 1:1 (using gestational age and date of birth) to infants whose mothers had not received influenza vaccine. The annual risk of influenza notifications or influenza hospitalisations identified through ICD-10 codes and all-cause ALRI hospitalisations among infants during the first 6 months of life was examined using stratified Cox models, adjusted for various factors including maternal age, Indigenous status, previous pregnancies and socioeconomic status.

Results: During follow-up of 118,112 matched infant pairs over the 4 years there were 1088 influenza notifications/hospitalisations and 7950 ALRI hospitalisations. Rates of influenza notifications/hospitalisations were highest in 2017 and 2019 (10.6 and 15.1 per 1000 person-years). The effectiveness (VE) of maternal influenza vaccine in preventing influenza notification or hospitalisation in the first 6 months of life varied by year of analysis ranging from non-significant in 2016, 2017 and 2018 (VE point estimates 29%, -3%, 28% respectively) to 34% (95%CI 18; 47%) in 2019. No significant effect of maternal vaccination on all-cause ALRI hospitalisations was observed (annual VE point estimates ranging from -4 to 3%).

Conclusion: Our findings suggest that the protective effects of maternal influenza vaccination on infants during the first 6 months of life vary across different influenza seasons. Additional analyses by months of follow-up and risk groups will be conducted and shared at the meeting.

Co-designing with community to improve maternal COVID-19 vaccination in WA-based Aboriginal women

Dr Anne-Marie Eades[1], Mima Bull, Deanne Eades, Jenna Greaves, Aunty Vanessa Hart, Tilsa Guima[1], Dr Alison Walton-Blane[1,2,3], Dr Eliza Razak[1], Ananda Buckley[1]
[1]University Of Technology Sydney, [2]University of Notre Dame Australia, [3]Curtin University

Access to COVID-19 vaccination for Aboriginal women of childbearing age in Western Australia is required to ensure protection for both women and their unborn babies. Although COVID-19 immunisation coverage among Aboriginal people has improved significantly since September 2021, Western Australian Aboriginal immunisation coverage is still the lowest in Australia. Understanding the cultural, psychosocial, and structural consideration about why there is poor uptake of COVID-19 vaccination programs for Aboriginal women will clarify the barriers and enablers for Aboriginal women and their families.

In this presentation we will provide an overview of the co-design process between researchers, clinicians and the community members of the Aboriginal Community Advisory Committee and Aboriginal Medical Services partners of the Ngarnk Koolangka Moorditj Yarning project. An Aboriginal Participatory Action Research method is used in the co-design of this project. Resources and information will be developed with culturally safety embedded across the strategies needed to improve immunisation rates for Aboriginal women and their infants in Western Australia. This Aboriginal-led research seeks to address some of the lessons that can be learned from the thoughts, perceptions, and experiences among Aboriginal woman about the COVID-19 Vaccination program in Western Australia.

Aboriginal community involvement and permissions: This research is being conducted in partnership with two Aboriginal health services in Western Australia. As part of the co-design process, community consultation and feedback is being implemented throughout the project, and the final resources will be developed with the Aboriginal community, the projects key stakeholders and service providers to enable shared investment in research translation. The community have provided consent for publication of the research findings. The study has received the relevant ethics approvals.

SCREENING FOR SYPHILIS DURING PREGNANCY IN ABORIGINAL COMMUNITY CONTROLLED HEALTH SERVICES.

Shellee Williams[1], Ms Shellee Williams[1], Alan Ho[1], Dr Clare Bradley[1,2,3], Paul Schwenn[1], Professor James Ward[1]
[1]Poche Centre for Indigenous Health, University Of Queensland, [2]Wardliparingga Aboriginal Health Equity, South Australia Health and Medical Research Institute, [3]College of Medicine and Public Health, Flinders University

Context and Aim
Congenital syphilis cases in Australia have increased tenfold between 2016-2023. Aboriginal and Torres Strait Islander women diagnosed with gestational syphilis and Aboriginal and Torres Strait Islander babies with congenital syphilis are overrepresented in national data. Early testing and treatment can reduce adverse pregnancy outcomes; however, studies suggest that screening for pregnant women is suboptimal. To date there have been limited testing data available for syphilis and other STIs during pregnancy among Aboriginal and Torres Strait Islander people.

Methods
This study used deidentified clinical data collected from 35 Aboriginal Community Controlled Health Service (ACCHS) sites nationally as part of the ATLAS Indigenous Primary Care Surveillance and Research Network to examine syphilis and other STI testing during pregnancy for the period 2016-2023.

Analysis/ Research Findings
Of 15,262 unique women who attended the ACCHSs, there were 4,950 with complete antenatal records, with 6016 pregnancies recorded. Sixty-four percent of pregnancies were screened for syphilis at least once between the first antenatal visit to six weeks postpartum (range: 56.7%-69.6% across states). Of the 64% (3848) screened, 37.8% (2272) were tested once only, 21.8% (1310) twice and 4.4% (266) three times. A low proportion (2.3%) were reactive.

Translational Outcomes
Within the context of the increasing cases of infectious syphilis and congenital syphilis, this data will be used to identify gaps in service delivery and for quality improvement initiatives, as well as adding to the evidence base on testing during pregnancy nationally.

Future Action
Results of this study can be translated to other primary care services and provide a greater understanding of opportunities for syphilis prevention among Aboriginal and Torres Strait Islander people who are recognised as a priority population.
Word Count: 265

Publication approval of research findings has been given by the ATLAS Clinical Hub Reference Group, as the data custodian on behalf of the sovereign owners of the data contributing to this study. The Clinical Hub Reference Group provides Indigenous governance and oversight of all data collected through the ATLAS network.
Word Count: 50

Uptake of pertussis and influenza vaccination in pregnancy, Queensland, 2016 to 2022

Ms Anne Maree Baldwin[1]
[1]Queensland Health

Aim
To assess uptakes of, and variation in, influenza and pertussis (whooping cough) vaccine during pregnancy in Queensland

Context and aim
Influenza during pregnancy increases mothers' morbidity, mortality and pre-term birth risk. Infants are at highest risk of severe outcomes from pertussis, and areas are currently experiencing elevated incidence. Antenatal influenza and pertussis vaccination provides infant protection via transplacental antibodies. Influenza vaccine in pregnancy has been funded nationally since 2010. In 2014, Queensland funded third-trimester pertussis-containing vaccine, with National Immunisation Program inclusion in 2018. Since mid-2015, self-reported antenatal influenza and pertussis vaccination has been collected for Queensland's Perinatal Statistics Collection(PSC).

Methods and analysis
PSC numbers and percentages of birthing mothers were obtained by influenza and pertussis vaccination status and: birth year; local hospital network (or private/unknown); and mother's ten-year age group, First Nations status, country of birth(Australia; other) and number of antenatal visits. Uptakes were descriptively analysed. The Public Health Act 2005 provides for release of non-identifiable PSC information.

Outcomes
Between 58,731(2020) and 62,482(2021) mothers gave birth annually. Uptakes ranged from 2016 lows (influenza:27%; pertussis:53%) to 2020 highs (influenza:60%; pertussis:77%). Substantial geographical variation was observed. Uptakes for women birthing in private hospitals were 12 to 20 percentage points higher for influenza, and 9 to 17 percentage points higher for pertussis. In a subset analysis, uptakes were higher with more antenatal visits, for mothers aged 30-39 years, and for mothers not identified as Aboriginal and Torres Strait Islander. Mothers born overseas had higher influenza, but lower pertussis, vaccine uptakes.

Future actions
Uptakes will be discussed with Public Health Units, clinical networks and antenatal care providers. Multivariate unit-record analysis will support independent predictor identification. New requirements for vaccination providers to identify antenatal vaccinations in the Australian Immunisation Register may facilitate more accurate, nationally consistent uptake assessment, and national strategies to improve uptake.

How to Prevent Neonatal Syphilis in Remote and Regional Australia

Dr Simon Slota-Kan[1]
[1]WA Country Health Service

In 2023, for the first time since 2019, the Pilbara region of Western Australia recorded no cases of neonatal syphilis. Over the previous four years, there were 4 cases of congenital syphilis with 2 cases in 2022; 1 in 2021 (and 1 foetal death in-utero at 19 weeks); and 1 case in 2019. The Pilbara syphilis outbreak that began in 2018 still predominately affects the vulnerable remote Aboriginal population. The numbers of women of childbearing ages with previous syphilis infections continue to increase. The Pilbara Public Health Unit coordinated a comprehensive response in 2023 that included strategies such as: the “Mooditj” resilience, relationship and sexual health education campaign aimed at adolescents; an antenatal strategy comprising high-risk pregnancy meetings, the ‘Baby Basket’ program, case management of antenatal women with syphilis, neonatal management plans to implement at delivery for women with syphilis in pregnancy and antenatal emergency department (ED) testing; comprehensive Aboriginal Medical Services engagement; and intensive follow-up of syphilis cases and contacts.
This presentation by the Pilbara Public Health Unit will explore the elements required for success in prevention of neonatal syphilis in a high-risk setting and region.
No specific research findings in relation to Aboriginal and Torres Strait Islander Communities will be presented. The presentation will be reviewed by the WA Country Health Service Aboriginal Health Guidance committee before presentation.

Identifying maternal COVID-19 vaccination uptake and decision-making factors in WA-Aboriginal Communities

Ms Alison Walton-Blane[1,5,6], Ms Mima Bull[2], Ms Deanne Eades[3], Ms Jenna Greaves[4], Aunty Vanessa Hart, Miss Ananda Buckley[1], Dr Eliza Razak[1], Mrs Tilsa Guima Chinen[1], Associate Professor Anne-Marie Eades[1]
[1]University Of Technology Sydney, [2]South West Aboriginal Medical Service, [3]South West Aboriginal Medical Service, [4]South Coastal Babbingur Mia, [5]Curtin University, [6]University of Notre Dame

COVID-19 complications are more frequent in Indigenous communities who remain at increased risk of morbidity and mortality outcomes. Complications are also more likely during pregnancy, therefore pregnant Aboriginal and Torres Strait Islander Peoples (hereafter respectfully termed Aboriginal) have a compounded risk and are strongly recommended to vaccinate against COVID-19. The COVID-19 vaccination uptake is known to be lower in both Aboriginal communities and pregnant mothers. However, limited research exists exploring maternal COVID-19 vaccination uptake in Aboriginal communities. Therefore, identifying the factors related to maternal COVID-19 vaccination rate and decision-making in Aboriginal communities is required.

This study forms part of an explanatory mixed methods research project that explores the COVID-19 experiences of WA-based Aboriginal women of childbearing age, as well as non-Aboriginal mothers of Aboriginal children. A detailed survey exploring factors related to COVID-19 vaccine confidence, hesitancy, and decision-making during pregnancy and conception was run between October 2023 – April 2024 at two Western Australian Aboriginal Medical Services. At time of writing, 55 Aboriginal women and mothers of Aboriginal babies had completed the survey.

Survey results indicate that maternal perceptions of vaccine efficacy, safety, levels of trust in health professionals and governing bodies, as well as levels of worry and skepticism are related to vaccination uptake. The WA-based COVID-19 vaccine mandate was discussed and highlighted as a divisive influencing factor. The results further indicate the potential influence of medical bodies when providing information. Furthermore, that a multi-pronged approach including vaccination recommendations from a trusted health professional and campaigns targeting and including local services, i.e., Aboriginal Medical Services, GPs, midwives, and pharmacies may influence Aboriginal mothers, and Aboriginal communities' decisions to vaccinate during pregnancy or conception.

Aboriginal community involvement: This research is being conducted in partnership with two Aboriginal health services in WA. As part of the co-design process community consultation and feedback was used during the survey development and the project is continually guided by Aboriginal-led governance groups. The results will be used to develop recommendations and resources with the Aboriginal community. The community has provided consent for publication of the research findings. The study has received the relevant ethics approvals.

2B –
Outbreak investigations, Great Hall 3 - Break out, June 11, 2024, 13:30 - 15:00

335

Investigation and response to an outbreak of anogenital Neisseria meningitidis serogroup Y

Dr Ned Latham[1,2], Prof Sebastiaan J. Van Hal[3], Dr Sally L. Ellis[1], Ms Ella F. Madden[1], Mr Arun Parasuraman[1], Dr Jessica L. Wells[1], Dr Vicky Sheppeard[4], Dr Phillip Read[4], Prof David J. Templeton[5], Dr Christopher Carmody[6], Dr Nathan Ryder[7], Dr Benjamin H. Armstrong[8], Dr Juliette Holland[9], Dr Stella Pendle[10], Dr Christine E. Selvey[1], Prof Monica M. Lahra[11]
[1]Health Protection NSW, [2]NSW Public Health Training Program, [3]Royal Prince Alfred Hospital, [4]South Eastern Sydney Local Health District, [5]Sydney Local Health District, [6]South Western Sydney Local Health District, [7]Centre for Population Health NSW Health, [8]Douglass Hanly Moir Pathology, [9]Laverty Pathology, [10]Australian Clinical Labs, [11]WHO Collaborating Centre for Sexually Transmitted Infections and Antimicrobial Resistance, New South Wales Health Pathology, Microbiology, The Prince of Wales Hospital

In October 2023, there was an unexpected increase in Neisseria meningitidis (Nm) serogroup Y (MenY) detections in anogenital specimens in NSW. Nm is an uncommonly reported cause of sporadic anogenital infections. Urethritis outbreaks caused by a non-groupable Nm clade have been described in the United States, however geo-temporal clusters of anogenital MenY have not previously been reported.

Nm isolated from anogenital sites is not notifiable in Australia, however presumptive detections in NSW are referred to the NSW Neisseria Reference Laboratory by some laboratories for confirmation of identification and serogrouping. Whole genome sequencing (WGS) and in silico multi-locus sequencing was performed on most isolates. Confirmed outbreak cases had an Nm isolate matching the cluster sequence type; probable cases were NSW residents with MenY isolated from an anogenital site from 1 July 2023 without WGS results. Case information was obtained in interviews conducted by public health unit and/or sexual health clinic staff.

There were 41 outbreak cases identified to 8 February 2024. The 30 confirmed cases were MenY ST-1466 and had limited sequence diversity. Of the 41 cases, most were men (N=27), of whom six reported recent contact with a female sex worker. Five cases were men who have sex with men and two were female sex workers. Almost all (N=39) had urogenital symptoms; the sole anorectal case was asymptomatic. Sexual contacts of symptomatic cases were offered clearance antibiotics and vaccination. No cases or contacts developed invasive meningococcal disease (IMD).

Investigation of an increase in anogenital Nm infections in NSW identified an outbreak of MenY ST-1466. Ascertaining the extent of carriage, disease, and populations at risk is hindered by variability in clinical and laboratory practices, notification, and case data collection. Although MenY ST-1466 is known to cause IMD, the link between anogenital infection and IMD is not well-understood and requires further investigation.

Penicillinase-producing Neisseria gonorrhoeae (PPNG) outbreak in remote Northern Territory, 2023-ongoing

Ms Joanne (Annie) Gerrell[1,2], Ms Natasha Egoroff[3], Dr Belinda Greenwood-Smith[1], Ms Paula Wines[1], Ms Jamie-Anne Maidment[1], Dr Pasqualina Coffey[3], Ms Michelle Doyle[3], Mr James McLeod[4], Mr Kevin Freeman[5], A/Professor Rob Baird[5], Dr Vicki Krause[3], Mr Anthony Draper[2,3,6], Professor Katie Glass[2], Dr Manoji Gunathilake[3]
[1]Centre for Disease Control Northern Territory Health, [2]National Centre for Epidemiology and Population Health, Australian National University, [3]Centre for Disease Control Northern Territory Health, [4]Territory Pathology, Alice Springs Hospital, [5]Territory Pathology, Royal Darwin Hospital, [6]Global and Tropical Health Division, Menzies School of Health Research, Charles Darwin University

2B - Outbreak investigations, Great Hall 3 - Break out, June 11, 2024, 13:30 - 15:00

Background: The remote Northern Territory (NT) is a vast, sparsely populated area. Approximately 41% of the population outside urban Darwin are First Nations Australians. Historically, cases of penicillinase producing Neisseria gonorrhoeae (PPNG) were infrequent outside urban Darwin, despite higher rates in most of Australia and overseas. Oral amoxicillin, probenecid and azithromycin combinations were used as first line treatment for suspected or confirmed uncomplicated urogenital gonococcal infections when sexual partners were also from specified remote regions. An increase in notified PPNG cases occurred from January 2023 and an outbreak was declared in July 2023.

Methods: An outbreak case was defined as any person with PPNG notified in the NT since 1 January 2023 who resided outside urban Darwin. Contact tracing was conducted and enhanced surveillance completed to verify treatment of cases and named contacts. A descriptive epidemiologic analysis was conducted. A review of clinical guidelines was undertaken, and treatment advice was updated in response to the increased incidence of PPNG in remote NT.

Results: There were 71 outbreak cases between 1 January 2023 and 1 February 2024; with 50.7% male; median age 29 years (range 15-69 years) and 90% First Nations Australians. Of the 41(58%) cases with sexual contacts identified, 59 contacts were listed; 40 (68%) were named; 14 of those named (35%) were confirmed as adequately treated; 4 became cases. Testing and treatment of contacts were not consistently reported.

Conclusion: This outbreak likely precedes PPNG becoming endemic in remote NT. It highlights the difficulties in effective contact tracing for sexually transmitted infections in remote areas, and the need to adapt treatment advice in response to epidemiological information.

Multijurisdictional healthcare-associated outbreak of Ralstonia pickettii from contaminated saline, Australia 2023

Dr Kelsi Marris[1]
[1]South Eastern Sydney Public Health Unit

2B - Outbreak investigations, Great Hall 3 - Break out, June 11, 2024, 13:30 - 15:00

Background
In September 2023, South Eastern Sydney Public Health Unit was notified of five haematology/oncology inpatients with Ralstonia pickettii blood stream infections from the same hospital ward. This organism is an uncommon cause of healthcare-associated outbreaks, previously linked to contaminated healthcare fluids.

Methods
A NSW outbreak management team was assembled, and later broadened to include other jurisdictions. Laboratories, public health networks and clinicians were requested to notify R. pickettii cultures to jurisdictional public health authorities. All available isolates were sequenced.

Confirmed cases had laboratory evidence of R. pickettii, isolated since 1 August 2023, matching the outbreak strain on whole-genome sequencing (WGS). Probable cases had R. pickettii without WGS available.

Case exposures were investigated through medical records, clinician interviews, and product procurement data. Microbiological testing of suspected products was conducted, and isolates were sequenced. The Therapeutic Goods Administration (TGA) investigated supply chains of suspected products.

Results
55 cases (41 confirmed, 14 probable) were identified across seven jurisdictions in Australia with samples collected between 1 August and 4 December 2023. R. pickettii was isolated from a variety of clinical sites including blood, urine and skin.

After identification of a common product used in several cases, R. pickettii was cultured from a 30mL sodium chloride irrigation solution product. 46 (84%) of cases had definite or possible exposure to this product. All isolates (n=7) from this product were genomically indistinguishable to clinical isolates.

From November, the TGA instituted consumer level recalls of the implicated product and three additional products manufactured at the same facility in India.

Conclusion
This large multijurisdictional healthcare-associated outbreak was caused by intrinsic contamination of sterile saline. WGS was vital in establishing links between patients with diverse epidemiology. Collaboration across jurisdictions and agencies facilitated source identification and product recall. Ongoing review of manufacturing processes may identify a cause of the contamination.

Outbreak investigation of a tattoo-related mycobacterial cluster in Western Australia

Dr Jelena Maticevic[1], Dr Rebecca Hogan[1], Ms Lisa Nicolaou[1], Ms Jaala Downes[2], Ms Martika Jary[2], Mr Andrew Jardine[2], Ms Sapphire Osborne[3], Dr Helena Collgros[4], Dr David Foley[5]
[1]Communicable Disease Control, WA Dept Of Health, [2]Environmental Health Directorate, WA Department of Health, [3]City of Stirling, [4]Perth Dermatology Clinic, [5]PathWest Laboratory

2B - Outbreak investigations, Great Hall 3 - Break out, June 11, 2024, 13:30 - 15:00

Background
Tattoo-related mycobacteria infections may occur when contaminated products are used during the tattooing process. Non-tuberculous mycobacteria infections are not notifiable in Western Australia (WA), and surveillance relies on clinician identification of infection.

Aim
To describe the epidemiology and investigation of a cluster of three locally acquired tattoo-related mycobacteria infections in Perth, Western Australia in 2023.

Methods
Case follow up was undertaken following consent obtained by the treating clinicians. Descriptive epidemiology was done for the three tattoo-related mycobacteria cases, and laboratory results were obtained. An epidemiological and environmental investigation by the WA Department of Health and local government was conducted at the tattoo studio, including interview of the manager and tattoo artist regarding practices. Inks, distilled water, alcohol gel, after-care products and environmental samples were obtained for laboratory analysis.

Results
Three cases (one confirmed, two suspected) of tattoo-related mycobacteria infections were identified in non-immunocompromised males, aged in their 20s-30s, with a history indicative of tattoo-related skin irritation and ongoing infection presenting with papules and pustules on the tattoo area. Mycobacterium chelonae was cultured from skin biopsy of one case; the other two cases were culture negative in the context of preceding antibiotic therapy, with supportive histopathological changes. The cases had attended the same tattoo studio and been tattooed by the same artist. The same bottles of ink, in different gradients of grey washes, had been used on the three cases. Inks had not been diluted with water at the studio. Laboratory analysis of environmental samples are pending to inform next steps and conclude the investigation.

Conclusions
While tattoo-related mycobacteria infections are uncommon, locally acquired infections require investigation to exclude manufacturing contamination, and provide an opportunity to review the role of regulation of tattoo practices and improve communications with tattoo studios regarding infection prevention practices.

Salmonella outbreak in the Pacific Islander labour community in Central Queensland

Ms Connie Slater[1], Mr Mohammad Rashidul Hashan[1,2], Dr Krishna Doshi[1], Dr Olivia Williams[3], Dr Rikki MA Graham[4], Mrs Jacina Walker[1], Dr Gulam Khandaker[1]
[1]Central Queensland Hospital & Health Service, [2]CQUniversity Australia, [3]Queensland Health, [4]Queensland Public Health and Scientific Services

2B - Outbreak investigations, Great Hall 3 - Break out, June 11, 2024, 13:30 - 15:00

Australia is largely dependent on immigrant workers in the agricultural sector and agricultural-related food product manufacturing with increasing risk of non-endemic vaccine-preventable disease introduction and transmission.

We report the public health investigation to a Salmonella Typhi outbreak amongst Pacific Australia Labour Mobility (PALM) scheme workers in regional Queensland. The outbreak was managed following the Communicable Diseases Network Australia National Guidelines for Public Health Units.

Three confirmed cases of Salmonella Typhi were reported, all male, median age: 31 years (range, 29-33 years). All cases were hospitalised, and managed with antibiotics and supportive care, with a median illness duration of 9 days. Full recovery was reported for all cases. We identified 310 individuals in the exposed cohort, with a median age of 31 years (range, 22-55 years), all males. A total of 305 (98·4%) individuals provided a faecal sample, all returning a negative for Salmonella Typhi, however, three were PCR positive (culture negative) for Shigella. No associated risk factors were reported by any of the cases, recent travel, nor contact with a recent confirmed typhoid case. Genomic sequencing confirmed the cluster and ruled out a possible link with another cluster in a neighbouring region. The likely source of infection in this outbreak was chronic carriage of Salmonella Typhi. A multidirectional response was implemented to control including enhanced infection control measures recommended to the facility and a targeted vaccination campaign was carried out; 305/310 (98.4%) close contacts were vaccinated with polysaccharide typhoid vaccine without any adverse events. The provision of culturally and linguistically appropriate face-to-face education and information leaflets was provided.

With a substantial increase in PALM workers in regional areas, particularly within the agricultural sector, culturally and linguistically appropriate public health messaging and rigorous pre-employment health checks and vaccinations would be beneficial in the prevention of disease importation and communicable diseases outbreaks.

347

An outbreak of plasmodium vivax malaria in the Torres Strait

Ms Caroline Taunton[1], Ms Nancy Lui-Gamia[1], Ms Melissa Sprague[1], Dr Dunstan Peniyamina[2], Dr Richard Gair[2], Ms Emma Pickering[1], Mr Gerhard Ehlers[2], Mr Joe Davis[2], Dr Allison Hempenstall[1,3]
[1]Torres and Cape Public Health Unit, [2]Cairns Tropical Public Health Services, [3]James Cook University

2B - Outbreak investigations, Great Hall 3 - Break out, June 11, 2024, 13:30 - 15:00

Background: Malaria is a mosquito-borne disease caused by parasites of the plasmodium genus. Given the proximity to Papua New Guinea where malaria is endemic, the Top Western Torres Strait Islands of Australia are at increased risk of malaria outbreaks. For the first time in a decade, five imported cases of malaria were reported to the Torres and Cape Public Health Unit between January and May 2023. In July 2023, a positive malaria test was notified for a Boigu Island resident who had not left the island during their exposure period. An outbreak was declared, and a public health response initiated. Nine days later, another case of locally acquired malaria was notified in a resident of neighbouring Saibai Island. A second public health response was initiated.

Methods: An outbreak response team was assembled including public heath clinicians and vector control officers, with team members onsite in each community within four days of index cases testing positive. In partnership with the local council and primary healthcare centre, the team engaged in health promotion activities, undertook door-to-door symptom screening, and delivered mosquito repellent and insecticide-treated-nets to residents. Mosquito control included indoor residual spraying where cases resided, along with residual insecticide harbourage spraying of vegetation throughout residential areas of each island.

Results: Five cases were associated with the outbreak. All were plasmodium vivax species and gametocytes were detected in 3/5 cases. Median age was 28 years with 2/5 cases hospitalised and no complications or deaths reported. Onset of all five cases was consistent with infection during a single local transmission cycle on each island. The successful prevention of further transmission is attributed to early outbreak detection, a prompt and culturally considered public health response, engagement from communities and strong local leadership. Ongoing collaboration is key to ensuring the Torres Strait Islands remain malaria-free.

First Nations statement:
Local First Nations staff involved in this public health outbreak response have provided approval and an ethics exemption has been obtained from the Far North Queensland Human Research Ethics Committee. At least one co-author identifies as First Nations and will co-deliver the presentation.

The first confirmed outbreak of chikungunya in Timor-Leste, 2024.

Mr Anthony Draper[1,2,3], Mr Felipe de Neri Machado[4], Dr Anderida Monteiro Fernandes[2], Dr Frederico Bosco Alves dos Santos[4], Dr Marcelo Amaral Mali[4], Dr Ari Jayanti Pereira Tilman[5], Mrs Endang Soares da Silva[5], Dr Elizabeth Hornay[4], Mr Antonio Salles de Sousa[2], Ms Tessa Oakley[2], Mrs Edinha da Cruz[6], Mr Nevio Sarmento[2], Mrs Maria Angela Varela Niha[7], Mrs Ana Fatima Soares[8], Ms Eva Estrelita Cardoso Gomes[7], Dr Jose de Deus Alves[9], Dr Jose Paulo Soares[6], Dr Joshua Reginald Francis[2], Dr Jennifer Yan[2], Dr Merita Antonio Monteiro[4]
[1]Northern Territory Centre For Disease Control, [2]Menzies School of Health Research, Timor-Leste, [3]National Centre for Epidemiology and Population Health, Australian National University, [4]Instituto Nacional de Saúde Pública de Timor-Leste, [5]Laboratorio Nacional da Saude, [6]Centro de Saude Internamento, [7]World Health Organization Timor-Leste Country Office, [8]Surveillance Department, Timor-Leste Ministry of Health, [9]Centro de Saude Comoro

2B - Outbreak investigations, Great Hall 3 - Break out, June 11, 2024, 13:30 - 15:00

Timor-Leste is a half-island nation with a population of 1.3 million, 550km from Darwin, Australia. Since independence in 2002, Timor-Leste has achieved significant development, however high levels of poverty remain. Chikungunya virus (CHIKV) is endemic in over 100 countries in Africa, Asia, Europe and in the Americas. It is transmitted by the bite of infected Aedes aegypti or A. albopictus mosquitoes, which are present in Timor-Leste, particularly during annual rainy season dengue outbreaks. Symptomatic people typically suffer from acute onset of fever, usually accompanied by severe arthritis or arthralgia. Joint pain can be debilitating for several days, and may sometimes last for weeks, months or years. Most people recover completely from CHIKV. Between 2002 and 2023, there were 26 cases of CHIKV notified in Australia who acquired their infection in Timor-Leste, however laboratory testing for CHIKV in Timor-Leste only commenced in 2021. The first locally diagnosed case of CHIKV was notified in October 2023. In January 2024, an outbreak of CHIKV was recognised in Timor-Leste for the first time, with 195 outbreak cases reported between 1-31 January 2024. There were no hospitalisations or deaths. The median age of cases was 17 years (range 1 – 76 years); 51% were males. Cases were reported across the country; most cases (88/195) were from Dili; the highest incidence rate was seen in the municipality of Ermera (monthly incidence rate of 58.8 cases per 100,000 population).
This first reported outbreak of CHIKV in Timor-Leste highlights the need for improved mosquito-borne illness control and response strategies in Timor-Leste, including minimising breeding sites and promoting early presentation for differential diagnosis from DENV. Other strategies should be investigated including the deployment of Wolbachia-infected mosquitoes, particularly as they have shown to reduce the transmission of CHIKV, DENV and Zika virus, all of which pose threats in Timor-Leste.

Investigating Buruli ulcer spread in a suburban non-coastal area of Victoria

Sarah Howard[1], Dr Bridgette McNamara[1,2], Dr Naomi Clarke[1], Alana Kelly[1], Tiffany Pe[1], Dr Mohammad Akthar Hussain[1,3], Dr Kim Blasdell[4], Dr Michael Muleme[1,2], Associate Professor Daniel O'Brien[1,2,5], Professor Eugene Athan[1,2,3,5]
[1]Barwon South West Public Health Unit, Barwon Health, [2]Centre for Innovation in Infectious Disease and Immunology Research (CIIDIR), Barwon Health and Deakin University, [3]School of Medicine, Deakin University, [4]Australian Centre for Disease Preparedness, Commonwealth Scientific and Industrial Research Organisation, [5]Department of Infectious Diseases, Barwon Health

2B - Outbreak investigations, Great Hall 3 - Break out, June 11, 2024, 13:30 - 15:00

Buruli ulcer (BU) is a necrotising skin condition caused by the environmental pathogen Mycobacterium ulcerans. Once predominantly associated with coastal areas in Victoria, the last five years have seen spread into urban areas of Melbourne and Geelong. Understanding the extent of local acquisition can be challenging in the context of frequent travel to surrounding coastal endemic areas. In 2022, the Barwon South West Public Health Unit (BSWPHU) investigated the spread of BU in inner Geelong suburbs to inform public health action.

We undertook detailed case interviews to collect enhanced surveillance data, focusing on travel to endemic areas and exposure risks at cases' residences. We examined changes in BU case numbers and clustering of cases within inner Geelong suburbs over the period 2011-2022. We compared data on the presence of M. ulcerans in local possum populations to the location and timing of human cases.

Case interviews revealed BU cases in inner Geelong suburbs with no travel to endemic areas, suggesting local acquisition. This was supported by an overall increase in BU case numbers within these suburbs (4 in 2018 to 29 in 2022). We identified clustering of cases in three neighbouring suburbs, many of whom lived within 200m of locations where M. ulcerans was detected in possum faeces collected up to 3 years prior.

The investigation resulted in recognition of local BU spread in inner Geelong suburbs. State-wide and local communication was undertaken via health alerts, media, and targeted communication to local health networks and at-risk communities, aiming to increase clinician and community awareness of BU and ways to prevent infection, reduce time to presentation and diagnosis, and improve treatment outcomes.

Key learnings included the benefits of utilising a collaborative approach, the value of environmental M. ulcerans surveillance, and the importance of local expertise in understanding community behaviours and risk exposures.

An outbreak of Legionella pneumophila in the Sydney CBD, Australia, 2023

Miss Eunice Stiboy[1,2], Misha Klingstrom[1], Dr Karen Chee[1], Dr Mark Ferson[1,9], Sandra Chaverot[1], Brian Huang[1], Toby Hannan[1], Philp Pershen[1], Kirsty Hope[3], Zoe Baldwin[3], Geoffrey Pedergast[3], Kristy McCreadie[3], Anita Smojver[4], Catherine Pitman[5], Anna Smith[6], Keira Glasgow[3], Geraldine Sullivan[7], Professor Vitali Sintchenko[7,8], Dr Jeremy McAnulty[3], Dr Anthea L Katelaris[1]
[1]South Eastern Sydney Local Health District, [2]National Centre for Epidemiology and Population Health, Australian National University, [3]Health Protection New South Wales, New South Wales Health, [4]Health and Building, City of Sydney Council, [5]Public Health Pathology, New South Wales Health Pathology, [6]Legionella Reference Laboratory, Forensic and Analytical Science Service, [7]Institute of Clinical Pathology and Medical Research, [8]Sydney Infectious Diseases Institute and School of Medical Sciences, The University of Sydney, [9]School of Population Health, University of NSW Medicine

2B - Outbreak investigations, Great Hall 3 - Break out, June 11, 2024, 13:30 - 15:00

Background
Outbreaks of Legionnaires' disease are infrequent in NSW, and cooling water systems (CWS) are regulated to reduce this risk.
In January 2024, South Eastern Sydney Public Health Unit was notified of an initial 4 people with Legionella pneumophilia serogroup 1 (Lp1) infection who visited Sydney central business district (CBD) during their exposure period. We conducted an investigation to identify cases and control the source.
Methods
Cases were detected through routine laboratory notifications and interviewed to determine their movements in the CBD.
We mapped exposure sites to inform the areas for environmental investigation. CWS in key exposure areas were inspected and tested for Legionella. Historical results from routine monthly CWS testing were reviewed.
Genomic sequencing was performed on environmental and patient Lp1 isolates.
We issued clinical and public alerts, and requested all CBD building managers review their CWS compliance.
Results
Fifteen patients of legionellosis were identified, via positive Lp1 urinary antigens. Two patients had positive sputum cultures. Fourteen patients were hospitalised, and six required intensive care. All patients visited the CBD between 12-26 December 2023.
Between 3□12 January, we tested 166 CWS across 118 sites, plus three fountains. One (0.6%) CWS was positive for Lp1. Some laboratories testing the same environmental sources reported different results.
Genomic sequencing of the clinical and environmental isolates showed all genomes belonged to sequence-based type, ST211. Phylogenetic analysis suggested a probable link between the cases and CWS. Genomic differences were present between isolates, including those isolated from different parts of the CWS on the same dates.
The positive CWS was decontaminated, but continued to have Lp1 detected, necessitating additional maintenance work.
Conclusions
A contaminated CWS was the most likely source of this outbreak. Preceding construction work and heatwaves may have contributed to the contamination. Opportunities to further strengthen the regulation of CWS should be considered.

169

Pantoea sp. infections in healthcare facilities with indoor plant origins

Dr Anita Ona[1], Lisa Mundy[1], Dr Elise Firman[1], Moira Dore[1], Dr Vicki Slinko[1,2], Dr Candice Colbran[1], Sharon Jurd[1], Ian Hunter[1], Fiona May[1], Tracy Bladen[1], Dr Kate Alexander[1]
[1]Gold Coast Public Health Unit, [2]School of Public Health, University of Queensland

2B - Outbreak investigations, Great Hall 3 - Break out, June 11, 2024, 13:30 - 15:00

Pantoea is a gram-negative bacilli, considered to be an environmental organism that inhabits water, faeces, soil and plants. There have been reports of Pantoea being introduced to humans through inhalation of organic dust, organic material penetrating the skin, perinatal and nosocomial infections related to contaminated intravenous fluids or equipment. To date there have been no publications detailing Pantoea spp. causing pathology in patients in Australian healthcare settings.

In 2020 and 2023 there were two separate investigations conducted by Gold Coast Public Health Unit (GCPHU) into cases of Pantoea infection in patients who had attended healthcare facilities for invasive procedures. The first investigation in 2020 involved two patients who had received vitamin infusions via central lines and subsequently developed systemic infections (Pantoea dispersa bacteraemia). The second investigation also involved two patients at a different healthcare facility after having invasive radiological spinal procedures. One patient developed a subsequent localised infection and the other developed bacteraemia (Pantoea agglomerans was identified in specimens from both patients).
Investigations and sampling of items within the health facilities identified that the source of the Pantoea was plants located within common areas of the premises and not the procedure rooms. However, poor hand hygiene and infection control policies and practices ultimately led to cross contamination from environmental areas to the patients and sterile fields.

As an emerging opportunistic human pathogen and a risk for nosocomial infections, further research is required to characterise the risk and management within infection control models for healthcare facilities relating to cross contamination with Pantoea species.

2C –
Vaccine safety | Zoster vaccines, Mezzanine 1, June 11, 2024, 13:30 - 15:00

65

Multi-jurisdictional vaccine safety investigations for rare adverse events using data linkage

Dr Lauren Bloomfield[1,2], Ms Hannah Morgan[3,4], A/Prof Hazel Clothier[3,4], Mr Gonzalo Sepulveda Kattan[3,4], Ms Sera Ngeh[1], Dr Gemma Cadby[1], Prof James Boyd[5], Prof Jim Buttery[3,4], Prof Paul Effler[1]
[1]WA Department of Health, [2]The University of Notre Dame, [3]Epi-Informatics Group and SAEFVIC, Murdoch Children's Research Institute, [4]Epi-Informatics, Centre for Health Analytics, Melbourne Children's Campus, [5]Department of Public Health, La Trobe University

The COVID-19 pandemic has highlighted the need for rapid vaccine safety investigation, to inform the rollout of vaccination programs and provide accurate risk-benefit analyses to the public and providers. Rigorous assessment of rare but serious adverse events for conditions of interest (COI) is critical to maintain public safety and trust in the vaccination program.

Both Western Australia (WA) and Victoria have established routine data linkage between the Australian Immunisation Register and their respective emergency department, hospital admissions, and mortality data collections. A data sharing model has been established between jurisdictions, whereby each can generate de-identified, population-level data for a COI, using agreed case definitions and analytical methods. Combining these outputs allows for larger sample sizes and more precise estimates, especially for rare outcomes. To demonstrate the utility of this data sharing model, WA and Victoria have combined data from a self-controlled case series, investigating the association between COVID-19 vaccines and Guillain-Barre syndrome (GBS).

There were 401 incident GBS admissions in Victoria and 149 admissions in WA between 1 January 2020 to 30 June 2023 that met the case definition. Individual jurisdiction analyses using self-controlled case series identified an increased incidence of GBS following COVID-19 adenovirus vector vaccine (Vaxevria), although WA sample size was insufficient to reach statistical significance. Combining the data from both jurisdictions using a fixed-effect meta-analysis approach confirmed an increased incidence following Vaxevria (RI 2.37, CI95 1.69 - 3.31), with a decreased standard error and greater precision of the estimate when compared to WA or Victoria alone.

This project represents ongoing successful collaboration between two Australian jurisdictions using data linkage to investigate rare COI. Given Australia's population size, multijurisdictional collaborations will be key to our ability to effectively investigate rare events that may affect Australians following vaccination.

The increasing role of active vaccine safety surveillance in Western Australia

Dr Phoebe Spencer[1], Dr Dale Carcione[1], Dr Carla Drake-Brockman[2], Judy Mathews[2], Dr Tim Ford[2,3]
[1]Communicable Disease Control Directorate, WA Department of Health, [2]Infectious Diseases Department, Perth Children's Hospital, [3]Discipline of Paediatrics, Medical School, University of Western Australia

2C - Vaccine safety | Zoster vaccines, Mezzanine 1, June 11, 2024, 13:30 - 15:00

Adverse events following immunisation (AEFI) in Western Australia (WA) are captured in the Western Australian Vaccine Safety Surveillance (WAVSS) system, which was established in 2011 as an enhanced passive surveillance system accepting spontaneous AEFI reports from healthcare professionals and members of the public. Since 2012, WAVSS has also accepted actively solicited AEFI reports from SmartVax, a participant-centred, digital surveillance system, and in 2021 expanded to include data linkage identified possible serious AEFI (SAEFI) and adverse events of special interest (AESI).
Reports in WAVSS were categorised as passive (reported by a healthcare professional, vaccinee or their parent/guardian) or active (SmartVax or data linkage) for the five years from 2019 to compare trends in reporting over time, changes to AEFI rates, and detection of SAEFI and AEFI.
In 2019, 5.7% of AEFI reports to WAVSS originated from active surveillance. By 2021, this proportion increased to 37%, then to 63% in 2023. However, a similar number of total passive reports occurred in 2019 and 2023 (281 and 312 for all vaccines, respectively). The AEFI rate (reports per 100,000 doses of vaccine administered) increased from 33.0 in 2019 to 104.8 in 2023 for vaccines on the National Immunisation Program schedule administered to children aged <5 years, despite a similar number of doses administered, while most reported reactions remained common, minor or expected. In 2023, 25.9% of the SAEFI/AESI classified as causally associated with a vaccine were detected by active surveillance.
This marked increase in actively identified reports demonstrates a significant shift in WA's approach to vaccine safety surveillance. Actively soliciting reports contributes to a higher AEFI rate but allows enhanced monitoring of rare SAEFI and AESI in near real-time, with more rapid feedback to state and national monitoring systems, such as the Therapeutic Goods Administration.

196

Long term outcomes of myocarditis after mRNA COVID-19 vaccines in Australia

Prof Nicholas Wood[1], Dr Lucy Deng[1,2], Ms Amanda Van Eldik[1], Professor Kristine Macartney[1,2]
[1]NCIRS, [2]University of Sydney

2C - Vaccine safety | Zoster vaccines, Mezzanine 1, June 11, 2024, 13:30 - 15:00

Background: Myocarditis is a known adverse event of special interest after COVID-19 vaccines. The long-term outcomes for people who have had myocarditis after a COVID-19 vaccine is not well known and a better understanding is essential to inform the community. This is Australia's largest and longest follow up study describing the clinical and well-being outcomes of 552 people who had COVID-19 vaccine related myocarditis.

Methods. All confirmed and probable cases of myocarditis as defined by TGA criteria reported in Australia between 21 April 2021 to 5 July 2022 were included in this analysis. Data was collected from medical records including patient demographics, risk factors for myocarditis, presenting clinical features, laboratory results (troponin), electrocardiograms (ECG), echocardiographic, cardiac magnetic resonance imaging (MRI)) findings, treatment, ICU admission, complications, ongoing exercise restriction and discharge outcomes. Vaccination date was confirmed on the Australian Immunisation Register (AIR). Individuals were contacted by research staff at 3 to 6 months and 12 to 18 months following diagnosis. Clinical data including persistent symptoms, complications, school/work attentions, return to baseline health and subsequent COVID-19 vaccination(s) and outcome(s) were collected. Health related quality of life and psychological impact were assessed through a participant-based (self-report) standardised validated tool EQ-5D-5L. Variables were compared using chi-squared or Fisher's exact test for categorical values and t-test or Mann-Whitney U for non-parametric continuous variables where appropriate. Analyses were conducted in R version 4.1.0, Excel, and STATA SE 18.

Results: 552 cases of confirmed or probable myocarditis, following a monovalent COVID-19 vaccine were identified. Of those who consented to follow up, 60% and 35% of cases had persistent symptoms at 3- and 12-months. The self-reported quality of life survey found that at 12 months most had no problems with mobility (94%), self-care (98%), usual activities (80%) or pain/discomfort (75%). However, x%* reported persistence of any problems with anxiety/depression at 12 months.

Conclusion: Most patients with myocarditis had recovered by 12 months post diagnosis, however the presence of ongoing pain and psychological impact was significant.

*The data in this abstract will be updated following receipt of external approval from the funder

Epidemiological burden of Shingles among elderly population in Central Queensland

Dr Rashidul Hashan[1,2], Ms Jacina Walker[2], Margaret Charles[2], Susie Le Brasse[2], Daneille Odorico[2], Dr. Nicolas Smoll[3], Dr. Michael Kirk[4], Professor Gulam Khandaker[1,2]
[1]Central Queensland University, [2]Central Queensland Public Health Unit, [3]Sunshine Coast Public Unit, [4]Central Queensland Hospital and Health Services

2C - Vaccine safety | Zoster vaccines, Mezzanine 1, June 11, 2024, 13:30 - 15:00

Introduction
We report the epidemiological characteristics, burden, and vaccination impact against hospitalisation of Shingles among elderly (>50 years) in Central Queensland.
Methods
Central Queensland Public Health Unit (CQPHU) launched a prospective active enhanced vaccine preventable disease (VPD) surveillance among aged care facilities (ACFs) within CQ region since July 2021. We analysed data from 2011 – 2022 using hospital-based corporate information system (HBCIS), Notifiable Conditions System (NOCS), and Australian Immunisation Register (AIR) to illustrate the burden of Shingles. Descriptive statistics, incidence rate ratio (IRR) used to highlight the burden, and log-binomial regression model was used to estimate the impact of vaccination against hospitalisation.
Results
Between July 2021 – June 2023, approximately~1361 ACFs residents were followed, 13 had Shingles (n = 3 lab-confirmed, n = 10 clinical) indicating an incidence of 6.8 cases per 1000 person per year among people aged ≥65 years in surveillance cohort. Mean vaccination uptake among surveillance cohort was 21.7% (range 0 – 34.7). A total number of 1611 Shingle cases were notified from (2011 – 2022) with a median (IQR) age of 65 (58 – 73) years. Nearly three-fourth (70%) were ≥ 60 years old, 57% (n = 921) were female, and 3.8% (n = 62) were indigenous. There was a 7.26% decline in hospitalisation IRR per 10,000 population comparing pre (2011 – 2016) [4.05 (95% CI 3.4 – 4.7)] and post (2017 – 2022) [3.75 (95% CI 3.2 – 4.3)] National Immunisation Program (NIP). Being vaccinated against Shingles [RR 0.48 (95% CI 0.23 – 0.98; p<0.5)], non-indigenous status [RR 0.47 (95% CI 0.24 – 0.89; p<0.5)] decreases the likelihood of hospitalisation among elderly ≥50 years old in log-binomial regression model adjusted for age group, sex, and indigenous status.
Conclusions
Poor Shingle vaccination coverage in surveillance cohort with potential impact against hospitalisation underscores the essential need of targeted strategies to increase vaccination coverage among older adults in Australia.

Informing on safety of Shingrix® from the private market era: Victoria's experience

Mr Jesse Fryk[1,2], Ms Aishwarya Shetty[1,2], Ms. Georgina Lewis[2], Prof. Jim Buttery[1,2,3,4], A/Prof. Hazel Clothier[1,2,3]

[1]Epi-Informatics, Centre for Health Analytics, Melbourne Children's Campus, [2]Epi-Informatics Group and SAEFVIC, Murdoch Children's Research Institute, [3]Department of Paediatrics, University of Melbourne, [4]Infectious Diseases, Department of General Medicine, Royal Children's Hospital

2C - Vaccine safety | Zoster vaccines, Mezzanine 1, June 11, 2024, 13:30 - 15:00

Shingrix® is an inactivated two-dose vaccine for protection against shingles (herpes zoster) and post herpetic neuralgia. Shingrix®, available on the private market in Australia since June 2021, replaced Zostavax® on the National immunisation program (NIP) from November 2023 with broader eligibility, particularly in the immunocompromised. Clinical trials indicated Shingrix® to be reactogenic, particularly in regard to injection site reactions (ISR). International post-licensure studies also suggest potential rare association with Guillain-Barré syndrome, Bell's palsy, anaphylaxis and supraventricular tachycardia. We therefore explore Victoria's private market experience of Shingrix® to support safety discussions and provide an expected baseline for surveillance post NIP inclusion.

We analysed adverse events following immunisation (AEFI) with Shingrix® reported to SAEFVIC–Victoria's vaccine safety service—from 1 June 2021 to 31 October 2023. Reactions described were compared as counts, reporting rates, and rate ratios (RR) by sex, 10-year age-group and dose number according to doses administered recorded in the Australian Immunisation Register.

A total of 52 AEFI reports were received following 74,032 doses administered (reporting rate: 0.70 per 1,000 doses), with 15% (n=8) of reports describing vaccination errors, predominantly administration outside recommendation. AEFI reporting was higher for females than males (RR=3.11; 95%CI: 1.52, 6.37) but with no significant difference observed by age-group or dose received (RR=1.57; 95%CI: 0.87, 2.83). ISR was the most common reaction. None of the abovementioned potentially associated conditions were reported.

The AEFI profile of Shingrix® during the private market era showed a low reporting rate and commonality of ISR. However, detecting rare AEFI was a challenge given the small volume of doses administered. Enhancing Shingrix® surveillance since NIP inclusion is therefore necessary to sufficiently inform on known conditions of interest and detect unknowns. Utilising passive surveillance and other readily available data sources will facilitate an evidence-base on risk-benefit and successful progression of the vaccination program.

289

You're not the only one: Bearing the bulk of vaccination error

Ms Georgina Lewis[1,2], Mr Jesse Fryk[1,3], Mrs Adele Harris[1,2], Ms Li-yin Goh[3], Associate Professor Hazel Clothier[1,3,4], Ms Megan Beasley[5]
[1]SAEFVIC, Murdoch Children's Research Institute, [2]Department of General Medicine, Royal Children's Hospital, [3]Epi-Informatics, Centre for Health Analytics, Melbourne Children's campus, [4]Department of Paediatrics, University of Melbourne, [5]Immunisation Unit, Department of Health

2C - Vaccine safety | Zoster vaccines, Mezzanine 1, June 11, 2024, 13:30 - 15:00

In Victoria, adverse events following immunisation (AEFI), including vaccine administration errors (VAE) are reported to SAEFVIC.
VAE can occur due to vaccine scheduling, preparation, handling or administration. While some errors affect an isolated vaccinee, others can impact multiple individuals either as attendees at one immunisation session or over prolonged periods of time at a single provider setting. We term these events "bulk errors".
Prior to COVID, bulk errors were captured as a single event. However, several large-scale errors reported in a short timeframe highlighted the need for a more structured approach to capturing data, including the number of individuals affected.

An error classification tool established previously by SAEFVIC to support coding of reports includes six error categories aligned to standard World Health Organization classification and MedDRA preferred terms.
To identify bulk error events in the SAFEVAC database, a new filtering reaction code Drug error-Bulk was created and used alongside the corresponding error category. A process for capturing individual vaccination error reports belonging to a bulk error event was also devised.
A REDcap form was developed to further capture bulk-error event details, including error type, number of affected individuals, revaccination requirements and incident management. Certain fields were auto populated from the SAFEVAC database with automatic downloading of data set up to feed into Microsoft Power BI.

Retrospective review of all VAE reported to SAEFVIC since 2015 identified 45 bulk-error events impacting at least 4,389 individuals. Common large-scale VAE were due to handling (21/45 reports; 47%), cold chain breaches and expired vaccine, particularly use-past-thaw-date of COVID-19 vaccines.

This new process provides capacity for capturing large-scale vaccine error events, including impact at an individual level. It offers a pathway for response and targeted education to reduce the incidence of often predictable and preventable VAE. SAEFVIC is funded by the Victorian Department of Health.

198

Shingrix Dose 2: Are we up for the challenge?

Dr Aishwarya N Shetty[1,2], Dr Muhammad Javed[1,2], Mr Jesse Fryk[1,2], Dr Gerardo Luis Dimaguila[1,2], Dr Christopher Pearce[3], Prof Jim P Buttery[1,2,4,5], A/Prof Hazel J Clothier[1,2,4]
[1]Epi-Informatics Group and SAEFVIC, Murdoch Children's Research Institute, [2]Epi-Informatics, Centre for Health Analytics, Melbourne Children's Campus, [3]Outcome Health, [4]Department of Paediatrics, The University of Melbourne , [5]Infectious Diseases, Royal Childrens Hospital

2C - Vaccine safety | Zoster vaccines, Mezzanine 1, June 11, 2024, 13:30 - 15:00

Background
Shingrix®, a two-dose vaccine entered the Australian private market in June 2021, and replaced Zostavax® on the government funded national immunisation schedule (NIP) from 1 November 2023. Injection site reaction post Shingrix is estimated to occur in over 80% of vaccinees, which may translate to significant deterrence of second dose uptake.

Given that Shingrix will predominantly be administered in general practice (GP), we utilised a large dataset sourced in partnership with five Australian Primary Health Networks (PHNs) from contributing practices, to understand dose 2 uptake.

Methods
Our epidemiological analysis utilised a large de-identified GP dataset collected by- Population Level Analysis and Reporting (POLAR) with approval from partner PHNs, encompassing over 12 million case records. We determined dose 2 uptake, dose interval (with inter quartile range (IQR)) and compared the pre and post NIP periods.

On social media, BERT modelling processes were used to isolate and understand sentiments and concerns regarding Shingrix dose 2.

Results
In the primary care data, second dose uptake peaked at 84% for persons vaccinated through private market, with a median interval of 3.3 months (IQR:65 days). On the NIP, uptake so far has reached 11% (low due to availability and eligibility constraints) with median interval of 2.2 months (IQR:13 days).

On social media, 84% of identified mentions were either neutral (74%) or negative (10%), with major themes of concern relating to safety and potential side effects.

Discussion
Our analysis of primary care data indicates significant return for second dose is achievable in a motivated vaccinee population. However, broad concerns on safety and risk of side effects are circulating on social media. We must continue to monitor dose 2 uptake and align our community messaging to ensure concerns are addressed to uphold community trust in this zoster prevention program.

87

Risk of herpes zoster in immunocompromised and autoimmune disease patients in Asia-Pacific

Dr Jing Chen[1], Ms Chin-Yen Ho[2,3], Prof. Yu-Kang Tu[2,3], Dr Yi-Chih Lin[3,4], Dr Yun Hsia[3,5], Dr Ying-Chun Lin[3,6], Ms Emma Bandy[7], Dr Sumitra Shantakumar[1]
[1]GSK, [2]Health Data Research Center, National Taiwan University, [3]Institute of Epidemiology & Preventive Medicine, College of Public Health, National Taiwan University, [4]Department of Nephrology, National Taiwan University Hospital Jinshan branch, [5]Department of Ophthalmology, National Taiwan University Hospital, [6]Department of Anesthesiology, MacKay Memorial Hospital, [7]GSK - Victoria

2C - Vaccine safety | Zoster vaccines, Mezzanine 1, June 11, 2024, 13:30 - 15:00

Background/Purpose:
Increased risks of herpes zoster (HZ) and HZ-related complications have been reported in individuals who are immunocompromised (IC) or have autoimmune diseases (AID). We conducted a meta-analysis to estimate HZ risk in IC/AID patients in Asia-Pacific (APAC).

Methods:
A systematic literature review of English articles via MEDLINE/Embase (search period Jan 2000– Apr 2022) consolidated HZ epidemiology/disease burden in adults ≥18 years in APAC. Random-effects meta-analyses were used to estimate pooled HZ incidence in IC/AID patients (e.g., rheumatoid arthritis [RA], systemic lupus erythematosus [SLE], psoriasis) and the general adult population, and pooled HZ risk compared to the non-IC/AID population.

Results:
Of 271 articles identified, 87 were included in the analysis, among which 24 reported data on patients with IC/AID conditions from Japan, South Korea, Taiwan, and China. HZ incidence rates were heterogeneous across patients with different IC/AID conditions (potentially due to divergent study settings, sample sizes, and follow-up durations), and within each disease/condition, ranging from 2.28/1,000 person-years (PY) in RA to 95.20/1,000PY in malignant lymphoma.

Pooled HZ incidence rate (95% confidence interval [CI]) for all IC/AID conditions was 16.53/1,000PY (12.15–22.48), which was higher than that of the general adult population (6.49/1,000PY [5.30–7.95]). For specific IC/AID conditions, pooled HZ incidence rates (95% CI) were: 7.42/1,000PY (4.85–11.34) in psoriasis, 13.29/1,000PY (6.60–26.76) in RA, 14.19/1,000PY (11.14–18.08) in liver transplantation, 14.83/1,000PY (9.13–24.08) in solid organ tumour, 26.64/1,000PY (11.96–59.32) in SLE, and 63.78/1,000PY (46.09–88.26) in haematological malignancies.

Nine studies compared HZ occurrence in IC/AID patients versus the non-IC/AID population; pooled relative risk was 1.76 (95% CI, 1.46–2.12), indicating that IC/AID patients had significantly higher risk of developing HZ than the non-IC/AID population.

Conclusion:
Patients with IC/AID had significantly increased risk of HZ comparing to adults without IC/AID, highlighting the importance of HZ prevention for these patients.

Funding: GSK (Study identifier: VEO-000466)

Injection site reaction is no deterrent to completing the Shingrix® 2-dose schedule

Ms Georgina Lewis[1,2,4], Mrs Adele Harris[1,2], Mr Jesse Fryk[1,3], Mrs Rachael McGuire[4], Associate Professor Hazel Clothier[1,3,5], Professor Nigel Crawford[1,2,4,5]
[1]SAEFVIC, Murdoch Children's Research Institute, [2]Department of General Medicine, Royal Children's Hospital, [3]Epi-Informatics, Centre for Health Analytics, Melbourne Children's campus, [4]Melbourne Vaccine Education Centre (MVEC), [5]Department of Paediatrics, University of Melbourne

2C - Vaccine safety | Zoster vaccines, Mezzanine 1, June 11, 2024, 13:30 - 15:00

Shingrix® vaccine is recommended as a 2-dose schedule for the prevention of herpes zoster and post-herpetic neuralgia for adults over 50 years and some immunocompromised individuals 18 years and older. Clinical trials showed Shingrix® to be reactogenic with 82% of vaccine recipients reporting injection site reactions (ISR), including pain, redness and swelling. SAEFVIC is the reporting service in Victoria for Adverse Events Following Immunisation (AEFI). Phone follow-up is provided to individuals and referral for specialist immunisation consultation can be facilitated.

ISR's have the potential to impact second dose completion which is required for long-term vaccine effectiveness. SAEFVIC aims to establish Shingrix® dose 2 uptake for those reporting an ISR following dose 1.

We analysed all reports of AEFI with Shingrix® reported to SAEFVIC from June 2021 to 19 February 2024 with particular focus on ISR, clinical support and uptake of dose 2 (as recorded in the Australian Immunisation Register (AIR). Of 143 reports received, 62 (43%) described an ISR of which 50 (81 %) were post dose 1. 12 provided clinical photos. Four individuals reported an ISR with both doses. Median ISR symptom onset was 21 hours, 23 (46 %) sought medical advice. There were no specific referrals for specialist consultation. Of the 40 individuals eligible to receive dose 2 (≥ 2 months since dose 1), 16 (40 %) had a second dose recorded in AIR. Four verbally declined dose 2 due to the perceived severity of their reaction.

Our findings for dose 2 uptake in eligible Shingrix® recipients reporting an ISR are reassuring, taking into consideration the limitations of AIR reporting, recommended interval (2-6 months), private cost and vaccine supply. SAEFVIC supports completion of the Shingrix® course through safety messaging for healthcare providers and consumers via phone counselling and referral to educational resources from the Melbourne Vaccine Education Centre.

Varicella morbidity declines since vaccination program commenced in Australia

Ms Nicole Sonneveld[1], Dr Joanne Jackson[1], Dr Aditi Dey[1,2], Associate Professor Stephen Lambert[1], Associate Professor Frank Beard[1,3]
[1]National Centre For Immunisation Research And Surveillance, [2]The University of Sydney, Children's Hospital at Westmead Medical School, [3]The University of Sydney, School of Public Health
2C - Vaccine safety | Zoster vaccines, Mezzanine 1, June 11, 2024, 13:30 - 15:00

Introduction: Single dose varicella vaccination was added to the National Immunisation Program (NIP) at 18-months of age in 2005, with time-limited adolescent catch-up. We describe varicella hospitalisations in Australia, 2002–2021.
Methods: We included hospitalisations with principal diagnosis varicella (ICD-10-AM code B01) in the AIHW National Hospital Morbidity Database between 2002–2021. Hospitalisation rates were analysed by age group. Trend analyses (2002–2019) used Poisson or negative binomial regression models. Rate ratios (RR) comparing 2020–2021 to 2015–2019 were calculated. Sensitivity analyses were undertaken excluding hospitalisations with additional zoster code (B02). Linear regression was used to assess trend in proportion of principal varicella hospitalisations with additional zoster code over time.
Results: Varicella hospitalisation rates between 2002–2019 declined in children <10-years (all p<0.001); 5-fold in infants <1-year (48.2/100.000/year in 2002 to 9.3/100.00/year in 2019), 16-fold in children 1–4-years (29.1/100,000/year to 1.8/100,000/year), and 11-fold in children 5–9-years (10.5/100,000/year to 0.9/100,000/year). Rates also declined (all p<0.001) in the age groups 10–14 (3.4-fold), 15–19 (4.2-fold), 20–29 (3.4-fold) and 30–39-years (2.1-fold). Hospitalisation rates increased in adults ≥40-years (1.2/100,000/year to 2.1/100,000/year, p<0.001).
The hospitalisation rate was lower in 2020–2021 than 2015–2019 for all ages combined (RR=0.86, 95%CI 0.79–0.93), and for infants <1-year (RR=0.66, 95%CI 0.43–0.97) and 30–39-year-olds (RR=0.80, 95%CI 0.64–1.00).
Overall, 10.6% of principal diagnosis varicella hospitalisations had an additional zoster diagnosis with increasing trend (0.6% in 2002 to 23.6% in 2021, p<0.001), and 26.3% for adults ≥40-years (5.8% to 34.8%, p<0.001). Excluding dual varicella/zoster-coded hospitalisations, the hospitalisation rate among adults aged ≥40-years remained stable between 2002–2019 (1.1/100,000/year to 1.4/100,000/year, p=0.90).
Conclusion: Varicella hospitalisations declined substantially between 2002–2019, highlighting the success of NIP-funded vaccination. A large proportion of varicella hospitalisations had an additional zoster code, particularly in older age groups.

2D –
Respiratory illness in children, Mezzanine 2, June 11, 2024, 13:30 - 15:00

290

Respiratory-Associated Paediatric Presentations to NSW Emergency Departments 2013-2019

Miss Rebecca Burrell[1,2], Dr Gemma Saravanos[1], A/Prof Nicholas Wood[1,2], A/Prof David Muscatello[3], A/Prof Philip Britton[1,2]
[1]The University Of Sydney, [2]The Children's Hospital at Westmead, [3]The University of New South Wales

Background: Acute respiratory illness account for a substantial burden of emergency department (ED) presentations, hospitalisations, and intensive care admissions of Australian children. We aimed to describe the epidemiology of respiratory syndromes in children presenting to EDs across New South Wales (NSW), 2013 through 2019.
Methods: Data were extracted from NSW ED care surveillance repositories (EDRE and PHREDSS) for unplanned ED presentations from children aged <16 years. Descriptive analysis included frequencies, seasonal trends, and severe outcomes (admission to critical care or via an operating theatre, or death on arrival or in the ED).
Results: Of 1,099,725 presentations, frequencies were highest among children <5 years (74.3%), males (57.3%), and during winter months (30.3%). Most arrived by car (n=1001373, 91.1%) or NSW ambulance service (n=69657, 6.3%). Severe outcomes were infrequent (n=3970, 0.36%), a minority of which were deaths (n=34, 0.86%). Arrival by NSW ambulance was high amongst these children (15/32, 46.9%), and most recorded deaths were classified as breathing problems (17/32, 53.1%). Asthma (n=100,923, 9.2%), bronchiolitis (n=85,990, 7.8%), and breathing problems (n=72,555, 6.6%) were the most frequent syndromes. Clear seasonal increases in (influenza-like-illness) ILI occurred in winter months, with approximately a third of ILI presentations occurring in August (31.8%). Several seasonal patterns can be seen for other syndromes. Both asthma and breathing problems demonstrated increased peaks in presentations, in February/March and again in May. Whilst cough presentations rise through the first half of the year, peaking in June and again in August.
Conclusion: ARI-associated ED presentations are frequent and statewide EDRE data can support the identification of trends with associated clinical presentation phenotypes, even for rare events such as deaths. The clear seasonal patterns amongst different syndromes could be further enhanced through integration of sentinel laboratory data. This could strengthen our ability to detect, and capacity to manage, ARI outbreaks.

359

A national paediatric serosurvey of Omicron-subtypes attending hospitals within the PAEDS network.

Dr Archana Koirala[1,2], Ms Shayal Prasad[1], A/Prof Philip N Britton[2,3], Dr Ushma Wadia[4,5], Prof Peter Richmond[4,5], Prof Helen Marshall[6], A/Prof Julia E Clark[7,8], Dr Joshua R Francis[9,10], Dr Jeremy Carr[11,12], Dr Adam Bartlett[13], Prof Nigel Crawford[15], A/Prof Justin Skowno[14], Prof Nicholas Wood[1,2], Prof Kristine Macartney[1,2], on behalf of PAEDS Serosurvey Group
[1]National Centre For Immunisation Research And Surveillance, [2]Faculty of Medicine and Health, University of Sydney, [3]Department of Infectious Diseases and Microbiology, The Children's Hospital Westmead, [4]Centre for Child Health Research, The University of Western Australia,, [5]Wesfarmers Centre of Vaccine and Infectious Diseases, Telethon Kids Institute,, [6]Faculty of Health and Medical Sciences, The University of Adelaide, [7]Infection Management, Childrens Health Queensland, [8]School of Clinical Medicine, University of Queensland, [9]Global and Tropical Health Division, Menzies School of Health Research, Charles Darwin University, [10]Department of Paediatrics, Royal Darwin Hospital, , [11]Department of Infection and Immunity, Monash Children's Hospital Melbourne, [12]Department of Paediatrics, Monash University, [13]Department of Immunology and Infectious Diseases, Sydney Children's Hospital, [14]Department of Anaesthesia, The Children's Hospital at Westmead, [15]Infection, Immunity & Global Health, Murdoch Children's Research Institute,

2D - Respiratory illness in children, Mezzanine 2, June 11, 2024, 13:30 - 15:00

Context and aim: The global occurrence of SARS-CoV-2 outbreaks persists, with multiple Omicron subtypes circulating since November 2021. Serosurveys in children, particularly those born during the pandemic, offer valuable insights into recent infection rates and population immunity. Previous serosurveys in 2021 and 2022 collected sera from 3735 participants. This study aimed to assess the feasibility of collection three years post-SARS-CoV-2 emergence within a strict one-month period and determine the seropositivity of children aged 0-16 years to Omicron subtypes.

Methods: Samples were collected from 1 November 2023 to 1 December 2023, in children and adolescents aged 0-16 undergoing anaesthesia at eight tertiary paediatric hospitals. Participant questionnaires were administered, and blood samples were tested using the SARS-CoV-2 MSD Panel 37 assay.

Results: Blood was collected from 1070 participants, with 41.3% in children aged 0-4 years, 35.8% in children aged 5-11 years, and 22.9% in adolescents aged 12-16 years. The majority (57.7%) were male. Of the participants, 62.3% had no underlying medical conditions, and 33.8% were vaccinated with at least one dose of a COVID-19 vaccine. Furthermore, 72.5% consented to future use of sera for research. Testing is ongoing, and preliminary results will be presented at the meeting.

Outcomes: Successfully recruiting over 1000 participants, 41% born around the emergence of SARS-CoV-2.
Future Directions: The feasibility of collecting sera during a tight timeframe in children undergoing anaesthesia has been demonstrated. Additionally, banking sera collected from serosurveys for future use provides a valuable reserve to enhance our understanding of immunity against emerging or recirculating pathogens in children.

Clinical characteristics and in-hospital outcomes in children with RSV-ALRI compared to non-RSV-ALRI

Dr Mei Chan[1], Acacia Ozturk[1], Dr Nan Hu[1], Dr Jahidur Rahman Khan[1], Dr Brendan McMullan[1,2], Dr Philip N Britton[3,4], Dr Adam Bartlett[2], Dr Rama Kandasamy[3,4], Dr Gemma L Saravanos[6], Dr Bernadette Prentice[1,2], Dr Ting Shi[7], Dr Adam Jaffe[1,2], Dr Louisa Owens[1,2], Dr Nusrat Homaira[1,2]
[1]UNSW, [2]Sydney Children's Hospital, [3]Sydney Medical School, University of Sydney, [4]The Children's Hospital at Westmead, [5]School of Clinical Medicine, University of Sydney, Sydney, Australia, [6]Susan Wakil School of Nursing and Midwifery, Faculty of Medicine and Health, University of Sydney, Sydney, Australia, [7]Usher Institute, Old Medical School, Teviot Place, University of Edinburgh, Edinburgh, United Kingdom

2D - Respiratory illness in children, Mezzanine 2, June 11, 2024, 13:30 - 15:00

Background: Globally respiratory syncytial virus (RSV) is the leading viral cause of hospitalisation for children under 2 years due to acute lower respiratory infections (ALRIs). It is poorly understood whether there is a difference in the clinical course and outcomes of RSV ALRI compared with other viral causes of ALRI. We aimed to compare the disease spectrum of RSV and non-RSV ALRI in children under 2 years of age .
Methods: We conducted a retrospective study utilising electronic medical records among children under 2 years hospitalised with ALRIs at Sydney Children's Hospitals Network between 2020-2022. Demographic and clinical characteristics were compared between laboratory-confirmed RSV-positive and RSV-negative children. Poisson regression models were used to estimate adjusted prevalence ratio (aPR) associated with in-hospital outcomes including length of stay (LOS) >2 days, need for any respiratory support and transfer to intensive care unit (ICU) between two groups.
Results: The study included 150 children under <2 years hospitalised with RSV-positive ALRIs and 208 with RSV-negative ALRIs. Children with RSV-positive ALRIs were more likely to be older (10 vs 7 months, p<0.001) and more frequently presented with cough (99% vs 91%), fever (79% vs 55%), crackles (89% vs 76%,), hypoxia (47% vs 32%) and lethargy (35% vs 21%).They were also more likely to undergo a chest x-ray (22% vs 11%) and receive antibiotics (62% vs 35%). In the adjusted model, children with RSV were more likely to have LOS of >2 days (aPR 1.95, 95% CI 1.14-3.36). However, there were no differences in the need for respiratory support or ICU transfer.
Conclusion: Children with RSV-ALRI presented more frequently with severe clinical features, received more antibiotics, and were hospitalised for longer duration compared to children with other viral ALRIs highlighting the need for RSV-preventative therapeutics and effective treatment modalities.

Respiratory syncytial virus testing and hospital burden among infants in Central Queensland

Dr Mahmudul Hassan Al Imam[1], Dr Reema Goswami[1], Ms Caitlyn Bolck[1], Ms Jacina Walker[1], Dr Sunday Pam[1], Dr Michael Kirk[1], Professor Ross Andrews[2,3], Dr Stephen Lambert[4], Dr Robert Menzies[5], Professor Gulam Khandaker[1,6,7]
[1]Central Queensland Hospital and Health Service, [2]Office of the Chief Health Officer, Queensland Health, [3]College of Health and Medicine, Australian National University, [4]Communicable Disease Branch, Queensland Health, [5]Research Division, Sanofi Pasteur, [6]Research Division, Central Queensland University, [7]Discipline of Child and Adolescent Health, Sydney Medical School, The University of Sydney

2D - Respiratory illness in children, Mezzanine 2, June 11, 2024, 13:30 - 15:00

Context and aim: Little is known about the frequency of respiratory syncytial virus (RSV) testing and the burden of hospital admissions among infants in sub-tropical regions of Australia. We aimed to define the RSV testing and hospital admission rates among the infant population in Central Queensland (CQ).
Methods & analysis: As part of the RSV Surveillance Program of CQ Public Health Unit, hospital admissions linked to RSV-specific ICD-10-AM codes (i.e. J12.1, J20.5, J21.0 and B97.4) from the Business Analysis Decision Support (BADS) portal and PCR RSV test data from the Pathology Queensland database between January 2018 and December 2023 were extracted. Descriptive analyses were employed.
Research findings: Between 2018-2023, a total of 3,537 RSV PCR tests were performed among infants, with 15.7% (n=556) positive cases (mean age 5.6±3.5 months). RSV tests and positive cases increased markedly, from 354 and 72 (20.3%) in 2018 to 1,168 and 176 (15.1%) in 2023. There were 420 RSV-related hospital admissions; mean age 5.0±3.6 months, 46.9% (n=197) female and 28.1% (n=118) Indigenous infants. Among the admitted infants, RSV was documented as a primary diagnosis in 70.2% (n=295) of cases. The rate of hospital admission increased during active prospective surveillance post-COVID-19 pandemic, from 15 per 1,000 infants in 2018 to 42 per 1,000 infants in 2022 and 2023. The mean length of hospital stay was 2.5±2.3 days, with 17.1% (n=72) requiring ventilations and 2.1% (n=9) ICU admissions.
Outcomes and future actions: RSV infections and related hospital admissions among infants in CQ is substantially high. The increased detection rate can be explained by enhanced testing, indicating a need for policy-level changes to promote RSV testing.
Funding declaration: The authors acknowledge that this work was supported by Sanofi Pasteur S.A. (RSV00061).

209

Association of air-pollution and greenspace exposures with respiratory-health and pathogen-acquisitions in early-childhood.

Ms Mari Takashima[1]
[1]Griffith University

2D - Respiratory illness in children, Mezzanine 2, June 11, 2024, 13:30 - 15:00

Abstract

Background: Exposure to air pollution during early childhood is recognised increasingly as a factor that affects current and future respiratory health. Such exposure elevates the risk and severity of respiratory infections in young children, potentially affecting lung growth and development. Objective: To investigate the association between air pollution and greenspace, and respiratory pathogen acquisition, wheezing in the first 2-years-of-life and childhood asthma at age 5-7 years.

Methods: The Observational Research in Childhood Infectious Diseases (ORChID) study was an Australian birth cohort of healthy children where parents collected nasal swabs weekly and completed symptom diaries daily until age 2-years. Asthma diagnosis was assessed annually until age 7-years. Annual exposure to nitrogen dioxide (NO_2) and fine particulate matter ($PM_{2.5}$), and greenspace (normalised difference vegetation index (NDVI), were estimated for the full antenatal period and the first 2-years-of-life. Outcomes were rhinovirus, any respiratory virus, Streptococcus pneumoniae, Moraxella catarrhalis, and Haemophilus influenzae detections in the first 3-months-of-life, age when these pathogens were first detected, wheeze in the first 2-years-of-life and asthma at age 5–7 years.

Results: ORChID enrolled 158 children. One IQR increase in NO_2 and $PM_{2.5}$ was associated with earlier H. influenzae and symptomatic rhinovirus detections, respectively. In contrast, increased greenspace exposure by one interquartile-range (IQR) was associated with fewer viral (mean difference (MD): 0.45; 95% confidence interval [CI]: -0.88, -0.02) and M. catarrhalis detections (MD:-0.50, 95%CI: 0.93, 0.08) in the first 3-months-of-life. However, no significant associations were found between these environmental exposures and developing wheezing or asthma by ages 5–7.

Conclusion: Improving air quality by reducing NO_2 and $PM_{2.5}$ levels, and increasing greenspace exposure, may decrease early respiratory pathogen acquisition in the upper airways and early-life symptomatic respiratory virus infections. Despite these findings, the direct impact on wheezing and asthma outcomes remains inconclusive, suggesting the need for further investigation.

Understanding Perceptions of Infection Transmission in Early Childhood Education and Care Settings

Ms Carla Puca[1], Dr Samantha Carlson[1,2], A/Prof Hannah Moore[1,3], A/Prof Hayley Christian[4,5], Dr Gabriela Willis[6], Ms Megan Baker[1], Dr Briony Hazelton[7,8], Dr David Foley[1,7,8,9], Prof Chris Blyth[1,7,8,9]
[1]Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute, University of Western Australia, [2]School of Social Sciences, University of Western Australia, [3]School of Population Health, Curtin University, [4]Telethon Kids Institute, [5]School of Population and Global Health, University of Western Australia, [6]Metropolitan Communicable Disease Control, North Metropolitan Health Service, [7]Department of Infectious Diseases, Perth Children's Hospital, [8]Department of Microbiology, PathWest Laboratory Medicine, QEII Medical Centre, [9]School of Medicine, University of Western Australia

2D - Respiratory illness in children, Mezzanine 2, June 11, 2024, 13:30 - 15:00

Context and aim: Early Childhood Education and Care (ECEC) centres are an important environment for the interaction of young children but also a likely source for transmission of childhood infection. . Though often mild and self-limiting, infections can result in disruption of care, parental time off work, secondary transmission to other household members and significant health, economic and social impacts. The aim of this project is to understand knowledge, attitudes and practices of providers, staff and parents on infections in the ECEC setting.

Methods: This project involves semi-structured, in-depth interviews with up to 10 ECEC owners/managers, 10 ECEC educators/teachers, 10 parents/carers of children attending ECEC, and 4 staff from the Metropolitan public health unit who provide infection control advice and support to ECEC centres. Interviews explore: 1) concerns regarding the frequency and impact of infections on the daily business of ECEC centres and the daily life of households, 2) participants' broad understanding of infection transmission in ECEC, including current and potential prevention measures and attitudes towards vaccination, and 3) the application of non-pharmaceutical interventions to reduce the risk of infection transmission and attitudes towards these approaches.

Findings: Preliminary results demonstrate the negative impact of childhood infections within ECEC on the physical and mental health of families due to balancing carer responsibilities with work responsibilities and household finances. Participants strongly supported vaccination, and spoke on the importance of hand hygiene, regular environmental cleaning, and outdoor play as key methods to reduce the risk of infectious disease transmission within these settings.

Outcomes and future actions: These findings will inform a broader program of work to identify the frequency and impact of infection transmission in ECEC centres, and the opportunities and implementable strategies to reduce the risk of transmission within these environments.

309

Children and Adolescents: Respiratory Infection and Long-term Effects (CARE Study) - Protocol

Dr Mark McMillan[1,2], Dr Tom Sullivan[3], Dr Philip Britton[4], Dr Brendan McMullan[5], Dr Nan Vasilunas[6], Dr Tess Edmonds[7], Dr Ailish Battersby[7], Professor Jon Jureidini[8], Professor Helen Marshall[1,2]
[1]Vaccinology and Immunology Research Trials Unit, Women's and Children's Health Network, , [2]Robinson Research Institute and Adelaide Medical School, The University of Adelaide, [3]South Australian Health & Medical Research Institute (SAHMRI) Women and Kids, [4]Department of Infectious Diseases and Microbiology & Child and Adolescent Health, Children's Hospital Westmead & Sydney Medical School, University of Sydney, [5]Department of Immunology and Infectious Diseases, Sydney Children's Hospital , [6]Microbiology and Infectious Disease, Women's and Children's Health Network, [7]Department of General Medicine, Women's and Children's Health Network, [8]Critical and Ethical Mental Health (CEMH) research group within the Robinson Research Institute, University of Adelaide

2D - Respiratory illness in children, Mezzanine 2, June 11, 2024, 13:30 - 15:00

Context and Aim: Post-acute sequelae (PAS) following SARS-CoV-2 (PASC), widely recognised as long COVID, affects children and adolescents but has been understudied compared to PASC in adults. Data on PAS from influenza in children, is also limited, with its impact presumed to be less severe than PASC. The World Health Organization defines PASC in children as symptoms that persist for at least two months, affecting daily activities. The absence of a comprehensive PASC surveillance system in Australia clouds the development of targeted management strategies, particularly as the risk of children developing PASC after a second infection appears to remain similar to the risk after the first. This study will explore the incidence, risk factors, and long-term outcomes of PAS following COVID-19 and influenza infections in Australian children and youth.

Methods & Analysis/Research Findings: The CARE Study, a longitudinal cohort investigation, plans to prospectively recruit 2,444 participants over 24 months, following each participant for a year. Parents of children and adolescents aged 0-18 years who test positive for SARS-CoV-2 or influenza (controls) will be invited to participate through the Women's and Children's Hospital in Adelaide with expansion across South Australia using COVID-19 and influenza notifications. Through questionnaires administered at 1, 3, 6, and 12 months post-infection, the study will collect data on symptoms, vaccination history, risk factors, severity of initial infections, healthcare visits, school absenteeism, and quality of life, utilising the International Severe Acute Respiratory and Emerging Infection Consortium's symptom list, Malmo POTS Score, and the PedsQL Pediatric Quality of Life Inventory and Multidimensional Fatigue Scale for detailed assessments.

Future Actions: Findings will inform clinical management and shape vaccine recommendations for young populations. The study will facilitate the development of targeted screening and support systems by identifying PAS predictors and incidence.

Dr McMillan is supported by a Women’s & Children’s Hospital Foundation Postdoctoral Fellowship

389

COVID-19 associated neurological disease in Australian Children 2020-2023

Dr Kara Dubray[1], **Dr Katherine Phan**[2,3], A/Prof Andrew Anglemyer[4,5], Rebecca Burrell[2,3], Prof. Christopher Blythe[6, 7, 8], Dr Jeremy Carr[9,10,11], A/Prof Julia Clark[12,13], Prof Nigel Crawford[14,15,16], A/Prof Joshua Francis[17,18], Prof Helen Marshall[19,20,21], Dr Michaela Waak[22], Prof Russell Dale[2,23,24], Prof Cheryl Jones[2,24], Emma Carey[25], Prof Kristine Macartney[25,26], Prof Nicholas Wood[25,26], A/Prof Philip Britton[2,3,27]
[1]Department of Paediatrics, Dunedin Hospital, [2]Sydney Medical School, Faculty of Health and Medicine, University of Sydney, [3]Centre of Paediatric and Perinatal Infection Research, The Children's Hospital at Westmead, [4]Health Intelligence Team, Institute of Environmental Science and Research, [5]Department of Preventive and Social Medicine, University of Otago, [6]Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute and School of Medicine, University of Western Australia, [7]Department of Infectious Diseases, Perth Children's Hospital, [8]Department of Microbiology, PathWest Laboratory Medicine, Queen Elizabeth II Medical Centre (QEIIMC), [9]Infection & Immunity, Monash Children's Hospital, [10]Monash University, [11]Department of Paediatrics, University of Oxford, [12]Infection Management and Prevention Service, Queensland Children's Hospital, [13]UQ Centre for Clinical Research, The University of Queensland, [14]Department of Paediatrics, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne, [15]Immunisation Services, The Royal Children's Hospital, [16]SAEFVIC, Infection, Immunity and Global Health, Murdoch Children's Research Institute, [17]Royal Darwin Hospital, [18]Menzies School of Health Research, Charles Darwin University, [19]Vaccinology and Immunology Research Trials Unit, Women's and Children's Health Network, [20]Robinson Research Institute and Adelaide Medical School, The University of Adelaide, [21]Adelaide Medical School, The University of Adelaide, [22]Paediatric Intensive Care Unit, Queensland Children's Hospital, Children's Health Queensland Hospital and Health Service, [23]Clinical Neuroimmunology Group, Kids Neuroscience Centre, Kids Research at the Children's Hospital at Westmead, [24]Department of Neurology and Neurosurgery, Children's Hospital at Westmead, [25]National Centre for Immunisation Research and Surveillance, [26]The Children's Hospital at Westmead and University of Sydney, [27]Infectious Diseases Department and Microbiology Department, Children's Hospital at Westmead

2D - Respiratory illness in children, Mezzanine 2, June 11, 2024, 13:30 - 15:00

Background:
There are few studies on COVID-19 associated neurological disease (CAND) within paediatric populations and none from Australia. We aimed to describe the spectrum and burden of CAND on Australian children.
Methods:
We used Australian surveillance data from 4 studies nested within the Paediatric Active Enhanced Disease Surveillance (PAEDS) network: COVID-19 Surveillance, PIMS-TS Surveillance, Acute Childhood Encephalitis (ACE) and Acute Flaccid Paralysis (AFP). Data covered a 3-year period (January 2020 - April 2023) consisting of four COVID variant periods; Ancestral, Delta, Early and Late Omicron. All cases were registered as SARS-CoV-2 positive from PCR or rapid antigen testing. Neurological features used to identify potential CAND cases were seizure, altered consciousness/confusion, encephalopathy, weakness, encephalitis, meningitis, stroke/cerebrovascular accident and cerebral venous thrombosis. We described the clinical features and severity of CAND and estimated incidence.
Results:
From 5888 paediatric cases hospitalised with COVID-19, we identified 311 instances of CAND accounting for 5.3% of hospitalised COVID. This included 8 cases of COVID-associated encephalitis/encephalopathy (0.1% hospitalised COVID). The spectrum of CAND presentations was broad with seizure being the most common (n=215; febrile seizures n=85, other seizures n=130), followed by non-specific encephalopathy (n=62), post-infectious immune conditions (n=11), diabetic ketoacidosis (n=10), encephalitis (n=8), aseptic meningitis (n=3) and cerebrovascular accident (n=2). Of the 8 children with encephalitis, 2 acutely died and 3 had adverse neurological outcomes at discharge. Two-thirds were <5 years of age and one-third of children with CAND had a pre-existing neurological disorder. CAND frequency fluctuated between COVID variant periods, with highest frequency during the Ancestral period (16.1% hospitalised COVID) and lowest frequency during the Delta period (3.3% hospitalised COVID). CAND frequency during Early and Late Omicron periods was 3.5% of hospitalised COVID and 7.2% of hospitalised COVID, respectively. Despite fluctuations in frequency, the spectrum and severity of CAND did not appear to differ remarkably between COVID variant periods.
Conclusion:
COVID-19 is an important cause of neurological disease in children. Children with COVID-associated encephalitis showed a high frequency of adverse outcomes. PAEDS surveillance of hospitalised COVID-19 and its neurological complications is ongoing.

COVID-19 Hospitalisations in Australian Children 2020-2023: a multi-centre prospective surveillance study

Ms Elizabeth White[1], Mr Mehyar Khair Baik[2], Prof Christopher Blyth[3], Dr Jeremy Carr[4], Prof Nigel Crawford[5], Dr Joshua Francis[6], Prof Helen Marshall[7], Ms Emma Carey[2], Prof Kristine Macartney[2,8], Prof Nicholas Wood[2,8], A/Prof Philip Britton[8], A/Prof Julia Clark[1]
[1]Queensland Children's Hospital, [2]National Centre for Immunisation Research and Surveillance, [3]Perth Children's Hospital, [4]Monash Children's Hospital, [5]Royal Children's Hospital, Melbourne and Murdoch Children's Research Institute, [6]Royal Darwin Hospital, [7]Women's and Children's Hospital, [8]The Children's Hospital at Westmead and University of Sydney

2D - Respiratory illness in children, Mezzanine 2, June 11, 2024, 13:30 - 15:00

Context and aim:

In Australia to date, there have been approximately 2.6 million COVID-19 cases in children and young people (CYP) aged less than 20 years. This study aimed to describe the frequency of children admitted to hospitals for management of clinical, incidental, and nosocomial COVID-19 and whether this differed across SARs-CoV-2 variant periods or by age.

Method:

Children with SARS-CoV-2 infection were identified through active surveillance by the Paediatric Active Enhanced Disease Surveillance (PAEDS) nursing staff. Hospital admission was classified "Clinical COVID" if primarily for managing symptoms consistent with acute SARs-CoV-2 infection, and "Incidental COVID" if managing an alternative diagnosis alongside a positive SARs-CoV-2 test. Nosocomial infection was defined as a first positive COVID test ⍰ 72 hours after admission. The eligible cases were grouped as occurring during four periods according to the dominant SARS-CoV-2 variant circulating at the time.

Results:

Acute clinical COVID-19 was the primary indication for admission in 79%. A higher number of younger children compared with older were admitted for clinical COVID-19. Rates of admission to a paediatric intensive care unit (PICU) and fatality were highest in the 12–16 years age group (11% and 1.2% respectively). Nosocomial infection was associated with a higher frequency of respiratory support, including invasive ventilation, ICU admission and a longer length of stay. There was an increased use of corticosteroids during the Omicron period compared with the previous periods. one-quarter of children across the study received antibiotics.

Translational outcomes:

In approximately one-fifth of children hospitalised with a positive SARS-CoV-2 test, this was incidental to their need for hospitalisation. Amongst the remaining children with clinical COVID-19, more young infants were admitted to hospital, but the severity was greatest in 12–16-year-olds. Nosocomial infection was associated with a considerable burden of disease.

183

Recurrence of apnoea post vaccination in preterm infants

Dr Tamishka De Silva[1,2], Ms Deidre Brogan[1], Ms Shayal Prasad[1], Professor Nicholas Wood[1,3], Dr Archana Koirala[1,3,4]
[1]National Centre for Immunisation Research and Surveillance, Westmead, NSW, Australia, [2]Child Development Service, Royal North Shore Hospital, [3]Faculty of Medicine and Health, University of Sydney, The Children's Hospital Westmead Clinical School, [4]Department of Infectious Diseases, Nepean Hospital

2D - Respiratory illness in children, Mezzanine 2, June 11, 2024, 13:30 - 15:00

Background: Apnoeas are a common idiopathic occurrence seen in preterm infants and a documented but rare adverse event following immunisation (AEFI) in this group. It is recommended that these infants are admitted for monitoring in hospital for their next set of immunisations.

Aims: This study aims to review vaccine-proximate apnoeas in preterm infants (born at <32 weeks gestational age) at the 6-week immunisations and assess whether this impacts vaccine timeliness and coverage for subsequent routine childhood immunisations, as well as AEFI recurrence and the uptake of additional recommended vaccines in this population.

Method: We reviewed a database of 954 patients seen in The Specialist Immunisation Clinic at The Children's Hospital Westmead from June 2018 – June 2023, of which 13 infants met inclusion criteria. We reviewed the medical records for case details, clinic outcomes and recurrence of an AEFI and the Australian Immunisation Register for vaccination status and timeliness.

Results: We found 9/13 infants had received their 4-month immunisations in our clinic, 3/13 were admitted to hospital for monitoring and 1/13 was vaccinated at their local medical centre. The majority (12/13) did not have a recurrent AEFI; 1/13 (7.7%) had a brief breath-hold with no other documented apnoea and/or desaturation events. The median age at 6-week, 4-month, 6-month and 12-month immunisations was 1.9 months, 4.5 months, 6.6 months and 12.3 months respectively. In addition, we found only half (3/6) infants born at gestational age <28 weeks received an additional dose of 13vPCV, and the average age for additional 13vPCV dose was 18.2 months old.

Conclusion: Recurrence of vaccine-proximate apnoeic events was uncommon in this cohort of preterm infants and most were able to be safely vaccinated in an outpatient setting. Timely and complete vaccination is vital for preterm infants to ensure adequate protection from vaccine-preventable diseases for this at-risk cohort.

2E -
Adult vaccination, Mezzanine 3, June 11, 2024, 13:30 - 15:00

143

Relative effectiveness of Adjuvanted vs High-dose influenza vaccines in high-risk individuals

Miss Mahrukh Imran[1], Miss Caroline Mills[2], Miss Kimberly McDermott[2], Mr Alex Dean[2], Miss Alina Bogdanov[2], Mr Ian McGovern[3], Ms Edin Mifsud[4], Dr Mendel Haag[5]
[1]CSL Seqirus, [2]Veradigm, [3]CSL Seqirus, [4]CSL Seqirus , [5]CSL Seqirus
Background: The likelihood of a patient having an influenza related medical encounter increases with the number of risk-factors one has, especially in adults ≥65 years. Two vaccine formulations were specifically developed to provide older adults with enhanced protection: MF59®-adjuvanted influenza vaccine (aTIV) and high-dose influenza vaccine (HD-TIV). There is limited evidence on relative vaccine effectiveness (rVE) of these two vaccines in individuals ≥65 years, who are at increased risk due to presence of one or multiple risk-factors.
Methods: We conducted a retrospective cohort study during the US 2019-2020 influenza season among individuals ≥65 years vaccinated with aTIV or HD-TIV. The primary objective was to estimate rVE of aTIV vs HD-TIV for prevention of influenza-related medical encounters (IRME) stratified by the number of CDC-defined risk-factors for each patient. A secondary objective evaluated rVE for outpatient IRMEs specifically and influenza-or pneumonia-related hospitalizations. Exposure, outcome, and covariate data were obtained from electronic health records linked to pharmacy and medical claims. Doubly robust analysis combined inverse probability of treatment weighting (IPTW) with multivariate adjustment by age, sex, race, ethnicity, region, vaccination week, frailty, healthcare resource utilization and risk-factor(s). Negative control outcomes (NCOs) were evaluated as indicators of healthcare seeking behaviour.
Results: 1,115,725 (30.3%) patients received aTIV and 2,561,718 (69.7%) received HD-TIV. Primary outcome of any IRME for patients with 0 risk-factors demonstrated comparability in effectiveness between vaccines (5.2 [-5.9–15.1]). For patients with 1-2, ≥3, or ≥1 risk-factors aTIV was more effective than HD-TIV (18.4 [13.7–22.9], 10.4 [7.4–13.3], and 12.5 [10.0–15.0], respectively). Comparable trends were observed for secondary outcomes. Incidence of NCOs was balanced between vaccine cohorts pre- and post-IPTW.
Conclusions: This study demonstrates benefit of aTIV compared with HD-TIV in prevention of IRMEs, outpatient IRMEs, and influenza- or pneumonia-related hospitalizations among high-risk individuals ≥65 years and comparable effectiveness in patients with no risk-factors.

16

Audit of Invasive Pneumococcal Disease and associated pneumococcal vaccination in the Kimberley

Ms Marama Haenga[1], Dr Rhea Psereckis[1]
[1]WA Country Health Service Kimberley Population Health

2E - Adult vaccination, Mezzanine 3, June 11, 2024, 13:30 - 15:00

Background
Aboriginal and Torres Strait Islander peoples in Australia continue to experience higher rates of invasive pneumococcal disease (IPD) despite recommendations for additional pneumococcal vaccinations under the National Immunisation Program (NIP). We investigated the association between pneumococcal vaccination and IPD incidence in the Kimberley region of Western Australia (WA) between 2018-2023.
Methods
We collated IPD notification data from the WA Notifiable Infectious Diseases Database (WANIDD) from 1 July 2018 to 30 June 2023 and supplementary clinical data from local clinical databases. Descriptive analysis of data was performed.
Results
Between 1 July 2018 and 30 June 2023, there were 104 IPD notifications in the Kimberley region, with 97% of all notifications occurring among Aboriginal people. The most common clinical presentation was pneumonia and 90% of all cases were hospitalised. Six cases died in hospital within two weeks of disease onset and 22% of all cases met criteria for sepsis or septic shock. Seventy-six percent of all IPD cases had received at least one pneumococcal vaccination prior to disease onset. The group with the highest proportion of unvaccinated cases were those aged 5-49 years; this group also accounted for the highest number of IPD notifications. There was a slight increase in the proportion of IPD cases fully vaccinated for the disease after changes to the pneumococcal vaccination schedule on 1 July 2020. Seventy-four percent of all IPD cases had at least one risk factor for the disease. There was substantial serotype heterogeneity among cases, and 70% of all disease serotypes were non-vaccine serotypes.
Conclusions
IPD disproportionately affects Aboriginal people in the Kimberley region of WA and is associated with high rates of severe disease and hospitalisation. There may be opportunities to increase vaccination rates in under-vaccinated and at-risk groups, though the high proportion of non-vaccine serotypes among IPD cases suggests the need for ongoing disease surveillance and improvements to the pneumococcal vaccination program accordingly.

373

Co-administration of RSV (RSVPreF3 OA) and influenza (FLU-aQIV) vaccines in older adults

Ms Rebecca Clark[1], Dr, Mr Sam Davies[2], Mr Jorge Labrador[3], Mr Paul Loubet[4], Ms Silvina Natalini Martinez[5], Ms Helena Moza Moríñigo[6], Mr Jean-François Nicolas[7], Ms Mercè Pérez Vera[8], Mr Mika Rämet[9], Ms Agnès Chaumont[10], Ms Maria Henar Rebollo-Rodrigo[11], Mr Iván Sanz-Muñoz[12], Ms Nancy Dezutter[13], Ms Sophie Germain[13], Ms Marie-Pierre David[13], Ms Amulya Jayadev[14], Dr, Ms Hiwot Amare Hailemariam[13], Mr Shady Kotb[13], Ms Nadia Meyer[13]
[1]Layton Medical Centre, [2]South Gloucestershire Medical Research Unit, [3]Research Unit, Hospital Universitario de Burgos, [4]Department of Infectious and Tropical Diseases, CHU Nîmes, University of Montpellier, [5]Unit of Vaccine Department, hospital Universitario HM Puerta del Sur, [6]Departamento de Medicina Preventiva y Salud Pública, Hospital Universitario Fundación Jiménez Díaz, [7]Department of Allergology of Clinical Immunology, Lyon University Hospital, [8]ABS La Roca del Vallès, [9]Finnish Vaccine Research Ltd., Faculty of Medicine and Health Technology, Tampere University, [10]GSK, [11]University Hospital Valdecilla, Santander, [12]National Influenza Centre, [13]GSK, [14]GSK

2E - Adult vaccination, Mezzanine 3, June 11, 2024, 13:30 - 15:00

AIM
Respiratory syncytial virus (RSV) and influenza seasons may overlap in older adults. We report end-of-study (6 months [M] post vaccination) results assessing immunogenicity, safety and reactogenicity upon co-administration of RSVPreF3 OA and adjuvanted quadrivalent influenza (FLU-aQIV) vaccines in older adults.

METHODS
In this phase 3, open-label, controlled study (NCT05568797), ≥65-year adults received RSVPreF3 OA concomitantly with FLU-aQIV (Co-ad) or sequentially (1M apart: Control) following FLU-aQIV. Non-inferiority of immune responses (adjusted GMT ratio in control versus Co-Ad groups) was assessed 1M post-vaccination. Solicited and unsolicited adverse events (AEs) were reported within 7 and 30 days post-vaccination, respectively. Serious AEs (SAEs), potential immune-mediated diseases (pIMDs) and fatal SAEs were reported up to 6M after vaccination.

OUTCOMES
Overall, 1045 participants (Co-ad: 523; Control: 522) were vaccinated. At 1M after vaccination, adjusted GMT ratios were 1.32 (95% CI: 1.13, 1.53), 1.04 (0.91, 1.18), 0.97 (0.90, 1.06), and 1.04 (0.95, 1.13) for Flu A/H3N2, Flu A/H1N1, Flu B/Victoria, and Flu B/Yamagata; 0.99 (0.87,1.12) and 1.16 (1.03,1.30) for RSV-A and RSV-B, respectively. Solicited local events were reported in 73.8% (Co-ad), 46.2% (Control, post-FLU) and 60.8% (Control, post-RSV) of participants. Main solicited local and systemic AEs were pain, and fatigue, respectively. Unsolicited AEs and SAEs were reported by 13.6% and 4.0% of the Co-Ad participants, and by 24.5% and 6.9% of the Control participants, respectively. Three Control participants reported pIMDs (psoriasis flare-up, pericarditis, and giant cell arteritis [GCA]). One SAE reported as pIMD (GCA, Control) was related to FLU-aQIV vaccination. Six Control participants had non-vaccine related fatal SAEs.

FUTURE ACTIONS
Co-administration of RSVPreF3 OA with FLU-aQIV showed no evidence of clinically relevant interference in the elicited immune responses. For FLU A/H3N2, the non-inferiority criterion was marginally missed. RSVPreF3 OA co-administered with FLU-aQIV was well tolerated, and had an acceptable reactogenicity/safety profile.

Funding: GSK (NCT05568797)

Varicella Zoster Virus (Shingles) episodes and vaccination uptake in Spleen Australia Registrants

Ms Penelope Jones[1], Dr Gabriela Khoury[2], A/Prof Ian Woolley[3]
[1]Spleen Australia / Alfred Health, [2]Burnet Institute, [3]Monash Infectious Diseases /Monash Medical Centre

2E - Adult vaccination, Mezzanine 3, June 11, 2024, 13:30 - 15:00

Background: Spleen Australia (SA) supports people with asplenia and hyposplenism through education about their increased risk of bacterial infections and provide advice on vaccines and chemoprophylaxis. In November 2023 the National Immunisation Program was updated making the Shingrix vaccine available to First Nations people aged 50+ years; people 65+ years and immunocompromised people >18 years. It is unclear if people without functioning spleens have a higher risk of shingles and as a consequence are deemed ineligible for Shingrix.
Aim: To assess the prevalence of VZV shingles episodes and vaccination uptake in people who live without a functioning spleen.
Methodology: The survey was designed to capture demographic and medical history data, including age, gender, reason for asplenia or hyposplenism, history of chickenpox infection and shingles episodes and vaccination status. The survey was distributed to adult SA registrants who had an email address (n=7624).
Results: 2,657 registrants responded to the survey (35% response rate). The majority of participants had undergone a splenectomy (2539, 96%), followed by hyposplenism (91, 3%), and congenital asplenia (25, 1%). Within the cohort 75.2% of respondents had a history of chickenpox (1999/2657) and 521 had reported a previous shingles episode. A total of 687 self-reported cases were recorded with 22% of respondents reported having >1 episode of shingles, 10 respondents had 5 episodes. People who had a splenectomy for 1. Trauma (161/687) 2. Blood disorder (163/687) or 3. Blood and other cancers combined (157/687) had the highest number of reported shingles cases per group. There was low vaccine uptake within the cohort with immunisation against chickenpox (36%, 947/2657) and shingles (25%, 669/2657).
Conclusion: People with asplenia have a high proportion of shingles with 20% of respondents reporting 1 or more episodes especially amongst splenectomy groups. Our findings suggest that this group could benefit from accessing the shingles vaccines.

Evaluation of early uptake of Shingrix under the National Immunisation Program

Ms Annabeth Simpson[1], Dr Alex Hendry[1], Mr Brynley Hull[1], A/Prof Frank Beard[1,2]
[1]National Centre for Immunisation Research and Surveillance, [2]University of Sydney

2E - Adult vaccination, Mezzanine 3, June 11, 2024, 13:30 - 15:00

Background
From 1 November 2023, a two-dose schedule of Shingrix replaced Zostavax on the National Immunisation Program (NIP) for herpes zoster (HZ) vaccination. From November 2016, Zostavax was available on the NIP as a single dose for adults aged 70 years, with a catch-up program for adults aged 71–79 years. Shingrix is now funded for all adults aged ≥65 years, Aboriginal and Torres Strait Islander adults aged ≥50 years and immunocompromised individuals aged ≥18 years with specified medical conditions. We aimed to evaluate the early uptake of Shingrix following these NIP changes.

Methods
Australian Immunisation Register data as at 3 months post-NIP change (31 January 2024) were used to calculate monthly counts of Shingrix vaccination encounters and Shingrix vaccine uptake as a proportion of the NIP-eligible population by relevant demographic variables.

Findings
From 1 November 2023 to 31 January 2024, 477,239 doses of Shingrix were administered nationally, peaking at 190,691 doses in January. By age group, the highest number of doses was administered in adults aged 65–69 years (163,503). By 31 January 2024, 9.6% (409,525/4,274,530) of the NIP-eligible population ≥65 years had received ≥1 dose of Shingrix, with higher proportion of females (10.3%) than males (8.9%), and residents of major cities (10.0%) than remote areas (5.7%). Among the NIP-eligible Aboriginal and Torres Strait Islander population ≥50 years, 4.8% (7,049/146,218) had received ≥1 dose (6.0% in major cities, 2.7% in remote areas), with uptake among the NIP-eligible Aboriginal and Torres Strait Islander population ≥65 years 8.8% (3,914/ 44,401). Updated data 6 months post-NIP change will also be presented.

Conclusion
There has been rapid uptake of Shingrix in the first three months since its inclusion on the NIP, with one in 10 eligible individuals ≥65 years having received at least one dose.

Estimating the burden of non-bacteraemic pneumococcal pneumonia in Australian adults

Dr Sanjay Jayasinghe[1,2], Dr Chrissy Imai[1], Dr Shahin Oftadeh[3], Dr Jin-Gun Cho[4,5], Prof Vitali Sintchenko[5,6]
[1]National Centre For Immunisation Research and Surveillance, [2]The Children's Hospital at Westmead Clinical School, The University of Sydney, [3]Institute of Clinical Pathology and Medical Research, [4]Department of Respiratory and Sleep Medicine, Westmead Hospital, [5]Sydney Medical School, Faculty of Medicine and Health, The University of Sydney, [6]Centre for Infectious Diseases and Microbiology Laboratory Services, NSW Health Pathology

2E - Adult vaccination, Mezzanine 3, June 11, 2024, 13:30 - 15:00

Background
Streptococcus pneumoniae (pneumococcus) is the commonest cause of community-acquired pneumonia (CAP) among adults. Diagnosing pneumococcal CAP (PP) in the absence of a sterile site isolate (i.e. non-bacteraemic pneumococcal pneumonia [NBPP]) remains challenging and therefore accurate estimates of its burden are lacking. We aimed to estimate the burden of NBPP in adults using results of current laboratory diagnostic tests.
Methods
All laboratory records of testing for pneumococcal pneumonia in adults aged >18 yrs across 32 hospitals in NSW from 2018-2022 were used in the study. Records included pneumococcal C-polysaccharide urinary antigen detection (UAD- Binax-NOW) and sputum and blood cultures for pneumococci. The relative burdens of NBPP (UAD positive/sputum culture positive but blood culture negative) and BPP (blood culture positive) were estimated by age group.
Results
Among 20,488 patients tested, 1,258 (6%) were positive for PP with their mean age being 62.2 yrs (95% CI 61.3-63.2). In the COVID-19 pandemic years (2020 and 2021), there was 20% reduction in the number of adults tested for PP. Overall the yield of blood culture positivity for pneumococci in the 5 years of the study was 1.1% (n=154/13,688 episodes tested). Overall UAD positivity was 6.1% (n=1,245/20,491 episodes tested). The NBPP (i.e., UAD or sputum culture positive) episodes were 7.5 times that of BPP (1,148;154) overall with that ratio ranging from 6 in <65-year-old adults to 11 in >70-year-olds. Of the 149 adults who were blood culture positive and also had a UAD test, 91 were positive for the latter. This suggests a sensitivity of 61% for UAD to detect PP.
Conclusions
Among the pneumococcal pneumonia episodes in the study, 88% were non-invasive. Accurate data of the burden and other aspects of NBPP epidemiology in adults is key to inform clinical management and prevention strategies, including vaccination, for pneumococcal pneumonia in adults.

128

A stocktake of the past 5 years of adult vaccination coverage data

Mr Brynley Hull[1], Dr Alexandra Hendry[1], Associate Professor Frank Beard[1,2]
[1]National Centre For Immunisation Research And Surveillance, [2]University of Sydney

2E - Adult vaccination, Mezzanine 3, June 11, 2024, 13:30 - 15:00

Background

Reporting of adult vaccination coverage data is important for evaluation of adult immunisation programs including detection of gaps in specific populations/geographic areas. Following expansion of the Australian Immunisation Register to 'whole-of-life' in late-2016, we aimed to review trends in adult vaccination coverage data over the past 5 years.

Methods

A cross-sectional analysis of AIR data from 2019-2023, focusing on zoster, influenza and 13-valent pneumococcal conjugate vaccine (13vPCV) vaccination coverage by age group and Indigenous status. We also calculated composite measures of coverage.

Results

Zoster vaccination coverage in 2022 was 41.3% in adults turning 71years (37.7% in Indigenous adults), 2.6 (3.6) and 4.4 (0.6) percentage points higher than in 2021 and 2020, respectively, and was highest in adults turning 75years (54.6% and 54.0%), reflecting a combination of vaccination at 70years and catch-up at older ages. Coverage of 13vPCV was 33.8% in adults turning 70years in 2022 (37.7% in Indigenous adults), 9.9 (12.6) and 26.0 (28.0) percentage points higher than in 2021 and 2020, respectively. Influenza vaccination coverage in adults in 2022 increased with increasing age, reaching 73.0% in the ≥75years age group. Coverage was higher in 2022 than in 2021 across all adult age groups, with the proportionate increase since 2019 four- to five-fold higher in those aged <65years than in those aged ≥65years. Coverage of a composite measure including influenza and 13vPCV vaccines was 31.3% overall in adults in 2022, 9.8 percentage points higher than in 2021. Selected updated data from 2023 will also be presented including geographical area data.

Conclusion

While adult coverage increased in 2021 and 2022 for 13vPCV, zoster and influenza vaccines – likely due in part to the introduction of mandatory reporting to AIR in mid-2021 resulting in more accurate estimates – adult coverage for these vaccines remains suboptimal.

Patient preferences towards herpes zoster vaccination among 50-64 year-olds in Australia

Sumitra Shantakumar[1], John Litt[2], Robert Booy[3], Lawrence Vandervoort[4], Vince Grillo[4], Emma Bandy[5], Raunak Parikh[6]
[1]GSK, [2]College of Medicine and Public Health, Flinders University, [3]The Children's Hospital at Westmead, The University of Sydney, [4]Cerner Enviza, an Oracle company, [5]GSK, [6]GSK

2E - Adult vaccination, Mezzanine 3, June 11, 2024, 13:30 - 15:00

AIM
Herpes zoster (HZ) creates substantial physical and economic burden for patients, especially those aged ≥50 years. Although HZ vaccination is on the Australian National Immunisation Program for some, it remains an out-of-pocket expense for 50–64 year-old (excluding indigenous people/certain immunocompromised individuals) and vaccination coverage has been suboptimal Using a discrete choice experiment (DCE), HZ vaccination preferences were assessed.
METHODS
An online DCE survey was administered, March–May 2023, to elicit participant preferences and trade offs. Choice tasks comprised a 'no vaccine' option and three HZ vaccine profiles of five attributes with varying levels. Attributes/levels were identified through literature review, concept elicitation, cognitive interviews, and expert opinion. Participants were stratified by HZ history, HZ vaccination status, and comorbidities: Cohort 1 (HZ-naïve with comorbidities), n=525 (n=75 for each comorbidity [asthma, CKD, COPD, CVD, diabetes, IBD, RA]); Cohort 2 (HZ-naïve without comorbidities), n=150; Cohort 3 (current/former HZ patients), n=150.
OUTCOMES
Three attributes influenced HZ vaccine choice the most: government guidelines/medical society recommendations, HZ lifetime risk reduction, and duration of protection. Cohort 1 indicated substantially lower relative importance (RI) of government guidelines/medical society recommendations and substantially higher RI of HZ lifetime risk reduction than other cohorts.. There were no significant differences in RI of attributes/levels between Cohorts 2 and 3. Among HZ-naïve cohorts, HZ vaccinated (n=146) and non-vaccinated respondents (n=529) indicated significantly different RI between the three most important attributes ($p<0.001$). All comorbidity groups ranked attributes similarly as Cohort 1. Comparing preference weight magnitudes, all respondents were willing to accept a change in any attribute for a vaccine gaining government guideline/medical society recommendation. A longer duration of protection was associated with higher patient preference.
FUTURE ACTIONS
These findings have helped elucidate motivations underlying HZ vaccine preferences among the Australian public aged 50–64 years, informing development of targeted initiatives/recommendations for protection against HZ.

Zoster hospitalisations decline in older adults since vaccine program commencement in 2016

Dr Joanne Jackson[1], Dr Nicole Sonneveld[1], Dr Aditi Dey[1,2], Associate Professor Stephen Lambert[1], Associate Professor Frank Beard[1,2]
[1]National Centre for Immunisation Research and Surveillance, [2]University of Sydney

2E - Adult vaccination, Mezzanine 3, June 11, 2024, 13:30 - 15:00

Introduction: Zoster (shingles) vaccine was added to the National Immunisation Program (NIP) in 2016, for people aged 70 years with time-limited catch-up to age 80 years. Here, we describe zoster hospitalisation rates in Australia, 2002–2021.
Methods: Hospitalisations with principal diagnosis zoster (ICD-10-AM code B02) between 2002–2021 were obtained from the AIHW National Hospital Morbidity Database. Hospitalisation rates were analysed by age group using Joinpoint regression. As age in older Aboriginal and Torres Strait Islander (hereafter, respectfully, Indigenous) adults is recorded as ≥65 years in the hospitalisation dataset, we were only able to analyse hospitalisation rates for the 60–69, 70–79 and ≥80 years age groups in non-Indigenous adults.
Results: In non-Indigenous adults aged 70–79 years, zoster hospitalisation rates were stable between 2002–2016, but decreased between 2016–2021 (50.5/100,000 in 2016 to 29.1/100,000 in 2021; average annual percentage change (AAPC) =-7.95% [95% CI: -19.1% – -3.7%]). In adults ≥80 years, rates were stable between 2002–2018 but decreased between 2018–2021 (117.0/100,000 in 2018 to 92.8/100,000 in 2021; AAPC=-6.0% [95% CI: -13.1% – -1.3%]). Hospitalisation rates were stable for adults 60-69 years over the 20-year period. Increases in hospitalisation rates across the 20-year period occurred among people aged 15–29 (AAPC=1.9%; 95% CI 0.7% – 3.3%), 40–49 (AAPC=2.9%; 95% CI 1.6% – 4.4%) and 50–59 years (AAPC=1.8%; 95% CI: 0.9% – 2.9%). Among adults aged 30–39 years, hospitalisation rate significantly increased between 2017–2021 (AAPC=9.0%; 95% CI 1.9% – 23.4%). Zoster hospitalisations among children <15 years decreased (2.2/100,000 in 2002 to 0.4/100,000 in 2021; AAPC=-8.6% [95% CI: -11.1% – -6.8%]).
Conclusion: Zoster hospitalisation rates have declined in older adults and children, reflecting likely impacts of inclusion of zoster (2016) and varicella (2005) vaccines, respectively, on the NIP.

A national survey of COVID-19 vaccination beliefs in Australian adults

Dr Maryke Steffens[1], Bianca Bullivant[1], Dr Jess Kaufman[2], Monsurul Hoq[2], Professor Margie Danchin[2], Dr Catherine King[1], Kathleen Prokopovich[1], Dr Mathew Marques[3]
[1]National Centre For Immunisation Research And Surveillance (ncirs), [2]Murdoch Children's Research Institute, [3]La Trobe University

2E - Adult vaccination, Mezzanine 3, June 11, 2024, 13:30 - 15:00

Introduction: Continued uptake of COVID-19 vaccines is necessary to provide ongoing immunity and protect people against serious morbidity and mortality. Misinformation about COVID-19 vaccines can generate misperceptions about vaccine safety and effectiveness, reducing vaccine acceptance and uptake. Investigating current COVID-19 vaccine misperceptions is critical for understanding the extent to which they contribute to lower vaccine confidence and intention. The aim of this study is to estimate the prevalence of COVID-19 vaccine misperceptions in Australian adults and their association with booster uptake, confidence, and future intention to vaccinate against COVID-19.

Methods: In 2023, we surveyed a nationally representative sample of 2000 Australian adults. Surveys were administered online; items included demographics, misperceptions related to COVID-19 vaccines, COVID-19 vaccine intentions, booster uptake, and vaccine confidence. Analysis to describe prevalence and measure associations is underway.

Results: We will report proportions of participants who hold COVID-19 vaccine misperceptions, demographic characteristics between participants with and without misperceptions, and the association of misperceptions with vaccine uptake, intention, and confidence.

Conclusions: These findings will identify the most prevalent misperceptions about COVID-19 vaccines in Australian adults and highlight which misperceptions influence vaccination intention. Findings will inform policy and practice related to encouraging acceptance and uptake of COVID-19 vaccines.

2F -
Cross-cultural and social determinants of health, Mezzanine 4, June 11, 2024, 13:30 - 15:00

122

Sociodemographic Factors and Free Vaccination Impact on Wide Bay Flu Vaccine Uptake

Dr Josette Sin Yee Chor[1], Ms Helen Thomas[1], Ms Carole Bye[1], Dr Arifuzzaman Khan[1]
[1]Wide Bay Public Health Unit

Background: Influenza poses a substantial and ongoing public health burden in Australia, contributing to significant morbidity and mortality. To combat this, multifaceted promotion strategies have been implemented, notably the 2023 free influenza vaccination campaign for all Queensland residents. Local Public Health Units (PHUs) play a critical role in promoting vaccination as a core element of disease prevention. The Australian Immunisation Register (AIR) provides PHUs with essential data for monitoring vaccination uptake, enabling targeted public health interventions.
Aims: This study aims to investigate the sociodemographic factors associated with the uptake of both nationally funded and non-eligible influenza vaccinations within the Wide Bay region. Additionally, it seeks to evaluate the impact of the 2023 public health messaging and free influenza vaccination initiative on overall uptake within the Wide Bay region.
Methods & Analysis: This study employs a retrospective design, extracting relevant data from the AIR for the period 1/1/2021 – 31/12/2023. Information on individuals' influenza vaccination status and key sociodemographic characteristics are analysed. Robust statistical methods (e.g., regression, difference in differences analysis and interrupted time series analysis) is used to examine the complex relationships between sociodemographic factors, public health message, the free vaccination initiative, and vaccination uptake patterns.
Outcomes: This study is to identify specific sociodemographic groups within Wide Bay that may experience disparities in influenza vaccination rates. Additionally, it quantifies the impact of Public health initiative on overall uptake, providing crucial insights for future policy decisions.
Future Actions: The results inform evidence-based public health campaigns and funding strategies aimed at improving influenza vaccination uptake. These initiatives will prioritize addressing identified barriers to immunization, ensuring equitable access, and will critically consider the effectiveness of targeted or broader free vaccination programs in the pursuit of optimal public health outcomes.

Factors affecting routine childhood vaccine uptake in the Philippines: a qualitative study

Dr Jessica Kaufman[1,2], Prof Soledad Natalia Dalisay[3], A/Prof Madilene Landicho[3], Mr Yoshiki Fujimori[4], A/Prof Maria Margarita Lota[4], A/Prof Paulyn Jean Claro[4], Prof Evalyn Roxas[4], Dr Florian Vogt[5], Alvin Abeleda[4], Jan Zarlyn A. Rosuello[4], Prof Margie Danchin[1,2], Prof Vicente Belizario Jr.[4]
[1]Murdoch Children's Research Institute, [2]The University of Melbourne, [3]University of the Philippines Diliman, [4]University of the Philippines Manila, [5]The Kirby Institute, University of New South Wales

Context and aim: The Philippines has struggled to achieve high coverage of childhood vaccines, with the 95% coverage target unmet since 2014. This problem has been exacerbated since the pandemic, and the country now has one of the highest rates of zero-dose children globally. Supported by the Australian Government, this qualitative study aimed to determine the factors affecting uptake of childhood vaccines in three areas with low vaccine coverage in the Philippines.

Methods: We conducted caregiver focus group discussions to explore their views and experiences with childhood vaccination. We also conducted key informant interviews with vaccination program personnel to provide context on program implementation. Data were collected in English or Tagalog. We inductively thematically analysed transcripts to identify barriers and facilitators to vaccination. We then deductively grouped these according to the domains of the World Health Organization Behavioural and Social Drivers (BeSD) of Vaccination model: “Thinking and feeling”, “Social processes”, and “Practical issues”.

Findings: We conducted six focus groups with 143 primarily female caregivers. “Thinking and feeling” enablers of childhood vaccination included perceived benefits of vaccines and positive personal experiences with vaccination, while fear of side effects like fever was the primary barrier. For “social processes”, husbands and grandparents could be both enablers, if supportive of vaccination, or barriers, if they were not. Other influencers included community elders and leaders, Barangay Health Workers, and government officials. “Practical issues” facilitating vaccination included outreach visits and incentive programs. Conversely, concern about missing work, discontinuation of incentive programs, lack of vaccine supply, and transportation challenges were practical barriers.

We interviewed 57 key informants, who identified supply chain challenges like vaccine procurement and transport and the need for additional healthcare worker training and capacity building.

Future actions: Findings will be integrated with quantitative survey data to inform implementation and evaluation of capacity building interventions.

Improving immunisation access and coverage for refugee children at a tertiary hospital

Mrs Narelle Jenkins[1,2], Ms Michelle Ryan[1], Dr Georgia Paxton[1,2]
[1]The Royal Children's Hospital, [2]Murdoch Children's Research Institute

Background:
People arriving in Australia as refugees or seeking asylum face multiple barriers to accessing essential vaccines and healthcare services. Victorian data show low vaccination coverage in this cohort compared to the general population, resulting in increased susceptibility to vaccine preventable diseases.
The weekly Immigrant health clinic (IHC), provides comprehensive healthcare for refugee background and asylum seeker children and adolescents. Historically, the RCH Immunisation service reviewed immunisation records for IHC patients prior to clinics. Unfortunately, with increasing medical and appointment complexity, patients do not always receive their catch-up vaccines in the same visit.

Aim:
To determine if integrating an Immunisation Nurse in the IHC improves the number of children and adolescents receiving catch-up vaccines in the same visit.

Methods:
Immunisation nursing was integrated into IHC for 3 months (October-December 2023). All patients had their immunisation history reviewed and offered catch-up if required. Vaccinations were provided in IHC, with prospective recording of service delivery. This data was compared with a retrospective review of patients referred to the Immunisation Centre from IHC and received catch-up vaccines between July - September 2023.

Results:
Between October - December 2023, 312 patient records were reviewed by the integrated IHC Immunisation Nurse. 17% (n=52) of patients were identified as not up to date with the National Immunisation Program (NIP). All 52 patients received catch-up vaccines and a further 8 patients received non-NIP immunisations. In the earlier period, 294 records were reviewed, 30% (n=89) of patients were identified as not up to date and 18 patients received catch-up vaccines.

Discussion:
This model removed barriers to catch-up immunisation, including difficulties navigating the hospital, allowing immediate access to vaccination in routine clinical care, with 100% uptake. Including an Immunisation Nurse in IHC streamlines service provision and ensures timely access to catch-up vaccination.

436

Access to COVID-19 antivirals and outcomes of infections in disadvantaged groups

Dr Lakshmi Manoharan[1], Ellie Robinson, Dr Daniel West, Dr David Lister, Dr Clare Looker, Professor Ben Cowie
[1]Victorian Department Of Health

The COVID-19 pandemic continues to impact human health globally through acute infections resulting in illness, hospitalisation, death, and broad social and economic impacts. Older people, those living with underlying conditions, and people with disabilities are at greater risk of severe outcomes. Those at greatest risk of severe disease are eligible to receive COVID-19 antiviral therapies. However, with increasing barriers to primary care, and previous evidence of inequity in outcomes of COVID-19 infection, it remains uncertain whether these medications – which save lives and also significantly reduce hospital pressure – are provided equitably to those who need them.

Methods

We analysed Person Level Integration Data Asset linked data sets including Pharmaceutical Benefits Scheme and 2021 Census data, examining antiviral access for Victorians aged 70 years and over who were not aged care residents. Cumulative population dispensation rates for Molnupiravir and Nirmatrelvir/Ritonavir were calculated across Index of Relative Social Disadvantage (IRSD) deciles and culturally and linguistically diverse (CALD) status during the period 1 January to 30 June 2023.

Results

Those from CALD backgrounds are less likely to receive antiviral therapy than those from non-CALD backgrounds, regardless of socioeconomic disadvantage. Those in the least disadvantaged socioeconomic decile were 1.49 and 1.45 times more likely to have a COVID-19 antiviral dispensed than those in the most disadvantaged decile for CALD and non-CALD groups, respectively.
As socioeconomic disadvantage increases, so does the rate of severe outcomes. For both the CALD and non-CALD groups, those in the most disadvantaged IRSD decile were 1.88 times (CALD) and 1.68 times (non-CALD) more likely to be hospitalised with COVID-19 or be reported as a COVID-19 death than the least disadvantaged group.

Conclusion

Equitable access to COVID-19 antiviral treatments for all older Victorians is a public health imperative. The observed disparities in uptake and outcomes call for an informed response that includes policy adjustments, targeted outreach, and the removal of systemic barriers to care.

Applying the BeSD framework to identify under-immunised children in Solomon Islands

Ms Chelsea Taylor[1], Dr Catherine King[2], Mr Ben Sanderson[1], Mrs Jenniffer Anga[3], Mrs Gremah Jilini[3], Dr Stefanie Vaccher[1]
[1]The Burnet Institute, [2]Sydney School of Public Health, Faculty of Medicine and Health, The University of Sydney, [3]Ministry of Health and Medical Services

Context
COVID-19 led to increased un(der)-immunised children globally, as resources were diverted to mitigate impacts of the pandemic. Solomon Islands' immunisation coverage dropped below pre-pandemic rates in 2022. In response, there is a need for research that identifies context-specific determinants to routine immunisation uptake. The World Health Organization (WHO) Behavioural and Social Drivers of Vaccination (BeSD) tools were developed to help immunisation program managers and researchers understand what drives vaccine uptake.

Aim
This project explored the applicability of WHO's BeSD tools in identifying barriers to immunisation uptake amongst un(der)-immunised children in the Solomon Islands.

Process
The BeSD tools were translated into Solomons Pidgin. Cognitive interviews and piloting were completed to test contextual understanding of the questions with the target populations. Modifications to the tools were made as required.

Stakeholder interviews, using the BeSD tools, were conducted with caregivers, community leaders, healthcare workers, and program managers in rural and urban areas in October 2023. The BeSD caregiver survey was additionally administered to caregiver participants. Interviews were facilitated by local researchers, in collaboration with the research team.

Analysis and Outcomes
Interviews were coded using a framework analysis approach. Barriers identified included access difficulties, language barriers between healthcare workers and caregivers, and opportunity costs associated with clinic attendance. Descriptive analyses of caregiver survey data indicated that caregivers thought vaccines were safe and important for children's health, but they faced access-related barriers in getting their child immunised.

These findings will inform the development of an adapted context-specific tool that can be used to identify key facilitators and barriers impacting immunisation uptake among un(der)-immunised children, with testing to be undertaken in the first half of 2024.

Pro-equity strategies to improve vaccination coverage amongst priority groups that are unvaccinated

Miss Adeline Tinessia[1], Mr Carlo Lorenzo[1], Dr Majdi Sabahelzain[1], Dr Ibrahin Dadari[2], Dr Saman Khalatbari-Soltani[1], Dr Praveena Gunaratnam[3], Dr Soumyadeep Bhaumik[4], Dr Catherine King[1], Associate Professor Meru Sheel[1]
[1]University Of Sydney, [2]UNICEF, [3]Clinton Health Access Initiative, [4]The George Institute

Background: The Immunization Agenda 2030 emphasises the importance of achieving "coverage and equity" to ensure universal access to full immunisation, irrespective of geographical location, age, socioeconomic position, or gender-related barriers. Existing health inequities can exacerbate challenges in vaccinating certain priority groups. No review of peer-reviewed articles and other grey literature so far examined existing strategies that are being used to promote vaccine equity in priority groups . This systematic review examines existing published strategies that are used to promote vaccine equity or improve vaccination uptake, coverage, and timeliness among these priority groups.

Methods: We reviewed OVID MEDLINE, OVID EMBASE, OVID PsycINFO, Scopus from 31st of July 2023 to 2nd of August 2023. Search targeted key groups of populations based on gender, migration, disability, urban or rural residents and ethnic minorities. Outcome was focussed on enhanced vaccine uptake, coverage, and/or timeliness of vaccination and focus on at least one of these priority groups. Descriptive statistics or formal narrative synthesis will be used to analyse the data. The review and results will be finalised by 31st of May 2024.

Results: The search yielded 16,592 records. Independent and blinded title and abstract screening were conducted on 7,969 records, and a full-text review was conducted on 162 records. A total of 52 papers were included in the review. Preliminary findings suggest the utilisation of diverse strategies for specific demographic cohorts. Furthermore, these strategies exhibit variation contingent upon the economic status of a country.

Conclusion: The review assesses existing pro-equity strategies used to address vaccination inequities among priority groups. However, the existing strategies demonstrate a constraint in their adaptability to address the needs of priority groups. The findings suggest the need for greater targeted and tailored strategies to improve vaccination amongst populations not always prioritised during programme planning.

Community connectors, leaders, and navigators: supporting engagement amongst multicultural communities during pandemics

Associate Professor Holly Seale[1]
[1]University of New South Wales

Context and aim: Communities must be effectively engaged to encourage participation in pandemic containment activities (i.e., testing, physical distancing, vaccination). It is critical to work with volunteers ('community connectors') with different skills and capabilities who have diverse ethnic, linguistic, and religious backgrounds. However, during pandemics, we currently assume that all communities have people who can act as community connectors or leaders or that communities want to receive information via those networks. Strengthening our understanding regarding the communication networks that are most useful and trusted will support stronger and more timely responses in the future.

Methods: This presentation will draw on the results from a cross-sectional survey conducted in NSW, QLD and VIC, through which we aimed to examine the role of community/faith and other natural leaders in promoting community engagement with recommended pandemic mitigation strategies.

Findings: A total of 669 participants completed the survey, most of whom were born outside of Australia (543/572, 94.9%) and had low-moderate trust in sources to provide relevant information during the COVID-19 pandemic.
Multivariable analysis indicated that feeling a sense of belonging with the community, increased frequency of asking for help or information from community organisations, attending events more often organized by community organisations and trust in community groups linked to culture or ethnicity were all significant predictors of increased trust in community organisations. Similarly, trust in community groups linked to culture or ethnicity, increased interaction with community leaders, being able to rely on community members during emergencies, increased levels of comfortability in talking with community leaders, receiving information on economic support and financial assistance programs, and finally likelihood of asking for help or information from a community leader was linked to increased levels of trust with community leaders.

These findings and the outcomes from focus groups with multicultural communities will be used during co-design workshops to support the development of a new intervention to enhance community-led engagement strategies in future pandemics and other health crises.

NSW Refugee Health Service - 10 years of disease detection

Dr Mitchell Smith[1]
[1]NSW Refugee Health Service

In 1999 the NSW Refugee Health Service was born, funded by NSW Health. This brought existing programs into a single entity and was an opportunity for a person-centred approach to disease detection and prevention, and promotion of health in newly arrived refugee settlers.
For ten years, pathology has been offered to all those attending the service for the first time. Nurses conduct health assessments to identify needs including disease risk factors, and provide health education. Additionally, the service's health promotion programs encompass women's health, cancer screening, nutrition, immunisation, oral health, tobacco cessation, and orientation to the NSW health system.
This presentation will include the results of 10 years of screening tests performed on newly arrived refugees seen by the service, aimed at detecting chronic infections such as hepatitis B and strongyloidiasis, and certain non-communicable conditions.
We largely followed the Australian national guidelines for screening of refugees. Even though our service does not repeat tests done overseas as part of the Immigration Medical Exam, infectious disease rates on arrival are very low.
Commonwealth policies have recently changed to increase overseas screening of refugee settlers for certain blood-borne viruses. In addition, presumptive therapy for a number of gut parasites is now offered as well.
Implications of these and other changes will be discussed.

Reducing the Impact of Chronic Hepatitis-B in Seasonal Workers in Regional Queensland

Dr Haylee Fox[1], Dr William Mude[1], Dr Robyn Preston[1], Dr Geraldine Vaughn[1], Associate Professor Catherine O'Mullan[1]
[1]Central Queensland University

Background

In 2008, the Australian Government introduced the Seasonal Worker Program (SWP) to address two main objectives: meeting the seasonal demand for low-skilled labour in industries such as horticulture and promoting economic development in Pacific Island countries. This program allows workers from nine Pacific Island nations to work in Australia for up to 9 months, with Queensland having the highest number of seasonal workers among all of the Australian states and territories.

The Pacific region, where seasonal workers originate, has a high prevalence of Chronic Hepatitis B (CHB). This means that many seasonal workers who have CHB will need to access health services for their CHB management whilst living and working in Australia. However, little understanding exists of the experiences of seasonal workers living with CHB in regional Queensland accessing medical treatment and care. Therefore, this project addresses the following aims.

Aims

1. To better understand how seasonal workers with CHB in regional Queensland access and use health care and services.
2. To better understand how hepatitis B care and service providers support seasonal workers.
3. To identify equity gaps in hepatitis B policy in Australia.

Methods

As part of a sequential mixed methods design, this phase of the project involved interviewing seasonal workers and healthcare and service providers in regional Queensland via Zoom and face-to-face. The interviews lasted between 45-60 minutes and the data were analysed thematically. Further, we systematically reviewed existing health policies in Australia on blood-borne viruses and sexually transmitted infections.

Results

From conducting interviews with service providers and seasonal workers, we identified barriers to accessing health services, including private health insurance and meeting associated out-of-pocket costs, a lack of in-language services, a lack of understanding of Australia's health system, limited coordinated services, and cultural influences. Enablers of effective healthcare provision for seasonal workers were found to be individual and service-based. Despite these challenges faced by this population who have increased health care requirements, existing CHB policies at both the federal and state government levels in Australia generally do not address equity concerns for seasonal workers who are ineligible for Medicare.

Immunisation Inequities: Vaccination Status of Culturally and Linguistically Diverse Paediatric Inpatients

Dr Matthew Roughan[1], Tracey Vidler[1], Justin Scott[2], Dr Sophie Wen[3], Dr Jan Cullen[4], Dr Satyamurthy Anuradha[1]
[1]Metro South Public Health Unit, [2]QCIF Bioinformatics, Institute for Molecular Bioscience, The University of Queensland, [3]Queensland Specialist Immunisation Service, Children's Health Queensland, [4]Logan Hospital, Metro South Hospital and Health Service

Context and aim:
Falling childhood immunisation rates remain a significant public health issue. Culturally and linguistically diverse (CALD) communities face systemic barriers in accessing preventative healthcare including immunisation. However quantitative coverage data for ethnic minority communities is lacking for routine Australian National Immunisation Program (NIP) vaccines. Hospital inpatient settings represent niche access to this vulnerable section of the community and need to be used more effectively to improve vaccination rates.
This study aims to assess the vaccination rate of paediatric inpatients in Logan Hospital, Queensland. This hospital serves a population with greater proportions of people born overseas and who speak a language other than English compared to Queensland overall.

Methods and findings:
A three-month period of admission data for patients aged six months to 17 years was reviewed and immunisation status was assessed using the Australian Immunisation Register (AIR). Demographic risk factors for incomplete vaccination in this population were analysed. Among the 427 individuals included, 87.8% were up to date with their vaccinations. This fell to 79.2% for those from a CALD background. Those born overseas were found to be significantly more likely to be incompletely vaccinated compared to those born in Australia.

Outcomes and future actions:
The disproportionate representation of children from CALD backgrounds in the incompletely vaccinated cohort is concerning. It highlights the need for a multifaceted plan to address this issue. This plan should include systematic checking of AIR data for all paediatric inpatients by hospital clinicians, provision of tailored, culturally appropriate immunisation resources to inpatients, and establishment of opportunistic immunisation programs in hospital settings.

3A -
Immunisation in our region, Great Hall 4 - Plenary, June 11, 2024, 15:30 - 17:00

385

Immunisation policy decision-making in the Pacific Islands: current processes and future directions

Dr Sarah Sheridan[1], Ms Wedyan Meshreky[1], A/Prof Meru Sheel[2], Dr Ilisapeci Vereti-Tuibeqa[3], Dr George 'Aho[4], Dr Md Hossain[5], Dr Mesfin Senbete[6], Ms Karina Stamef[1], Ms Kylie Jenkins[1], Mr Patrick Cashman[1], Prof Kristine Macartney[1], on behalf of Participants of the Pacific Island Inter-regional consultation and workshop on NITAG Support (all names to be listed as authors upon acceptance of abstract)[7]
[1]National Centre for Immunisation Research and Surviellance, [2]Sydney School of Public Health, Faculty of Medicine and Health, University of Sydney, [3]Colonial War Memorial Hospital, [4]Vaiola Hospital, [5]World Health Organization Division of Pacific Technical Support, [6]UNICEF Pacific, [7]Various Pacific Island Countries and Areas

Background
The 21 Pacific Island Countries and Areas (PICs) have diverse yet share commonalities, including small populations with limited capacity to form National Immunisation Technical Advisory Groups (NITAGs). A needs assessment and scoping activity was undertaken to understand immunisation decision-making processes in the Pacific and identify opportunities for strengthening these.

Methods
Following a desk review and individual PIC consultation, a Pacific Inter-regional workshop was held in Nadi, Fiji in February 2024 to identify ways to strengthen immunisation policy-making. Desktop review and consultation findings were presented to facilitate workshop discussion.

Findings and outcomes
Representatives from most of the 17 participating PICs considered that having respective country NITAGs meeting WHO criteria of independence and extensive range of expertise is unfeasible. However, some larger PICs have technical advisory groups (TAGs) functioning similarly to a NITAG in provision of immunisation recommendations to Ministries of Health. While not involved in earlier consultations, Papua New Guinea joined the workshop and is considering establishing a NITAG.

Challenges for immunisation policy decision-making identified by PICs included limitations in local immunisation and disease data; technical capacity and availability of locally-contextualised technical support and research; systematic decision-making processes; and opportunities for sharing experiences on immunisation policy and programs between PICs.

To address challenges, workshop participants considered three potential Pacific regional structures: a Pacific Immunisation TAG (PITAG); a Pacific Technical Support Hub; and/or a Pacific Immunisation Network. The potential value of each complementary structure was recognised. Workshop participants expressed interest in progressing a proposal for a Pacific-owned and led PITAG, considering its likely benefits. These include providing a forum to: develop evidence-based Pacific-tailored guidance on shared priorities for immunisation system strengthening and vaccine-preventable disease control; strengthen Pacific technical capacity on immunisation; advocate for Pacific priorities and research; and provide a network for shared learning. Next steps to progress the workshop outcomes will occur in coming months.

COVID-19 vaccination in the Philippines and its social determinants

Dr Paulyn Jean Acacio-Claro[1], Dr Evalyn Roxas[1], Dr Maria Margarita Lota[1], Mr Alvin Abeleda[1], Dr Soledad Natalia Dalisay[2], Asst. Prof. Madilene Landicho[2], Mr Yoshiki Fujimori[1], Ms Jan Zarlyn Rosuello[1], Dr Margie Danchin[3], Dr Jessica Kaufman[4], Dr Florian Vogt[5], Dr Vicente Belizario, Jr.[1]
[1]College of Public Health, University of the Philippines Manila, [2]College of Social Sciences and Philosophy, University of the Philippines Diliman, [3]University of Melbourne, [4]Murdoch Children's Research Institute, [5]Kirby Institute, University of New South Wales

Most research in the Philippines studied social determinants of COVID-19 vaccine intention or hesitancy, instead of uptake. The threat of future pandemics necessitates local evidence to inform policies and programs. This study estimated the coverage from 2021 to early 2023 using data from the Department of Health (DOH). A survey of 775 respondents, mostly females aged 18 years and above, identified social determinants and enablers and barriers of COVID-19 vaccination.

The WHO target coverage of 70% for COVID 19 vaccination was achieved at the regional level; some sites had lower than 70% coverage rates at the municipal level. Survey showed that 72% completed COVID-19 primary series. Top reasons for vaccination were protection of self, family, and community (93.0%) and government sanctions and restrictions (40.6%).Top sources of information were DOH announcements (65%), mass media outlets (59%), and government officials/ healthcare workers (46%). Primary reason for non-vaccination was distrust in vaccine safety including fear of side effects (81.4%). Multivariate logistic regression analyses showed that older age [30-45 years (OR=2.23; 95% CI 1.49-3.35), 46-59 years (OR=2.84; 95% CI 1.36-5.95)], higher education [secondary level (OR=2.25; 95% CI 1.47-3.43), tertiary level (OR=4.93; 95% CI 2.37-19.27)], and employment (OR=1.99; 95% CI 1.24-3.19) were enablers of vaccination. Other enablers were confidence on vaccine safety (OR=1.92; 95% CI 1.16-3.18) and effectiveness (OR=2.23; 95% CI 1.38-3.63), and satisfaction with COVID-19 efforts (OR=2.39; 95% CI 1.14-4.06). Disagreement with restrictions (OR=0.31; 95% CI 0.18-0.55) was a barrier for vaccination.

Results suggest that younger, less educated and unemployed adults may be targeted for health promotion and education activities. Key messages should emphasize vaccine safety and effectiveness. Continuing technical, logistical, and policy support by social institutions may increase public trust on vaccines and vaccination uptake for COVID-19 and other health programs.

Adapting, implementing, and evaluating a community engagement program promoting vaccination in Tonga

Ms Yasmin Mohamed[1,2], Dr Jessica Kaufman[1,2], Ms Isabella Overmars[1], Dr 'Ofa Tukia[3], Sister Afu Tei[3], Dr Emma Luey[4], Dr 'Ungatea Kata[4], Ms 'Asinate Toluta'u[4], Ms Meleane Lomu[4], Ms Luisa Vodonaivalu[1], Professor Julie Leask[5], Associate Professor Holly Seale[6], Ms Kylie Jenkins[1], Mr Kshitij Joshi[7], Mr Halitesh Datt[7], Dr Reynold O'fanoa[3], Ms Sonya Sagan[7], Dr Michelle Dynes[8], Associate Professor Jane Frawley[9], Professor Margie Danchin[1,2,10]
[1]Murdoch Children's Research Institute, [2]Department of Paediatrics, The University of Melbourne, [3]Tonga Ministry of Health, [4]Tupou Tertiary Institute, [5]The University of Sydney, Faculty of Medicine and Health, School of Public Health, [6]School of Population Health, University of New South Wales, Kensingto, [7]UNICEF Pacific, [8]UNICEF East Asia and Pacific, [9]School of Public Health, University of Technology Sydney, [10]Royal Children's Hospital

Background
While Tonga has high routine childhood vaccine coverage, human papillomavirus (HPV) vaccine uptake has been slow. Promising strategies to improve vaccine acceptance include community engagement approaches like the Vaccine Champions program which trains health and community leaders to advocate for vaccines and address misinformation. We adapted, implemented, and evaluated the Vaccine Champions program in Tonga with the Ministry of Health, UNICEF, and Tupou Tertiary Institute.

Methods
A co-design workshop with stakeholders from diverse government and non-government organisations established program focus and features. We explored barriers and facilitators of HPV vaccine uptake through community discussions. The Vaccine Champions program was implemented and evaluated from August to December 2023. We assessed reach, effectiveness, adoption, implementation, and maintenance through surveys and interviews with stakeholders, Vaccine Champions, and community members.

Results
Co-design participants (n=29) agreed the program should focus on HPV vaccines and identified key barriers and potential Champions. Nine focus groups with nurses (n=7), immunisation staff (n=5), teachers (n=15), and parents (n=32) highlighted limited vaccine knowledge and concerns about it being unsafe, causing infertility or encouraging promiscuity. We used these findings to adapt program training materials and develop a vaccine flipchart.

We trained 27 Champions including teachers, nurses, local officials, and representatives from disability, women's, youth, and sports groups. Most were female (19/27; 70%), from Tongatapu (19/27; 70%), and had no health training (25/27; 93%). Training increased Champions' trust in HPV vaccines and confidence to communicate about them. Champions ran 57 vaccine community information sessions, reaching over 1000 community members. Community attendee intention to vaccinate their daughters against HPV increased from 70% to 88%.

Conclusions
The Vaccine Champions program is a promising community engagement approach to increase HPV vaccine acceptance and support the global campaign for cervical cancer elimination. Details of our adaptation, implementation and evaluation process can support localisation of this program elsewhere.

Determinants of measles severity in the 2019 epidemic in Aotearoa New Zealand

Dr Catherine Gilchrist[1], Dr Edwin Reynolds[2], Dr Alana Cavadino[1], Dr Anna Howe[3], Ms Victoria King[1], Dr Owen Sinclair[4], Dr Kuang-Chih Hsiao[1], Dr Jocelyn Neutze[5], Dame Associate Professor Teuila Percival[1], Dr Fiona Perelini[6], Associate Professor Rachel Webb[1], Associate Professor Emma Best[1]
[1]The University of Auckland, [2]Auckland Regional Public Health Service, [3]Stats NZ, [4]Te Whatu Ora - Waitematā, [5]Te Whatu Ora - Counties Manukau, [6]Starship Child Health

Background

Measles is a serious vaccine-preventable illness associated with severe disease, complications, and death. In 2019, Aotearoa New Zealand (NZ) experienced a measles outbreak with 2174 confirmed cases nationwide and reported high hospital presentation rates (35%). Most measles cases (79%) were in the greater Auckland region and notifications were highest in Pacific Peoples (281.0 per 100,000) and Māori (NZ indigenous, 65.5 per 100,000) compared to an overall notification rate of 45.0 per 100,000.

Design and Methods

This cross-sectional study included all laboratory-confirmed measles events in children and young adults aged 0-30 years and residing in the Auckland region during the 2019 NZ Measles epidemic (n=1488).

Preliminary Results

Young children under five years (n=494, 33%) and under-vaccinated young people aged 15-30 (n=851, 57%) represented most of the measles cases, highlighting poor vaccination rates as a major risk factor. Hospital presentations were common, with 589 (40%) cases aged 0-30 years presenting to hospital during measles illness with a median (interquartile range) length-of-stay of 10.0 (2.0, 72.0) hours. Thirteen (2%) of these required intensive care unit admission. While there were no deaths, severe complications occurred, including pneumonia, tracheitis, and second trimester pregnancy loss (2/14 pregnant women). Health inequity played a role in outcomes, with 43% Māori and 40% Pacific Peoples with measles requiring hospital care, compared to 25% of people non-Māori and non-Pacific ethnicities. Socioeconomic deprivation measures demonstrated 61% of cases were living in the most deprived quintile by area.

Conclusion

Low vaccination coverage in NZ (82.5% of two-year-olds fully vaccinated) increases the risk of future outbreaks and severe disease. Study analyses are in progress. We will further describe determinants of measles severity and the influence of vaccination coverage, viral genotype, and concurrent infections on outcomes.

Measles Rubella Supplementary Immunisation Activity Solomon Islands October 2023

Mrs Jennifer Anga[2], Mr Paddy Cashman[1], Dr Tonia Marquardt[1]
[1]NCIRS (National Centre for Immunisation Research and Surveillance), [2]Ministry of Health and Medical Services, Solomon Islands

Background: There have been no measles outbreaks in the Solomon Islands since 2014 when there were 9 measles deaths in the Solomon Islands. In 2023 a measles immunity gap over greater than one birth cohort had reemerged with MCV2 below 40% in the Solomon Islands. With an influx of international visitors with inherent potential measles incursion risk for the 2023 Pacific Games hosted in Honiara the Solomons Ministry of Health and Medical Services decided to conduct a Measles Rubella Supplementary Immunisation Program funded by DFAT prior to the games.
Methods: The target population was 75,000 children 6 months to 5 years of age widely dispersed, mostly in villages across the 9 island provinces and Honiara City Council. Children were offered oral vitamin A and one dose of supplementary MR vaccine without reference to immunisation records and without registering as a routine MR dose. The national EPI program coordinated microplanning in every province to ensure localised service delivery throughout the dispersed population serviced by 358 health care facilities. Solomons have a functional national cold chain system with UNICEF solar vaccine fridges in most facilities. Teams of Nurses, Health Promotion Officers, Cold Chain Officers and Community Leaders delivered and administered MR vaccine throughout the Solomon Islands. Routine Coverage Assessments (RCA) were conducted after the campaign and mop up programs initiated if required.
Outcome: The October 2023 Solomon Islands MR SIA was successful resulting in 71,449 (94.4%) children in the targeted age groups receiving a dose of vaccine and there were no cases of measles detected during or after the November 2023 Pacific Games.
Conclusion: MR SIA’s are an effective means of closing acute immunity gaps. However these campaigns are resource intensive. Strengthening of routine immunisation by primary care services is a more sustainable means of ensuring ongoing and sustained high immunity.

Evaluation of a vaccine knowledge and communication Training-of-Trainers program in Vietnam

Dr Jessica Kaufman[1,2], Miss Isabella Overmars[1], Miss Yasmin Mohamed[1,2], Miss Suzanna Vidmar[1], Prof Gregory Fox[3], Prof Nguyen Thu Anh[3,4], Dr Luong Tran Thi Tuyet[3], Ms Nguyen Anh Vu[3], Mr Chu Huu Trang[5], Mr Maharajan Muthu[5], Mr Shiva Shrestha[6], Prof Julie Leask[7], A/Prof Holly Seale[8], Prof Margie Danchin[1,2,9]
[1]Murdoch Children's Research Institute, [2]Department of Paediatrics, The University of Melbourne, [3]Woolcock Institute of Medical Research, [4]School of Public Health, University of Sydney, [5]United Nations Children's Fund (UNICEF), [6]National Centre for Immunisation Research and Surveillance, Sydney Children's Hospitals Network, [7]Susan Wakil School of Nursing and Midwifery, University of Sydney, [8]School of Population Health, University of New South Wales, [9]The Royal Children's Hospital

Context and aim: In 2022, Vietnam had one of the highest rates of zero-dose children, or children who received no routine vaccines. COVID-19 vaccine booster coverage was also sub-optimal. Supported by the Australian Government, we worked with in-country partners UNICEF and the Woolcock Institute to co-design and deliver a vaccine education and communication training program for health workers and community influencers in Vietnam to promote COVID-19 and routine immunisation.

Methods: The Vaccine Champions program was a multi-level Training-of-Trainers program. It was co-designed with Vietnamese stakeholders and pilot tested in 2022. The 2023 program comprised three levels. In Level 1, six Master Trainers with expertise in vaccination and/or communication trained Provincial Trainers, who were health or communication experts. In Level 2, the Provincial Trainers trained community influencers to be Vaccine Champions. In Level 3, the Vaccine Champions delivered vaccine information and discussion sessions to their local communes.

The RE-AIM framework evaluation measured program reach, effectiveness, adoption, implementation, and maintenance. Mixed methods data were collected through interviews, surveys, and field notes. Primary outcomes included Provincial Trainer and Vaccine Champion knowledge, communication self-efficacy, trust in vaccines, program satisfaction, and community members' intention to vaccinate.

Findings: We trained 143 Provincial Trainers who then trained 318 Vaccine Champions. Champions included village health workers, representatives from women's unions and youth unions, pharmacists and hamlet heads. Champions conducted 192 community information sessions, reaching 4047 community members. Training increased both Provincial Trainers' and Champions' confidence to communicate about vaccines and trust in vaccines. Information sessions increased community members' confidence in vaccines and intention to receive future COVID-19 vaccine doses.

Future actions: A multi-level vaccine communication training program is a feasible and effective approach to promote vaccine confidence in Vietnam. Government support and engagement are critical for sustainability. Hybrid implementation-effectiveness trials are necessary now to build the evidence base.

Enhancing the Capacity and Functionality of Vietnam's NITAG: Design and baseline assessments

Dr. Luong TT Tran[1], Ms Catherine Tran[2], Dr Melinda Chen[2], Dr. Hanh TM Nguyen[3], Ms. Anh NN Vu[1], Dr. Van TC Ha[3], Dr. Ketaki Sharma[2], Prof. Thu-Anh Nguyen[1,4], Prof. / Dr. Kristine Macartney[2,4]
[1]The University Sydney Vietnam Institute, [2]National Centre for Immunisation Research and Surveillance, [3]General Department of Preventative Medicine, Ministry of Health, [4]Faculty of Medicine and Health, The University of Sydney

Context:
Vietnam's National Immunisation Technical Advisory Group (NITAG) serves as a critical technical body for the Vietnam Ministry of Health (MoH) in vaccine policy formulation. As the MoH plans to have integrated four new vaccines – Rotavirus, PCV, HPV, and Influenza – into the Expanded Program on Immunisation by 2030, reinforcing the NITAG's capabilities is paramount.

Aim:
The overarching aim of the project is to strengthen the governance and operations of Vietnam NITAG in 2023-2025. This presentation aims to introduce the design approach, baseline assessment results on the function and needs of Vietnam NITAG, and the proposed capacity building package.

Process & Analysis:
This effort commenced with interviews with 5 key informants, including the Vietnam NITAG Chair and secretariat, to understand strengths and opportunities for improvement. The needs for capacity building were assessed via survey of 13 NITAG members. A baseline NITAG Maturity Assessment was conducted, and will be repeated at the project's conclusion.

We used a twinning approach to design the capacity building package. The core of the twinning approach involves co-design and continuous engagement, interactive workshops, ongoing remote support and mentoring, and adaptive to the evolving needs and goals of the NITAG.

Outcome:
Vietnam's NITAG has a strong voice in advising the MoH on immunization strategies and diverse membership. Training needs such as standard evidence to recommendation process, data synthesis, vaccine safety & efficacy, and cost-effectiveness analysis were identified, along with governance and operational improvement opportunities in member participation, data availability, and financing model.

The key components of the NITAG strengthening package are: 1) Technical workshops on evidence assessment for vaccine policy making, and identified key topics such as new vaccine introductions; 2) Study visits to Australia; 3) Remote support on technical topics; 4) Regular meetings for governance and operational improvement; 5) Facilitating attending international conferences to connect with regional and international NITAG support and research network.

Community co-design of infant swaddle blankets: Promotng immunisation in the Solomon Islands

Ms Chelsea Taylor[1], Mrs Tanya Perrin[2], Mrs Jenniffer Anga[3], Dr Stefanie Vaccher[1]
[1]Burnet Institute, [2]National Centre for Immunisation Research and Surveillance, [3]Ministry of Health and Medical Services,

Context
In the Solomon Islands, the COVID-19 pandemic significantly impacted delivery of vaccine programs, resulting in reduced coverage of routine immunisations for children under five years. A series of activities were undertaken to identify zero-dose (no Pentavalent-1 vaccine) children and to understand factors impacting under-immunised and zero-dose children. Key findings from stakeholder consultations highlighted several reasons why children have not been vaccinated, including a generalised lack of awareness amongst parents about the importance of immunisation and the schedule of childhood vaccines.

Aim
Infant swaddle blankets have previously been used as an incentive for parents but are rarely combined with educational messages. We sought to co-design blankets with community members to serve as a visual reminder for parents with low literacy and promote the importance of timely immunisation.

Process
Four provinces with the highest number of unvaccinated children were identified as pilot sites. Stakeholder consultations were undertaken to develop a visually appealing and informative design to print on blankets, using images to reflect the national immunisation schedule. The blankets were pre-tested through a series of informal interviews with pregnant and postpartum women to ensure health messaging was understood. Infant swaddle blankets were printed and disseminated to provinces via the SafeMotherhood program, with the aim to distribute one blanket to each birthing mother in four targeted provinces in 2024 (12,500 blankets in total).

Analysis & Outcomes
Interviews and focus groups will be undertaken with health care workers, village health committees and caregivers in the first half of 2024. Initial evaluation of the program implementation phase will describe the extent to which health messages communicated on the swaddle blankets were both understood by parents and influenced parental propensity to return for their child’s scheduled vaccine visits.

Feasibility, safety, and impact of probiotics on vaccine immunity in PNG infants

Doctor Madeline Ong[1], William Pomat[3], Anita van den Biggelaar[1], Rebecca Ford[3], Andrew Greenhill[4], Joycelyn Sapura[3], Celestine Aho[3], Birunu Nivio[3], Amelia Koata[3], Mary Dreyam[3], Tilda Orami[3], Wendy Kirarock[3], Peter Richmond[1,2]
[1]Telethon Kids Institute, [2]School of Medicine, University of Western Australia, [3]Papua New Guinea Institute of Medical Research, [4]Institute of Innovation, Science and Sustainability, Federation University

INTRODUCTION
Newborns receiving probiotics for one week after birth may reduce episodes of infection. This double-blinded RCT investigates the safety, feasibility and impact on gut colonisation and vaccine immune responses of specific probiotic supplementation given to newborns in Papua New Guinea (PNG).

METHODS
244 healthy newborn infants were enrolled <72 hours after birth and randomised 1:1:1 to receive Bifidobacterium infantis, Lactobacillus plantarum, or placebo for 7 days. Routine EPI vaccines, including DTwP-HepB-Hib and PCV13 were administered at 1-2-3 months. Rectal swabs to assess gut colonisation and serum to measure vaccine IgG antibody responses were collected.

We present the preliminary safety data and antibody titers pre- and post-vaccination (n=216 infants) and probiotic colonisation data (n=60 infants) across all groups in the first 6 months.

RESULTS
The three infant groups were similar demographically with a median birthweight of 3300g (IQR:3000-3600).
Probiotics were well-tolerated and 89.3% of participants completed all doses. The most common reported infection was moderate pneumonia (L. plantarum n=8, B. infantis n=7, placebo n=6). There were no reported treatment related serious adverse events.

PCV13 specific IgG was generally lower in the L. plantarum group for all serotypes (only significant for 9V, $p<0.001$). Immune responses towards pertussis antigens was generally higher in the B. infantis infants, although not statistically significant.

All treatment groups had high B. infantis colonisation rates for the study duration, suggesting high colonisation rates in the community. B. infantis treatment produced the highest colonisation rate of 88% at 2-4 weeks. L. plantarum treatment produced transient colonisation rates (33-37%) between 1-2 weeks and was infrequent in the other groups.

CONCLUSION
Probiotics supplementation is safe and well-tolerated among newborns in PNG. However, L. planatrum only resulted in low-level transient colonisation. In this preliminary analysis, neither probiotic treatment significantly increased immune responses to EPI vaccines.

Strengthening national immunisation provider education systems in several Indo-Pacific country settings

Ms April Murphy, Dr Ann Burton, Dr Rachel Devi[2]
[1]National Centre for Immunisation Research and Surveillance (NCIRS), [2]The University of Sydney, The Kirby Institute, University of New South Wales

The immunisation workforce is pivotal in reducing vaccine preventable disease, optimising coverage engaging communities, and protecting health security. Capacity strengthening is an essential component of national immunisation programs; however, training alone is not sufficient to build and maintain a well-functioning workforce and a continuous cycle of a range of learning options is needed.

The aim is to support the development of country-owned sustainable continuous immunisation provider education (CIPE) in several Indo-Pacific countries that will be informed by sound training needs assessments (TNA) specific to the immunisation workforce.

We undertook desktop reviews of immunisation service delivery, policies, workforce education and professional development, assessment of training needs, application of TNA tools and learnings from different training modalities across three middle-income countries. These were supplemented by interviews with key in-country and international stakeholders, including ministries of health, NGOs, and academic partners.

A review of the literature to date demonstrated that there are no TNA tools containing standardised competencies for the immunisation workforce, adaptable by country and cadre. We identified shortcomings in current training modalities. For example, the reliance on face-to-face training is costly and has limited coverage. Furthermore, the quality of training in the widely employed cascade model is variable and may not be achieving desired learning outcomes. Supportive supervision, flexible and accessible learning platforms, recognition of achievements, and the provision of job aids have been successful in engaging and enabling the immunisation workforce and promoting staff motivation and retention.

We will develop TNA tools specific to the immunisation workforce. The Hennessy Hicks Training Needs Analysis questionnaire will be adapted to include the immunisation competencies for different health system levels including community level. The findings will be used to guide the development of country-owned and specific sustainable learning for the immunisation workforce.

3B -
Enteric diseases, Great Hall 3 - Break out, June 11, 2024, 15:30 - 17:00

261

Commonly reported foods amongst cases of invasive listeriosis in Australia, 2010-2022

Ms Elaine Ung[1,2], Ms Stacey Kane[2], Ms Rose Wright[2], Ms Dharshi Thangarajah[2], Md Rezanur Rahaman[1]
[1]Australian National University, [2]Australian Government Department of Health and Aged Care

Background
Invasive listeriosis disproportionately affects people with increased susceptibility, including pregnant women and people who are immunocompromised. Our objectives were to identify commonly reported foods amongst cases of invasive listeriosis to inform more targeted public health messaging around prevention of listeriosis.

Methods
Invasive listeriosis case information was obtained from the National Enhanced Listeriosis Surveillance System (NELSS) (1 January 2010 – 31 December 2022). Analysis was conducted using descriptive statistics and frequency distributions. Frequency and percentages were calculated for common 'risk' foods reported by: age; sex; pregnancy status; immunocompromised status; Indigenous status; culturally and linguistically diverse background; and prior knowledge about listeriosis.

Results
840 cases recorded in NELSS were included (427 female, 413 male). Median age of cases was 71 years (range 0–98 years). Of groups at higher risk of listeriosis, 78 cases (9%) were pregnancy-associated; 594 (71%) reported receiving/having received treatment within 4 weeks prior to illness, and 718 (86%) reported a pre-existing illness/condition.

Case reported food consumption showed decreasing trends of consuming foods associated with listeriosis outbreaks in the years following the event, including brie/camembert and rockmelon following respective outbreaks in 2012 and 2018. Smoked salmon was implicated in a listeriosis outbreak in 2019, however, reported consumption amongst cases remained steady since.

Analysis of other commonly reported foods such as deli meats showed consumption was highest among cases with pre-existing illnesses/conditions compared to pregnancy-associated cases. When asked if prior to illness cases received information to avoid certain foods to prevent listeriosis, most cases that responded reported 'no' (447/542, 82%).

Conclusions
This study describes the relationship between reported food exposures for listeriosis and certain at-risk populations. While not possible to provide comprehensive food safety information to all groups at risk of listeriosis as they are not homogenous, there is an opportunity to strengthen and target public health messaging on listeriosis.

Comprehensive insights into Australian Shigella to inform national genomic surveillance of shigellosis

Dr Jessica Webb[1,3], Dr Alireza Zahedi[7], Dr Jake Lacey[1,2], Dr Arshdeep Kaur[4], Dr Patiyan Andersson[1,2], Dr Michael Payne[9], Dr Danielle Ingle[1], Dr Mitchell Sullivan[7], Dr Kristy Horan[1,2], Dr Eby Sim[5,6], Dimitrios Menouhos[8], Rob Baird[8], Karina Kennedy[10], Louise Cooley[11], David Speers[12], Lex Leong[4], Vitali Sintchenko[5,6], Amy Jennison[7], Benjamin Howden[1,2,3]
[1]Department of Microbiology and Immunology at The Peter Doherty Institute for Infection and Immunity, [2]Microbiological Diagnostic Unit Public Health Laboratory, at The Peter Doherty Institute for Infection and Immunity, [3]Centre for Pathogen Genomics, Department of Microbiology and Immunology, University of Melbourne, [4]SA Pathology, [5]Sydney Institute for Infectious Diseases, The University of Sydney, [6]Centre for Infectious Diseases and Microbiology-Public Health, Institute of Clinical Pathology and Medical Research, NSW Health Pathology, [7]Public Health Microbiology, Forensic and Scientific Services, Queensland Department of Health, [8]Territory Pathology, Royal Darwin Hospital, [9]School of Biotechnology and Biomolecular Sciences, University of New South Wales, [10]Department of Clinical Microbiology and Infectious Diseases, Canberra Health Services, Australian National University Medical School, [11]Department of Microbiology and Infectious Diseases, Royal Hobart Hospital, Tasmanian School of Medicine, College of Health and Medicine, University of Tasmania, [12]Department of Microbiology, PathWest Laboratory Medicine

Shigellosis is a leading cause globally of diarrheal disease with low-to middle income countries experiencing greatest burden of disease. Genomics has transformed our understanding of shigellosis epidemiology, antimicrobial resistance (AMR) and transmission. To date, Australian case reports using genomics have been at a jurisdictional level. We present the first national assessment of shigellosis genomics in Australia, led by the Australian pathogen genomics program to inform prospective national Shigella surveillance.

We collated a comprehensive Australian Shigella dataset from jurisdictional public health laboratories (PHLs) involving: 8-years (retrospective: 2025-2022) and 12-months (prospective snapshot in 2023) of surveillance genomes and metadata. Foundations of a Shigella genomic surveillance system were established on AusTrakka, enabling jurisdictional PHLs to contribute data securely. Genomic analysis was undertaken to identify species, clusters, and genetic AMR towards clinically relevant drugs.

A total of ~4,400 Shigella genomes were contributed from all Australian jurisdictions from 2015-2023, with Shigella sonnei and Shigella flexneri dominant, and Shigella boydeii and Shigella dysenteriae rare. We observed 40 Shigella serotypes which differed between eastern and northern jurisdictions. We reveal increasing numbers of multi-drug resistant (MDR) and extensively drug resistant lineages spanning jurisdictions. This was most notable for S. sonnei where lineages were hierarchically defined using single nucleotide polymorphisms. In the total dataset, 20% of Shigella were genetically MDR and a high proportion carried resistance mechanisms to the extended spectrum beta lactams (ESBLs [CTX-M-15 and CTX-M-27]). This is the first report of MDR emerging in S. boydeii and S. dysentariae. We observed epidemiological patterns for age and sex based on species within the dataset.

Our national dataset highlights the public health threat posed by Shigella in Australia. National surveillance efforts should be focused on S. flexneri and S. sonnei as the two dominant species, with particular attention on S. sonnei as it contains 90% of the identified ESBLs.

Establishment of the poliovirus wastewater surveillance program in New South Wales

Dr Sally L. Ellis[1], Kelsi Marris[1,2], Katrina J. Wall[1], Zenah Bradford-Hartke[1], Paul Byleveld[1], Kaitlyn M. Vette[1], Meredith Wickens[1], Kirsty Gillespie, Ned H. Latham[1,2], Sudhi Payyappat[3], Bruce R. Thorley[4], David N. Durrheim[5], Richard A. Broome[6], Christine E. Selvey[1], Jeremy M. McAnulty[1]
[1]Health Protection NSW, [2]NSW Public Health Training Program, Ministry Of Health, [3]Sydney Water, [4]National Enterovirus Reference Laboratory, Victorian Infectious Diseases Reference Laboratory, Peter Doherty Institute for Infection and Immunity, [5]School of Medicine and Public Health, University of Newcastle, [6]Northern Sydney Local Health District, NSW Health

Context: Until global eradication is achieved, Australia remains at risk of importation of poliovirus. The Poliovirus Infection Outbreak Response Plan for Australia (“the national plan”) recognises the role of wastewater surveillance (WWS) in detecting poliovirus in the Australian community. NSW, home to a diverse population and numerous international visitors, has a heightened risk of poliovirus incursions. Unlike acute flaccid paralysis surveillance, WWS can detect asymptomatic carriage.
Process: In 2022, a poliovirus WWS program was developed, leveraging processes established for SARS-CoV-2 surveillance. Four wastewater collection locations were selected to capture diverse populations, at one regional and three metropolitan Sydney sites. We developed the NSW Poliovirus Wastewater Surveillance Protocol (“the protocol”) to ensure a safe, consistent response to surveillance results and to align with the national plan.
Analysis: The protocol details processes for sampling, analysis, reporting and responding to surveillance results. The sampling protocol utilises polymerase chain reaction (PCR) testing for poliovirus Sabin-like 1, Sabin-like 2, Sabin-like 3 or wildtype poliovirus type 1 (WPV). Detection of one or more of these targets triggers a different response pathway.
From December 2022 to February 2024, there were 13 PCR detections of Sabin-1 and/or Sabin-3 from three sites. Samples were transferred to the National Enterovirus Reference Laboratory (NERL) for confirmatory cell culture testing, with two of the detections confirmed as Sabin-like poliovirus type 3, consistent with a recent vaccination event with oral polio vaccine. There have been no detections of Sabin-like 2 poliovirus or WPV.
Outcomes: Detections in 3 of 4 NSW sites since the start of the program demonstrate the importance of the poliovirus WWS program. The development of the protocol has ensured a consistent approach to WWS results in NSW. Detection of Sabin-like 2 or WPV through WWS would trigger actions in line with the national plan.

Evaluation of a web-based, self-complete survey for salmonellosis surveillance in the ACT

Ms Jenny Post[1], Ms Felicity Greenville[1], Mr Timothy Sloan-Gardner[1]
[1]Act Health

Background
ACT has around 200 notified cases of salmonellosis per year, and public health follow up of cases via phone interview causes a significant burden on resources. In October 2022, ACT introduced a self-complete web-based survey to improve the data collection process for key epidemiological data. From October 2022 salmonellosis cases were sent an SMS with a link to a REDCap survey asking them to provide information about possible exposures to Salmonella, including travel history, foods eaten and environmental exposures.
Methods
Analysis of survey data (2022-23) investigated data completeness, representativeness, and timeliness. Interviews with stakeholders from the Public Health Response Unit and Epidemiology and Reporting teams and a small sample of cases provided feedback about operation, usefulness and performance attributes including simplicity, acceptability, flexibility and stability.
Results
The system has reduced the burden on public health resources and is flexible and stable. It has several manually dependent steps and is lengthy for cases to complete which may limit acceptability and timeliness. Of 148 notified cases in the study period, 91 were sent a survey and 53 responded (58.2%). Of the 38 cases who did not respond to the survey, 28 completed a phone interview. Data completeness for survey respondents was poor when compared to those who participated in a phone interview, particularly for food exposure fields. Key fields such as overseas travel and meals eaten in venues were sufficiently complete for public health purposes.
Conclusion
Salmonellosis surveillance using an sms-based, self-complete survey is a useful tool and is achieving its objectives but has some limitations. Recommendations include simplification of the survey to improve acceptability and data quality, and development of a risk-based framework to determine when cases require more comprehensive follow up.

Comprehensive national genomic profile of non-typhoidal Salmonella enterica to inform genomics-based surveillance

Dr Patiyan Andersson[1,2], Dr Alireza Zahedi[3], Dr Kristy Horan[1,2], Dr Jessica Agius[4,5], Dr Michael Payne[6], Dr Jessica Webb[2], Ms Angela Donald[1,2], Dr Lex Leong[7], Dr Louise Cooley[8], Dr Karina Kennedy[9], Ass. Professor Rob Baird[10], Dr Dimitrious Menouhos[10], Professor David Speers[11], Ass. Professor Torsten Seemann[1,2], Professor Vitali Sintchenko[4,5], Ass. Professor Amy Jennison[3], Professor Benjamin Howden[1,2]

[1]Microbiological Diagnostic Unit Public Health Laboratory, at the Peter Doherty Institute for Infection and Immunity, The University of Melbourne, [2]Department of Microbiology and Immunology at The Peter Doherty Institute for Infection and Immunity, The University of Melbourne, [3]Public Health Microbiology, Forensic and Scientific Services, [4]Sydney Institute for Infectious Diseases, The University of Sydney, [5]Centre for Infectious Diseases and Microbiology-Public Health, Institute of Clinical Pathology and Medical Research, NSW Health Pathology, [6]School of Biotechnology and Biomolecular Sciences, University of New South Wales, [7]SA Pathology, [8]Department of Microbiology and Infectious Diseases, Royal Hobart Hospital, Tasmanian School of Medicine, College of Health and Medicine, University of Tasmania, [9]Department of Clinical Microbiology and Infectious Diseases, Canberra Health Services, Australian National University Medical School, [10]Territory Pathology, Royal Darwin Hospital, [11]Department of Microbiology, North, Women's and Children's Division, PathWest Laboratory Medicine

Over the past decade pathogen genomics has increasingly been used to support outbreak investigations of non-typhoidal Salmonella enterica (NTS). With expanded sequencing capabilities and greater affordability, we are now on the cusp of integrating genomics into routine surveillance. Research in the AusPathoGen program, a 5-year MRFF funded initiative, seeks to inform and support the implementation of such initiatives in Australia. An NTS-specific AusPathoGen project aims to use a cross-sectional analysis of a nationally comprehensive NTS dataset to develop nationally harmonised analysis methodologies, and establish which serovars and sampling strategies are conducive to national genomics-based surveillance.

The dataset consisted of sequences from two 3-month snapshots conducted in Jan-Mar 2023 and 2024, during which all notified cases of NTS were sequenced in Australia. A retrospective dataset of available sequences from 2018-2022 provided temporal context. A total of 18,200 sequences have been contributed to date, with proportions of notified cases sequenced during the snapshots exceeding 90% across all jurisdictions. A large diversity of serovars were observed, however nine serovars comprised 75% of the dataset. Across the dataset antimicrobial resistance (AMR) was low, but some serovars display AMR patterns of concern. Core genome MLST (cgMLST) indicated cooccurrence of closely related sequences across jurisdictional borders, with tailored cgMLST thresholds for different serovars serving as an effective screening tool. Serovars were selected for high-resolution SNP-based phylogenetic and clustering analysis based on several criteria: high incidence rates, significant AMR profiles, multi-jurisdictional cgMLST groupings, or emerging patterns. The analysis identified both outbreaks and persistent, low prevalence multi-jurisdictional clusters.

The representativeness of the snapshot dataset allowed the study group to conduct sensitivity analyses to explore the effect of scenarios with incomplete jurisdictional participation or varying sequencing proportions. This study provides the necessary evidence to underpin decisions regarding the strategy and extent of future genomics-based surveillance of NTS.

Salmonella Reading outbreak in New South Wales associated with dried bovine meat

Ms Elenor Kerr[1], Kirsty Hope[2], Patrick Peacock[1,3,4], Dr Grace Blackwell[3], Qining Wang[3], Basel Suliman[3], Dr Vitali Sintchenko[3], Keira Glasgow[2], Dr Isabel Hess[1], David Kennedy[1]
[1]Sydney Local Health District Public Health Unit, [2]Health Protection NSW, [3]Institute of Clinical Pathology and Medical Research, NSW Health Pathology, [4]National Centre for Epidemiology and Population Health, Australian National University

Background: In August 2023, a sudden increase in Salmonella Reading (S. Reading) notifications was detected in New South Wales (NSW). Initial case interviews and a foodborne illness complaint identified a restaurant (Restaurant A) in Sydney Local Health District (SLHD) as a common exposure.
Methods: A case-series investigation was commenced, and a case-control analysis was undertaken to identify the source of infection. Cases and controls were identified via notifications, whole genome sequencing (WGS) of S. Reading isolates, and snowball sampling of confirmed cases reporting exposure to Restaurant A. All isolates of S. Reading were serotyped and sequenced by the ICPMR, NSW Health Pathology.
Results: Sixty-three cases were identified across nine LHDs; 39 were confirmed and 24 were possible cases. All 39 confirmed cases were linked by WGS and assigned the genomic cluster, SalRea-23-0001, which was distinct from historical S. Reading isolates. Calculated onset dates ranged over a six-month period. Among 51 cases interviewed, 86% (44/51) reported restaurant exposure. The median duration between restaurant exposure and onset was 1 day (range: 0–3 days). Twenty-one controls were recruited for case-control analysis, which identified four menu items with statistically significant odds ratios above one.
Seven confirmed cases had no exposure to restaurant A (7/51, 14%). Six of the seven cases (85%) reported consuming meat from a South-Asian grocer before symptom onset, with dried bovine and fresh goat meat most frequently reported.
Conclusion: The most likely source of S. Reading was dried bovine meat distributed to Restaurant A and various grocery stores across NSW. WGS enabled retrospective identification and clustering of cases which revealed a more prolonged outbreak than previously anticipated. WGS was also crucial for linking restaurant and non-restaurant-exposed cases, supporting the identification of contaminated product distribution beyond the restaurant setting. This investigation also highlights shelf-stable meat products as potential sources of Salmonella.

Multijurisdictional outbreak of Salmonella Saintpaul associated with frozen chicken products, Australia, 2023

Ms Jane Mcallister[1], Shaun Coutts[1], Anastasia Stylianopoulos[1], Michelle Renwick[1], Russell Stafford[2], Emily Fearnley[3], Michelle Harlock[4], Kim Lilly[5], Jenny Post[6], Stacey Hong[7], Anthony Draper[8], Stacey Kane[9], Rose Wright[9]
[1]Victorian Department of Health, [2]Queensland Health, [3]SA Health, [4]Tasmanian Department of Health, [5]Hunter New England Local Health District, [6]ACT Health , [7]Western Australia Department of Health, [8]NT Health , [9]Australian Government Department of Health & Aged Care

Introduction
In September 2023, the Victorian Department of Health commenced an investigation into an increase in Salmonella Saintpaul notifications; contemporaneous increases also occurred in New South Wales, Australian Capital Territory and Tasmania. A multijurisdictional outbreak investigation was initiated by OzFoodNet in October 2023 to characterise the outbreak and identify the source.

Methods
Confirmed cases were defined as any laboratory-confirmed case of S. Saintpaul with specimen collection date after 1 July 2023 clustering within ≤5 SNP (single nucleotide polymorphism) of the outbreak reference sequence, as determined by whole genome sequencing (WGS) analysis. Food exposures were obtained via case interviews and binomial probability analysis was performed comparing to the 2016 Victorian Food Frequency Survey. Traceback of food products was conducted by jurisdictional food safety authorities.

Results
Cases were identified in all jurisdictions (n=123); the majority in Victoria (n=34, 28%) and Queensland (n=37, 30%). Frozen chicken products were consumed by 53% of interviewed cases and were statistically significant in the binomial probability analysis of food exposures (p=<0.001). Chicken Kiev was the most frequently reported product type (n=16, 29%). The most commonly reported brand of chicken Kiev consumed was sampled by Queensland Health. Subsequent testing of the implicated product identified a strain of S. Saintpaul, highly related genomically to the human cases. Cooking instructions from the product packaging were validated by an independent laboratory. The time/temperature was deemed adequate for heat kill of Salmonella.

Conclusion
This investigation provided sufficient microbiological and epidemiological evidence to suggest the outbreak was linked to frozen chicken products, notably a chicken Kiev product. WGS was successfully utilised to identify outbreak cases and link a specific food to cases. Although the product met food safety regulatory standards, the outbreak highlights the need for better labelling, or greater consumer awareness of the importance of following cooking instructions for frozen poultry products.

Campylobacteriosis in Western Australia: identifying risk factors to inform intervention strategies

Dr Stacey Hong[1], Dr Hannah MacKenzie[1], Dr Katherine Lim[1], Mr Henry Tan[2], Mr Danny Gould[2], Dr Peter Gray[2], Ms Carolien Giele[1], Dr Michale Lindsay[2], Dr Paul Armstrong[1]
[1]Communicable Disease Control Directorate - WA Department of Health, [2]Enviornmental Health Directorate - WA Department of Health

Campylobacteriosis is the most frequently notified enteric disease in Western Australia (WA). In 2023, notifications reached a record high of 4,861 cases. As part of WA's Foodborne Illness Reduction Strategy (FBIRS) 2023-2026, notified campylobacteriosis cases were surveyed to improve the understanding of risk factors associated with infection.

Campylobacteriosis cases were extracted from the WA Notifiable Infectious Diseases Database with date of specimen collection from 16-April-2023 through 9-July-2023. Eligible cases were contacted via SMS to complete a REDCap® online survey. Questions included travel history, chicken consumption and preparation behaviours, drinking water sources, and animal exposure in the 7-day period prior to onset of diarrhoea. Data was analysed using R studio.

A total of 906 cases were notified; 893 were eligible for inclusion and 13 were excluded due to inability to receive SMS. The survey was completed by 618 cases (69%), comprised of 306 males and 312 females (median age, 43 years). Diarrhoea was reported by 591 (96%) participants. Of these, 397 (67%) reported no travel outside WA during their incubation period (WA cases), while 180 (29%) reported overseas travel. Of the 397 WA cases, 255 (64%) reported consuming chicken, 221 (56%) owned a pet dog, and 57 (14%) owned pet birds or chickens. Raw chicken was purchased and cooked at home by 169 (43%) of WA cases, of which 45 (27%) washed chicken meat and only 11 (7%) used a thermometer during preparation.

This study identified common risk factors amongst campylobacteriosis cases acquired within WA's local context and behaviours. Although chicken meat consumption was prevalent amongst cases in WA, a third did not consume any chicken. Findings highlight the need to strengthen current education on safe food handling practices and consideration of broader risk factors in developing effective mitigation activities as part of the FBIRS 2023-2026 to reduce campylobacteriosis in WA.

Novel culture independent Shigella species and serotypes diagnostic test

Dr Rajat Dhakal[1], Prof Vitali Sintchenko[2]
[1]Centre of Infectious Diseases and Microbiology- Public Health, Western Sydney Local Health District and School of Medical Sciences, The University of Sydney, [2]Centre of Infectious Diseases and Microbiology- Public Health, Western Sydney Local Health District and Sydney Medical School, The University of Sydney

Shigella is a high burden bacterial pathogen with estimated 269 million cases per year. Both culture positive and culture negative Shigella cause shigellosis notifiable to public health registries. However, no test exists for diagnosing Shigella species and serotypes from culture negative shigellosis samples. Only a genus level ipaH PCR test is doable for culture negative shigellosis samples. This causes difficulty in the diagnosis and surveillance of ipaH PCR positive and culture negative Shigella which can be up to 70% of notified cases. Conventional serotyping can determine species and serotypes only of culturable Shigella but not culture negative ones. Therefore, current Shigella diagnostics can't correctly characterise the significant proportion of Shigella notifications. In our project, we have identified 15 diagnostic markers for species/serotype in Shigella using a pipeline that combines Panaroo, SQL and NCBI-Blast. These markers can identify species of Shigella and differentiate them into serotype groups. The presence of these markers has been validated in silico using 17,553 publicly available Shigella genomes including all four species and the absence of the markers has been validated in 12,347 publicly available Escherichia coli genomes- which are closely related to Shigella genomes- and other pathogens' genomes in GenBank. The analytical sensitivity for Shigella species identification in silico was S. flexneri (0.97), S. dysenteriae (0.92), S. boydii (0.93), S. sonnei (0.99). The value for specificity with respect to E. coli genomes in silico was 0.98-0.99 depending upon the markers and with respect to other pathogens' genomes in silico was >0.99. We are in the process of validating the multiplex PCR test directly on the stool samples using these markers. Western Sydney Local Health District (WSLHD) is in the process of obtaining patent rights (PCT/AU2022/050517) on the test developed and the genetic markers used with the aim of its commercialisation with industrial partners.

3C -
Public health in practice, Mezzanine 1, June 11, 2024, 15:30 - 17:00

141

Immunisation service delivery processes at Victoria's Aboriginal Community Controlled Health Organisations (ACCHOs).

Dr Jenny Royle[1,2], Ms Renee Owen[3], Ms Amy Creighton[1, 2, 5], Prof James Ward[2, 4]
[1]University of New South Wales (UNSW), [2]Multicentre NHMRC CRE, Immunisation in understudied and special risk population groups. University of New South Wales (UNSW), [3]Aboriginal Health Unit, Barwon Health, [4]Poche Centre for Indigenous Health, University Queensland (UQ), [5]South Australian Health and Medical Research Institute (SAHMRI)

Background: Providing immunisations is a dynamic process involving a coordinated system of skilled staff, and an engaging and welcoming environment. ACCHOs across Victoria offer culturally safe services including immunisation service delivery. The ACCHO holistic model of care is an example of how immunisation service delivery can be achieved promoting timeliness and high immunisation coverage rates. The aim of this study is to describe successful immunisation processes embedded in day-to-day work at Victoria's ACCHOs.
Methods: Project design followed considerable consultation with staff at Victoria's ACCHOs, researchers and Health Care Providers working in Immunisation Services and Aboriginal health. Strengths-based qualitative research was utilised with semi-structured interviews with ACCHO staff. Descriptions of all aspects of how the staff go about their immunisation work were elicited through one-on-one or small group interviews. Interviews were recorded and analysed. Themes were derived by inductive content analysis.
Approval: The project, "Identification of culturally sensitive approaches to improve immunisation coverage and timeliness of Aboriginal and Torres Strait Islander children and their families", was approved by HREC-UNSW (HC14140), VACCHO (Victorian Aboriginal Community Controlled Health Organisation), individual participating ACCHOs and each staff member interviewed.
Results: 18 of 20 (90%) ACCHOs in Victoria providing immunisations participated. 78 interviews were conducted between 2015-2019 involving 93 staff. 32 (34%) staff identified as Aboriginal and/or Torres Strait Islander.
The sub-themes of successful ACCHO immunisation processes were:

- Early engagement with mothers
- Flexible immunisation booking processes
- Pre-calls and reminders
- Opportunistic immunisations and immunisation advice
- Linking immunisations with Aboriginal Health Checks
- Immunisation champions within ACCHOs
- Keeping staff up-to-date with immunisation knowledge
- Clinical support for immunisation providers
- Making immunisations a positive experience
- Error prevention strategies
- Seasonal flu-vaccine initiatives
- Immunisation health promotion
- Support for hesitant immunisers
- Awareness of recommended-but-unfunded vaccines
- Including General Practitioners in immunisation teams

Conclusion: This research describes the richness of immunisation service delivery carried out within Victoria's ACCHOs. These comprehensive strategies developed at ACCHOs are helpful to Immunisation providers at other health organisations (eg GP clinics, council/shire services, hospitals and pharmacies) who offer immunisations to Aboriginal and Torres Strait Islander peoples.

410

The use of cascades of care to empower responses to communicable diseases

Associate Professor Richard Gray[1]
[1]The Kirby Institute, UNSW Sydney

Context and aim: A 'cascade of care' is an epidemiological reporting tool designed to reflect the diagnosis, care, and treatment pathway for people living with an infection or disease. Over the last 10 years diagnosis and care cascades have been used in the surveillance of blood borne viruses and sexually transmissible infections (BBVSTIs) to inform the BBVSTI response. We review the development of these cascades, their strengths and weaknesses, and the potential applicability of cascades to other communicable diseases.

Methods: Cascades for BBVSTIs have been developed to report the estimated number of people living with these infections and the number who have been diagnosed, retained in care, and effectively treated in Australia. The estimates for each step of the cascade are produced using a combination of data sources and mathematical modelling. The methodology and the results are reviewed by reference groups of representatives from peak community organizations, ministries of health, and other researchers to ensure the estimates are as robust as possible.

Findings: The HIV and hepatitis C cascades show the progress made to end these infections as public health threats in Australia. They have also highlighted important gaps related to diagnosis and treatment uptake. The hepatitis B cascade highlights the challenges in testing, monitoring, and treating people living with hepatitis B. Cascades for STIs focusing on incidence and treatment have been less effective and are now focused on the morbidity of STIS during pregnancy.

Outcomes and Future Actions: The usefulness of cascades has led to the development of separate cascades for specific key populations and jurisdictions. Cascades have also been developed for the scale-up of specific interventions. Cascades are applicable to other communicable diseases but need to be tailored to capture the key effects of interventions and to focus on the main outcome desired.

Transition of notifiable disease surveillance to a Local Public Health Unit

Ms Clarissa Moreira[1], Ms Hibaq Ahmed[1], Ms Andrea Verde[1], Ms Renae Oliver[1], Ms Amina Seferovic[1], Ms Asmara Jammali-Blasi[1], Dr. Annaliese van Diemen[1]
[1]North Eastern Public Health Unit

Context and aim

Local Public Health Units (LPHUs) were established across Victoria in 2020 and 2021 to manage COVID-19 cases and outbreaks. Throughout 2022-2023, the Victorian Department of Health (DH) led and supported the integration of communicable disease investigation and response of 83 notifiable conditions into nine Victorian LPHUs. We describe this process from the perspective of the North-Eastern Public Health Unit (NEPHU), one of three metropolitan public health units covering a large geographical area and a population of 1.8 million people.

Process

The transition process first occurred condition-by-condition before moving to a batched approach, with groups of conditions (e.g. STIs, zoonotic diseases) transitioned together. NEPHU participated in approximately 65 DH-organised online training sessions and received DH-developed supporting documentation in the form of protocols and procedures before each integration date. Post-integration, communities of practice (CoPs) were established across the network for each disease group. NEPHU implemented internal practices to aid the transition included integration sub-committees, dedicated integration staff, local protocol development, document review committees, and additional staff training.

Analysis

Integration of 83 conditions took place from July 2022 to December 2023. During this time there were a total of 5962 events assigned to NEPHU for case follow up and management. 32 local protocols were developed. Staff participated in 27 externally-led CoP's, and 34 internal learning sessions. Practical training sessions, such as tabletop exercises, small group training, shadowing and supervision, were also conducted.

Outcomes & reflections

The DH-led batched condition training and subsequent CoPs were well attended by NEPHU staff and increased knowledge, skills and confidence in managing notifiable conditions. There was no assessment of understanding and competency of a novice workforce which could have identified gaps in knowledge and skills. Ongoing communication, informally and via CoPs has facilitated further knowledge transfer. In future, sharing resources (e.g. protocols), skills and knowledge across the LPHU network would improve efficiency and allow process optimization.

Mountains to coast, 20 years of notifiable diseases trends in Gippsland, Victoria

Dr Alex Tai[1], Ms Katherine Walker[1], Ms Sneha Simon[1], Ms Miranda Starr[1,2], A/prof Alyce Wilson[1,2,3]
[1]Gippsland Region Public Health Unit, [2]University of Melbourne , [3]Monash University

Background:

The Gippsland Region Public Health Unit (GRPHU) conducts public health activities across six large geographically and socioeconomically diverse local government areas in eastern Victoria. Most literature available for notifiable infectious diseases in Australia has been reported and interpreted at a statewide level, despite notable differences at regional levels, such as Gippsland.

Aim:

To understand the temporal trends and geographic variations on infectious disease notifications for postcodes in the Gippsland region.

Methods:

Cases notified to the Victorian Public Health Event Surveillance System from 2002 to 2021 were analysed by disease group (blood borne viruses (BBVs), gastrointestinal, sexually transmitted infections (STIs), and vaccine preventable diseases (VPDs), Indigenous status, age group and remoteness classification of postcode of residence using the Australian Bureau of Statistics' 2021 data of Australian postcodes by remoteness structure classification. Annual incidence rates per 100,000 population were calculated by combining postcodes into groups by remoteness classification (Inner Regional Australia, Outer Regional Australia, and Remote) and disease group to identify differences in disease notification incidence across the region.

Results:

In total, 50,574 notified between Jan 2002 to Dec 2021 were analyzed. VPDs were the most reported, followed by STIs and enteric diseases. Over the 20-year period, the remote grouping had the highest annual incidence rate for BBVs, while the inner regional postcode grouping had the highest annual incidence rate for VPDs. Notification incidence increased by nearly two-fold between the earliest and latest time periods, largely driven by STI and VPD notifications.

Conclusion:

The identification of diseases with increasing notification rates such as VPDs and STIs coupled with higher disease burden in remote areas highlight priority areas for public health intervention in Gippsland. Subsequent steps will be to leverage these findings to inform health protection strategies and drive targeted and tailored place-based public health responses.

Implementation of enhanced surveillance at mass gathering events

Ms Victoria Marriott[1,2], Dr Amalie Dyda[2,3], Ms Christobel Mak[1], Mr Ian Hunter[1], Ms Sharon Jurd[1], Dr Fiona May[1]
[1]Gold Coast Public Health Unit, Queensland Health, [2]National Centre for Epidemiology and Population Health (NCEPH), The Australian National University, [3]School of Public Health, University of Queensland

During the 2018 Commonwealth Games the Gold Coast Public Health Unit (GCPHU) strengthened their standard disease surveillance efforts by implementing a Gastrointestinal Syndromic Surveillance System (GSSS). The GSSS aimed to identify and interrupt the spread of gastrointestinal illness (gastro) across the Gold Coast community. Gastro cases were identified by analysing health service data from five emergency departments (ED) and Queensland's telehealth service, 13HEALTH. Cases were then asked to complete an online survey to determine common exposures and prevent further illness.

The GSSS continues to identify gastro outbreaks linked to community settings including restaurants, childcare centres, and swimming locations. In 2023, the GSSS sent surveys to 4,620 individuals and received 1,227 responses, 25% (n=301) of which required public health follow up. Overall, the GSSS identified 15 new outbreaks and 26 additional cases associated with known outbreaks.

The GSSS is being evaluated in preparation for the Brisbane 2032 Olympic and Paralympic Games. Currently, cases are identified through two public EDs. The addition of cases who present at medical centres and pharmacies would offer a more comprehensive picture of disease in the community. The GSSS could also be adapted to include syndromes that frequently signify more complex illnesses, including fever, rash, or neurological symptoms.

As Queensland continues to host national and international mass gathering events, it is imperative that the GSSS is expanded to best combat disease introduction and transmission.

Collaboration is key: findings from a regional viral haemorrhagic fever tabletop exercise

Ms Keeley Allen[1], Dr Meg Whitley[1], Dr Peter Massey[1], Dr Peter Murray[1], Dr Matthew O'Sullivan[2], Dr Patricia Ferguson[2], Ms Julie Tait[3], Professor David Durrheim[1]
[1]Hunter New England Population Health Unit, Hunter New England Local Health District, NSW Health, [2]Westmead Hospital, Western Sydney Local Health District, NSW Health, [3]John Hunter Hospital, Hunter New England Local Health District, NSW Health

Prompted by the imminent return of a healthcare worker volunteering in a high-risk West African setting, the Hunter New England Local Health District ran an exercise exploring local preparedness for a suspected viral haemorrhagic fever (VHF) case outside a major metropolitan setting. The exercise aim was to assess and improve local preparedness and delineate requirements to safely manage a suspected VHF case.

Health protection staff collaboratively prepared the exercise with the regional tertiary referral hospital executive leadership and clinical leads of the NSW Specialist Service for High Consequence Infectious Diseases (SSHCID). The exercise was held on 7 February 2024 and tested the early response to VHF symptom development in an exposed individual under public health monitoring at home. Representatives from state and local public health, clinical leads, hospital executive, pathology, ambulance and SSHCID participated in person or via videoconference. Timing was fortuitous enabling testing of existing NSW Health and local guidance, and their draft updates.

Engagement of key participants before the exercise contributed significantly to its success. The exercise improved local understanding of the pivotal SSHCID role throughout patient care, including shifting focus from the need for local management to stabilisation until transfer to the NSW Biocontainment Centre. Challenges of regionality were explored, including the increased time required to safely test and transport a suspected VHF case, availability of resources including trained personnel, and impacts on the case, staff, and facility service delivery.

The exercise highlighted the need for adaptable alternative models of care and public health response in regional settings. Conversations to enhance local preparedness continue, including finalising District plans and Hospital HealthPathway. The real test will come when the volunteer returns to Australia.

Attendees will learn to describe the challenges of a VHF response in a regional setting and apply strategies for delivering a tabletop exercise across organisations.

Developing guidelines for notifiable infectious disease transmission risk behaviours in Western Australia

Dr Alexander Shivarev[1], Ms Lisa Bastian[2], Ms Sharelle Tulloh[2], Dr Jelena Maticevic[1]
[1]Communicable Disease Control Directorate, WA Department of Health, [2]Sexual Health and Blood-borne Virus Program, WA Department of Health

Background
Most people who have a notifiable infectious disease (NID) avoid behaviours that put others at risk of infection. However, some individuals demonstrate transmission risk behaviours. In Western Australia (WA), the Public Health Act 2016 (the Act) outlines measures such as public health or test orders that can be issued to individuals who represent a public health risk. Guidelines exist in WA for managing people with human immunodeficiency virus (HIV) who demonstrate transmission risk behaviours.

In 2023, there was a need to use coercive measures under the Act for an NID other than HIV. This situation highlighted the need to develop a framework and guidelines to apply to transmission risk behaviours for NIDs with potentially significant public health consequences to protect both public health and the rights of an individual. Examples include infectious syphilis, tuberculosis and multi-drug resistant gonorrhoea.

Aim
To develop guidelines that outline a framework from least to most restrictive measures in managing people with a NID who display transmission risk behaviours and represent a risk to public health.

Methods
The development of the guidelines was based on: an interjurisdictional scan and review of literature; consultation with key stakeholders; two rounds of consultation with a reference group comprising subject matter experts and health consumer representatives; and extensive legal input.

Outcomes
The guidelines outline a four-stage framework that is underpinned by principles including proportionality, medical ethics and cultural safety. The primary objective throughout the framework focuses on reducing risk of transmission of NIDs and reducing the associated public health risk. Counselling, educating and supporting the individual are prioritised throughout. The guideline sets out processes, streamlines administrative procedures and ensures consistency in managing people under the Act. The guidelines also reference a statutory advisory panel, convened under the Act, to ensure any recommendations to use coercive measures are thoroughly considered.

Management of a cryptosporidiosis outbreak following decentralisation: Local approach Western Melbourne 2023-24

Dr Storm Holwill[1], Gabrielle Hales[1], Courtney Gee[1], Pasan Malagage[1], Dr Finn Romanes[1], Dr Wendy Bamberg[1]
[1]Western Public Health Unit (WPHU)

Background: Victorian public health management of Cryptosporidium, a chlorine-resistant parasite, transitioned to local public health units on 25 October 2023. During 5-6 December, three cryptosporidiosis cases were notified to the Western Public Health Unit (WPHU). Interview identified that cases were associated with a large aquatic facility with a learn-to-swim program. We initiated an investigation into the first aquatic facility-related cryptosporidiosis outbreak in the WPHU catchment following decentralisation of communicable disease control.

Methods: Outbreak cases were defined as a positive Cryptosporidium test and pool attendance during acquisition period (confirmed), a positive Cryptosporidium test and epidemiological link (probable), or clinically compatible illness plus either pool attendance or an epidemiological link to a confirmed case (suspected). Investigation included case-finding via interviews of all individuals with cryptosporidiosis within the WPHU catchment, a practice not routinely performed in Victoria, and environmental assessment of the facility. Management included two hyperchlorination events, 6 and 20 December. Outbreak communication was limited to local general practitioners. The public, including patrons, only received general information about an increase in cryptosporidiosis cases.

Results: Among 95 cases (34 confirmed, 13 probable, 48 suspected), 44 (46%) were in individuals aged 0-14 years. Six individuals presented to hospital. Twenty-three of 34 confirmed cases (68%) acquired cryptosporidiosis prior to first hyperchlorination and 11 (32%) after. Thirty percent of all individuals continued to swim whilst infectious. Individuals interviewed after the second hyperchlorination reported being aware of the outbreak via word of mouth. No further transmission was detected post second hyperchlorination.

Conclusions: Lack of early communication with pool patrons at the time of the first hyperchlorination likely prolonged the outbreak, requiring a second intervention. Public health should interview all cases of notified cryptosporidiosis to rapidly identify outbreaks and should ensure targeted and specific early communication with patrons to prevent reintroduction of Cryptosporidium into a pool.

An outbreak of infectious syphilis in Mid North Coast New South Wales

Ms Genevieve O'Neill[1], Dr Geoffrey Stewart[1], Dr Kym Collins[1], Dr Jane Shapiro[1], Ms Phoebe Nicholls[1], Mr Robin Auld[1], Dr Valerie Delpech[1]
[1]North Coast Population and Public Health Directorate, Mid North Coast Local Health District

Background: In New South Wales (NSW), infectious syphilis notifications have primarily been reported in men who have sex with men (MSM).
Methods: We describe an outbreak of infectious syphilis among Mid North Coast (MNC), NSW residents. Data was extracted from the NSW Notifiable Conditions Information Management System.
Results: Between 1 January 2020 and 31 December 2023, 140 cases of infectious syphilis were notified in MNC residents. Infectious syphilis was notified in 86 males and 54 females, 48 (89%) of the female cases were aged 15 to 45 years, and 9 were notified during pregnancy. As of 21 February 2024, there have been no notifications of congenital syphilis in the MNC. MSM made up 26% (37) of cases and 22% (31) were First Nations people.
During the three-year outbreak period, the rate of Infectious syphilis increased 15-fold among females (from 0.9 in 2020 to 14.4 in 2023, with a peak in 2022 of 24.8 cases/100,00), compared to a 0.6-fold increase in males (from 10.9 in 2020 to 17.9 in 2023, with a peak in 2022 of 28.7 cases/100,000).
Conclusion: The MNC is experiencing a syphilis outbreak with increased local heterosexual transmission. Outbreak control strategies included a focus on providing education and support to primary care and hospital staff and a social media campaign to increase community knowledge. Additionally, a coordinated response from public health, sexual health, maternity and paediatrics has been established. Although improvements have been seen, with infectious syphilis rates decreasing in both females and males in 2023, the outbreak continues and rates among females remain 349% higher than the NSW state female target (3.21 cases/100,000).

Varicella and Salmonella automated enhanced surveillance development and evaluation, South Australia, 2024

Mr Thomas Freeman[1,2], Dr Emily Fearnley[1], Rebecca Beazley[1], Darren McGlade[1], Stuart Holcroft[1], Daniel Petraccaro[1], Dr Megge Miller[2,3]
[1]SA Health, [2]The Australian National University, [3]University of Newcastle

BACKGROUND
Public health surveillance systems can leverage technological advancements to build capacity to respond to existing and emerging public health challenges. The current notifiable disease surveillance system in South Australia (SA) relies on multiple manual data collection processes. An enhanced automated data collection system has been trialed as a step towards improving the overall effectiveness and efficiency of public health surveillance in SA.

PROCESS
The automated enhanced surveillance system was piloted on two diseases. Varicella-zoster virus was selected to automate further classification of notifications into chickenpox or shingles and improve data completeness of vaccination status. Salmonella was selected to automate selected exposure data collection to improve prioritisation of cases for public health action and outbreak detection. The system automatically identifies eligible cases from the SA Notifiable Infectious Diseases Surveillance (NIDS) system and actively seeks enhanced data using online surveys sent to the mobile phones of cases. The response automatically integrates into NIDS.

ANALYSIS
The United States Centers for Disease Control and Prevention surveillance evaluation framework will be used to assess the impact and effectiveness of the automation of enhanced surveillance for Salmonella and varicella-zoster infections. Attributes to be investigated will be simplicity, flexibility, data quality (completeness and validity), acceptability, sensitivity, representativeness, timeliness, stability, and usefulness. A before and after intervention study will be performed to analyse key indicators related to the relevant surveillance attributes.

OUTCOMES
The evaluation will indicate whether the implementation of an automated survey for data collection has positively impacted the surveillance of Salmonella and varicella-zoster infections in SA. The evaluation will determine whether the system leads to improvements in data quality, representativeness, timeliness of data collection, prioritisation of public health resources, and reduced manual workload. Based on the evaluation, recommendations will be made about whether this approach could be expanded to include other notifiable diseases in SA.

3D -
COVID-19, Mezzanine 2, June 11, 2024, 15:30 - 17:00

182

Impact of socioeconomic factors on SARS-CoV-2 transmission, vaccinations and outcomes in Victoria.

Dr Christine Roder[1,2,3], Dr Karen Blaney[1], Dr Michael Muleme[1,2], Dr Bridgette McNamara[1,2], Dr Akhtar Hussain[1,3], Professor Eugene Athan[1,2,3]
[1]Barwon South West Public Health Unit, [2]Centre for Innovation in Infectious Disease and Immunology Research (CIIDIR), Institute for Mental and Physical Health and Clinical Translation (IMPACT) and School of Medicine, Deakin University, [3]Deakin University, Institute for Mental and Physical Health and Clinical Translation (IMPACT), School of Medicine

Background
Socioeconomic factors strongly influence health outcomes. Previously, we demonstrated that before vaccination availability, lower socioeconomic status (SES) areas had increased transmission of SARS-CoV-2. Now, we aim to investigate how vaccination and other public health measures, have impacted the transmission of SARS-CoV-2, exploring relationships between SES, health outcomes and vaccination rates.
Methods
We obtained aggregated data on cases, hospitalisation and number of deaths by week, postcode, age group, sex and vaccination doses from publicly available data. These were then grouped by epidemic periods, defined by dominant SARS-CoV-2 variants. Using descriptive statistics, we summarised cases, hospitalisations and death rates by SES for each period and computed Spearman's correlation to assess the relationship between variables.
Results
During the Delta period, median cases per 1000 population in the most disadvantaged areas (Index of Relative Socio-economic disadvantage (IRSD) decile 1) were higher than those in the least disadvantaged areas (IRSD-decile-10) i.e. (IRSD-1: 29; Inter-quartile range (IQR): 13-46 vs IRSD-10: 15; IQR: 9-26). Contrarily, during Omicron-BA2 period, median cases per 1000 population in the most disadvantaged areas (116; IQR: 81-173) were lower than those in the least disadvantaged areas (161; IQR: 118-208). At an area level, there was a negative correlation between case rates and first vaccination rates for the Delta period ($r_s[9652]=-0.3254$, $p<0.0001$), that was relatively consistent across IRSD deciles. A similar relationship was seen with third and fourth doses in the Omicron-BA1 period ($r_s[14330]=-0.4451$, $p<0.0001$ and $r_s[2098]=-0.4278$).
Conclusion
The relationship between SES and SARS-CoV-2 transmission is dynamic with many contributing factors. Vaccination reduced transmission during the Delta period when targeting those at highest risk of transmission (e.g. healthcare workers), and poor outcomes (e.g. elderly), this is supported by our preliminary ecological analysis.
Further analysis will explore how socioeconomic factors affect transmission and outcomes including population demographics, cultural/linguistic diversity, comorbidities, employment, and financial factors.

RCTs assessing nudge interventions for influenza and COVID-19 vaccines in pregnant women

Dr Prabha Andraweera[1,2,3], Dr Bing Wang[1,2,3], Prof Margie Danchin[4,5], Prof Christopher Blyth[6,7], Prof Ivo Vlaev[8], Prof Jason Ong[9], Prof Jodie Dodd[2,3,10], Prof Jennifer Couper[2,3,11], Dr Thomas Sullivan[12], Dr Alana Cuthbert[12], Prof Jonathan Karnon[13], Prof Nicola Spurrier[14,15], Dr Michael Cusack[15], A/Prof Dylan Mordaunt[14], Dr Dimi Simatos[16], Prof Gus Dekker[2,3,17], Dr Samantha Carlson[7], Dr Jane Tuckerman[5], Prof Nicholas Wood[18,19], Dr Lisa Whop[20], Ms Joanne Koch[17], Ms Kirsty Herewane[1,3], Ms Ashleigh Rak[5], Ms Deborah Pidd[21], Prof Helen Marshall[1,2,3]
[1]Vaccinology and Immunology Research Trials Unit, Women's and Children's Hospital, [2]Robinson Research Institute, The University of Adelaide, Adelaide, [3]Adelaide Medical School, The University of Adelaide, [4]The Royal Children's Hospital, [5]Department of Paediatrics, The University of Melbourne, [6]Perth Children's Hospital, [7]Department of Paediatrics, The University of Western Australia, [8]School of Business, Warwick University, [9]School of Medicine, Monash University, [10]Women's and Babies Division, Women's and Children's Hospitalf, [11]Division of Paediatrics, Women's and Children's Hospital, [12]South Australian Health and Medical Research Institute, [13]Discipline of Public Health, Flinders University, [14]Discipline of Paediatrics, Flinders University, [15]SA Health, South Australian Government, [16]Discipline of Paediatrics, Lyell McEwin Hospital, [17]Discipline of Women's Health, Lyell McEwin Hospital, [18]Discipline of Paediatrics, University of Sydney, [19]Children's Hospital Westmead, [20]Discipline of Public Health, Australian National University, [21]Mercy Hospital for Women

Background: Influenza and COVID-19 vaccine uptake amongst pregnant women is sub-optimal. "Nudges" are subtle behavioural interventions designed to encourage positive health behaviours and have been used in a range of contexts. Two randomised controlled trials (RCT), assessed the effectiveness of a multi-component nudge intervention on improving COVID-19 and influenza vaccine uptake among pregnant women.
Methods: A 'nudge' was developed in a nudgeathon with pregnant women, obstetricians, midwives, hospital administrative personnel, behavioural scientists, psychologists and graphic designers from South Australia (SA), Western Australia and Victoria using the MINDSPACE framework. The nudge comprised three SMS text message reminders with links to vaccine safety information and videos of health professionals and consumer recommendations. Using a waiver of consent, in separate RCTs, pregnant women who had not received an influenza vaccine during the 2023 influenza season, or received ≤2 doses of a COVID-19 vaccine, were randomised (1:1) to standard care or intervention at four hospitals in SA and Victoria.
Results: A total of 1090 and 1068 pregnant women were randomised to the COVID-19 and influenza RCTs respectively. For COVID-19 vaccination: 2.7% of the intervention group and 1.1% of the standard care group received a vaccine between randomisation and end of pregnancy (OR: 2.4, 95%CI 0.91-6.3). While 2.9% of the intervention group and 1.1% of the standard care group received a COVID-19 vaccine between randomisation and one month after delivery (OR:2.6, 95% CI 0.99-6.7). Less than 2% of women viewed the videos and 13.8% of women opted out from receiving further text messages. The Influenza RCT results will also be presented.
Conclusions: The multi-component SMS text messages had a small effect in improving COVID-19 vaccine uptake among pregnant women, despite limited accessing of linked videos. Face to face provider recommendations may be more successful in encouraging pregnant women to be vaccinated.

Excess deaths from pneumonia indicative of underdiagnosed COVID-19 deaths in Australia

Prof Catherine Bennett[1], Dr Shane Kavanagh[1], A/Prof Christopher Stevenson[1], A/Prof Steven Bowe[2], Dr Rebecca Kippen[3]
[1]Institute for Health Transformation, Faculty of Health, Deakin University, [2]Faculty of Health, Victoria University of Wellington, New Zealand, [3]School of Rural Health, Monash University

Examination of 'excess deaths' in the SARS-CoV-2 era indicates COVID-19 mortality was underestimated, particularly in the pandemic's early stages when clinical suspicion of COVID-19 was low and testing protocols were being established. For countries with low mortality and interventions that reduced deaths from other causes, missed COVID-19 deaths may not be apparent in "all cause" excess deaths. To investigate whether COVID-19 deaths were also misregistered in Australia, we examined 'pneumonia' deaths as the most likely alternative under which undiagnosed COVID-19 deaths might be registered.

We computed actual and expected (5-year average) weekly 'pneumonia' deaths by gender using 2020–2023 Australian mortality data. We applied an aberration detection algorithm for disease surveillance using an over-dispersed Poisson generalised linear model to generate upper-bound threshold values by time point based on historical data.

Weekly Australian 'pneumonia' deaths followed pre-pandemic trends until mid-March 2020 when the algorithm flagged excess deaths, corresponding to an additional 88 deaths over three weeks. The increase was apparent in both males and females and corresponds to Australia's first peak in separately registered COVID-19 deaths. For the remainder of 2020 and 2021, pneumonia deaths fell below historic averages, especially for females. From 2022, pneumonia deaths among females continued below pre-pandemic averages, whilst male deaths sat at or above. The upper bound was again exceeded in May 2022, with excess deaths more notable in males.

If documented excess 'pneumonia' deaths are COVID-19 deaths, the official Australian COVID-19 death toll to April 2020 doubles. The gender disparity in pandemic pneumonia deaths relative to pre-pandemic averages suggests COVID-19-related deaths were more likely to be misclassified in males. Inaccuracies in mortality data, especially biases in who is counted, must be understood and addressed so reliable mortality rates can be generated at national and subpopulation levels to monitor differential mortality and the effectiveness of interventions.

COVID-19 Mortality in North-East Melbourne: Identifying vulnerable communities and informing protective interventions

Ms Zainab Albadri[1], Dr Clarissa Moreira[1], Dr Desmond Gul[1], Ms Nicole Chatterton[1], Dr Annaliese van Diemen[1]
[1]North Eastern Public Health Unit

Context and aim
The emergence of the COVID-19 pandemic in 2020 had a profound impact globally. In Victoria, Australia, the first case was reported on 26th January 2020 and the first COVID-19 death occurred in March 2020. During 2020–2021, Melbourne experienced high case numbers while the rest of Australia was largely COVID-free. This study explores the distribution of COVID-19 cases and mortality rates within the North-Eastern Public Health Unit (NEPHU) catchment of Victoria.

Methods
Data from the Australian Bureau of Statistics and the Australian Institute of Health and Welfare was used to compare COVID-19 case numbers, fatality rates and mortality rate ratios in Australia and NEPHU.

Research findings:
The total number of COVID-19 cases reported in Australia from 2020-2021 was 395,504. Victorian cases accounted for 56% (221,000). Hume represents 3.8% of the Victorian population but had 8.2% of Victorian COVID-19 cases in 2020-2021. Similarly, Whittlesea represents 3.5% of the Victorian population but 4.8% of 2020-2021 COVID-19 cases.

Ten LGAs in Australia had COVID-19 in their top 20 causes of death in 2020-2021. All 10 LGAs were in Victoria, 3 within the NEPHU catchment; Hume with a mortality rate of 12.9 per 100,000 population, Whittlesea (10.9 per 100,000) and Darebin (6.6 per 100,000). From 2020-2021, the COVID-19 mortality rate ratio for Hume was 10-fold higher compared to Australia (10.4) and in Whittlesea it was 9-fold higher (8.8). In these LGAs, 45% and 42% of residents were born overseas respectively and both LGAs have areas with high socioeconomic disadvantage.

Translational outcomes:
This reflection enables us to understand how the NEPHU community was disproportionately affected by COVID-19 and identify areas for future community intervention programs. Subsequent research will investigate how demographic and socioeconomic factors relate to increased case and case fatality rates. This will assist with development of long-term interventions designed to protect our vulnerable communities from emerging public health risks.

A Bayesian network model for estimating risk of long COVID in Australia

Miss Jane Sinclair[1], Dr Helen Mayfield[2,3], Mr Samuel Brown[1], Ms Tina Moghaddam[4], Dr Michael Waller[2], Dr Olivia Williams[2], A/Prof John Litt[5], A/Prof Kirsty Short[1], Professor Colleen Lau[2,3]
[1]School Of Chemistry And Molecular Biosciences, The University Of Queensland, [2]School of Public Health, The University of Queensland, [3]Centre for Clinical Research, Faculty of Medicine, The University of Queensland, [4]Faculty of Science, The University of Queensland, [5]College of Medicine and Public Health, Flinders University

Long COVID continues to be a serious health issue around the globe, currently affecting an estimated 11% of adults who have ever suffered from COVID-19, causing over 200 symptoms across 10 organ systems. Despite the impact this continues to have on sufferers' quality of life and ability to work, long COVID remains largely overlooked in public discourse and is not often considered when making important public health decisions.

To address the challenge of assessing the continued risk of long-term adverse outcomes from COVID-19, we developed a Bayesian network (BN) informed by Australian and international data, that calculates probabilities of outcomes under different scenarios of vaccine coverage and effectiveness, sex, age, comorbidities, number of previous SARS-CoV-2 infections, and drug treatments administered during acute infection. This BN will form the basis of the next iteration of the COVID-19 Risk Calculator (CoRiCal) (https://corical.immunisationcoalition.org.au), a user-friendly online tool that enables scenario-analysis based on user inputs.

The resulting BN may be used to estimate the risk of developing 19 symptoms from long COVID affecting diverse organ systems, both for individuals and on a population level. Calculated outcomes show incomplete vaccination, missed opportunity for drug treatment during acute infection, and repeat infections to be the greatest controllable influences for an increased risk of long COVID development. The tool can be used by health managers and individuals alone or in conjunction with clinicians for shared decision making on vaccination, continuing infection-avoidant behaviors such as masking and social distancing, and pursuing early treatment during acute infection.

The model is easily updated to include emerging best evidence, data pertinent to different countries, vaccines, and outcomes. Moving beyond the pandemic, the model can function as proof-of-concept for the use of BNs as risk-benefit analysis tools in other healthcare contexts to prevent, prepare for and manage vaccine-preventable diseases into the future.

Fatal burden of COVID-19 and other causes of death in Australia

Ammie Li[1], Brandon Hao[1], Ms Aaliya Ibrahim[2], Clement Schlegel[1], Dr Gregory Hood[1], Michael Agnew[1]
[1]Health Economics and Research Division, Australian Government Department of Health and Aged Care, [2]Interim Australian Centre for Disease Control, Australian Government Department of Health and Aged Care

Background/aim: Years of life lost (YLL) is a measure of fatal burden and takes into account the frequency of deaths and the age at which they occur. Compared to crude death tolls, YLL is arguably a more robust measure of the mortality impacts of the COVID-19 pandemic, used to quantify the social and economic loss owing to premature death. In this study, we calculated the fatal burden associated with COVID-19 and other causes of death in Australia from 2019 to 2022.

Methods: The analysis was conducted using demographic and death data contained within the Person Level Integrated Data Asset. The study population included all deaths which occurred between 2019 to 2022 in Australia that were received and registered by the Australian Bureau of Statistic (ABS) by 31 March 2023.

Results: Between 2019 and 2022, total fatal burden in Australia increased by 10%, noting that this increase was non-linear. There was an increasing trend in fatal burden for both sexes over the pandemic. The YLL per 1,000 population in males was consistently around 45% higher than observed in females, but females experienced a higher proportional increase in total fatal burden during the study period. COVID-19 was found to be the third leading cause of fatal burden in 2022, after cerebrovascular diseases and 'other cardiac conditions' (cardiac disease that is not coronary artery disease). COVID-19 as an associated cause of death in deaths due to cancer, ischaemic heart disease, diabetes and dementia contributed to high levels of fatal burden.

Conclusion: Our findings contribute to improving our understanding of the mortality impacts of the COVID-19 pandemic in Australia and how these have evolved over time. The results highlight areas of health where COVID-19 has had a disproportionate impact, which can support the implementation of more targeted and nuanced public health measures.

Residential aged care facility managers perspectives on the psychosocial impacts of COVID-19.

Dr Katarzyna Bolsewicz[1,2], Dr Jenni White[1], Ms Megan Vidler[1], Dr Peter Murray[1], Dr David Durrheim[1]
[1]Hunter New England Local Health District Public Health Unit, [2]National Centre for Immunisation Research and Surveillance (NCIRS)

Background:
The risk of COVID-19 has disproportionately affected older adults especially those with underlying multi-morbidities living in residential age care facilities (RACF). Strict infection control measures were rapidly implemented with little time for residents, families, or staff to adapt. Growing evidence highlights the negative and disruptive impact of managing COVID-19 on the aged care workforce. Improved understanding of RACF managers experience during the response to the COVID-19 pandemic can assist with practice and policy changes that better support staff and residents in the future.

Methods:
We conducted an interpretative qualitative study involving interviews with nine managers of RACFs across metropolitan and regional New South Wales, the largest state in Australia. Data were analysed using an inductive thematic approach.

Results:
Managers worked across 10 RACFs representing diverse geographic, size, stand-alone/corporate, and quality rating characteristics. Four themes were identified: (1) Increased pressure on maintaining services during COVID-19 pandemic, including shortage of staff and leave allowance, difficulty accessing mandated COVID-19 pandemic vaccines, and public criticism of the sector; (2) Increased responsibility on RACF managers during COVID-19 pandemic, including responsibility to interpret and implement changing public health recommendations in the facility while experiencing backlash from visitors, managing outbreaks, and caring for staff who were struggling socially and financially; (3) Psychosocial impacts on managers due to accumulating pressures, including anxiety, depression, and burnout; (4) Experience of beneficial supports during the pandemic, including at system, organisation and individual level.

Discussion:
The COVID-19 pandemic compounded pre-pandemic sector challenges and added new stressors. While resilient and resourceful, RACF managers experienced workplace stress and burnout as they attempted to support staff and mitigate the negative impacts on RACF residents. There is a need for greater investment to effectively support staff, and research to identify optimal psychosocial and management supports.

We heard you: Audiovestibular adverse events following COVID-19 vaccinations.

Dr Aishwarya N Shetty[1,2], Ms Hannah Morgan[1,2,3], Dr Linny Phuong[1,3,4], Mr John Mallard[1,2], Dr Diana Vlasenko[1,2], Dr Christopher Pearce[5], Dr Nigel Crawford[3,4], Prof Jim P Buttery[1,2,3,4], A/Prof Hazel Clothier[1,2,3]
[1]Epi-Informatics Group and SAEFVIC, Murdoch Children's Research Institute, [2]Epi-Informatics, Centre for Health Analytics, Melbourne Children's Campus, [3]Department of Paediatrics, The University of Melbourne , [4]Department of General Medicine, The Royal Children's Hospital, [5]Outcome Health

Introduction
Vaccine safety surveillance systems worldwide indicated receiving some reports of tinnitus, vertigo and hearing loss following COVID-19 vaccination, however, evidence to confirm such an association of audiovestibular adverse events COVID-19 vaccines had so far been inconclusive. This study aimed to determine if there was an increase in audiovestibular events following COVID-19 vaccination.

Methods
A multi-data source approach was applied. First, a retrospective observational analysis of spontaneous reports of audiovestibular events to Victoria's vaccine safety surveillance service, SAEFVIC received from February 2021 to March 2023. Second, a self-controlled case series analysis using general practice data collected via the POpulation Level Analysis and Reporting (POLAR) tool sourced in partnership with five Australian Primary Health Networks (PHNs) from contributing practices with over 12 million case records.

Results
In SAEFVIC, the reporting rate was higher for Vaxzevria® adenovirus vector-based vaccines compared to mRNA vaccines (rate ratio: 1.94, 95%CI 1.65, 2.23). Rates were higher following dose 1 compared to dose 2 for the Vaxzevria® adenovirus vector vaccine (rate ratio: 4.1, 95%CI 2.89, 5.87).
Our primary care SCCS analysis showed an increase in presentations of vertigo following mRNA vaccines (Relative Incidence(RI)=1.40, P<0.001), and tinnitus following both the Vaxzevria® adenovirus vector and mRNA vaccines (RI=2.25, P<0.001 and 1.53, P<0.001 respectively).
There was no increase in hearing loss following any COVID-19 vaccinations. (RI=1.11, P =.35)

Conclusions
This study is the first to demonstrate an increase in tinnitus and vertigo following COVID-19 vaccinations. Our study, however, was unable to account for the potential of concurrent COVID-19 infections, which literature has indicated to be associated with audiovestibular events.
Healthcare providers and vaccinees should be alert to potential audiovestibular complaints after COVID-19 vaccination. Our analysis highlights the importance of using large real-world datasets to gather reliable evidence for public health decision-making.

COVID-19 outbreaks in aged care facilities: a regional Public Health Unit perspective

Dr Rashidul Hashan[1,2], Ms Jacina Walker[2], Margaret Charles[2], Susie Le Brasse[2], Daneille Odorico[2], Dr. Nicolas Smoll[3], Dr. Michael Kirk[4], Professor Robert Booy[5], Professor Gulam Khandaker[1,2]
[1]Central Queensland University, [2]Central Queensland Public Health Unit, [3]Sunshine Coast Public Unit, [4]Central Queensland Hospital and Health Services, [5]Sydney Medical School, The University of Sydney

Background
We report a regional public health unit approach to COVID-19 outbreaks in Aged Care Facilities (ACFs) in Central Queensland and compare summarized outbreak characteristics across different variants.
Methods
Central Queensland Public Health Unit (CQPHU) launched a prospective active enhanced vaccine preventable disease (VPD) surveillance within CQ region since July 2021. A Public Health Rapid Response Team (PHRRT) for prompt identification of respiratory outbreaks was implemented to coordinate public health response in April 2022. Descriptive statistics were used to report outbreak characteristics and appropriate statistical tests applied to explore the impact of the applied public health response in managing outbreaks.
Results
A total of 50 COVID-19 outbreaks affected approximately 938 COVID-19 cases: Residents – 540 (57.5%), Staff – 398 (42.4%) across 19 ACFs in the CQ region between January and August 2022. Residents' mean age was 84.8 years and 61.8% were female. Three COVID-19 outbreak waves were identified; 1st wave: 1 January to 13 March 2022 [BA.1]; 2nd wave: 14 March to 12 June 2022 [BA.2]; 3rd wave: 13 June – 31 August 2022 [BA.5]. Outbreaks mean (SD) duration in days was similar during these waves with higher during Wave 1 33.6 (14.6) days. Delay in outbreak notification to PHU from the ACFs gradually declined from 3.5 (3.1) to 2.0 (1.8) days in Wave 1 and Wave 3 respectively. Mean case fatality rate (SD) among residents were 2.0 (5.1); 3.5 (4.5); 1.4 (2.3) days during waves 1, 2, and 3 respectively. We found that both Hospital in the Home (HiTH) admissions and deaths were significantly lower (62 vs 5, $p<0.00001$, 14 vs 16, $p=0.02$) after the introduction of the PHRRT compared with the outbreaks that occurred before.
Conclusions
COVID-19 outbreak characteristics and outcomes among the high-risk ACF residents are crucially important to inform the stakeholders to reshape the future public health response.

3E - Influenza vaccination uptake and impact, Mezzanine 3, June 11, 2024, 15:30 - 17:00

402

Influenza Vaccine Effectiveness and Coverage in Australian Children: 2019-2022

Dr Emily Rice[1,2], Prof Allen Cheng[3,4], Prof Kristine Macartney[5], Assoc Prof Julia Clark[6], Prof Helen Marshall[7,8], Prof Nigel Crawford[9,10], Dr Jeremy Carr[4,11], Assoc Prof Joshua Francis[12,13], Prof Nicholas Wood[5], Assoc Prof Phillip Britton[5], Prof Christopher Blyth[1,2,14]
[1]Perth Children's Hospital , [2]Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute, [3]Monash Medical Centre, [4]Monash University , [5]National Centre of Immunisation Research and Surveillance, [6]Queensland Children's Hospital, [7]Women's and Children's Health Network, [8]Robinson Research Institute, [9]Royal Children's Hospital, [10]Murdoch Children's Research Institute, [11]Monash Children's Hospital , [12]Royal Darwin Hospital, [13]Menzies School of Health Research, [14]University of Western Australia

Introduction:
Influenza remains an important cause of paediatric morbidity and mortality in Australia. Children with comorbidities are at risk of severe disease, however most children with severe influenza have no underlying health conditions . Influenza immunisation is an important strategy to prevent hospitalisation and severe disease. The COVID-19 pandemic has had far-reaching effects on influenza epidemiology, and community attitudes towards immunisation.

Methods:
Subjects were recruited prospectively from PAEDS-FluCAN sentinel hospital sites between 2019 and 2022. Children hospitalised with an acute respiratory illness (ARI) and laboratory-confirmed influenza were considered cases whilst those who tested negative for influenza were considered controls. Vaccine effectiveness was estimated from the adjusted odds ratio of vaccination in cases and controls.

Results:
PAEDS-FluCAN recruited 3652 children hospitalised with influenza (cases) and 5334 influenza negative controls. Of those hospitalised with influenza, 27.9% were <2 years of age. Overall, 7.5% of those hospitalised with influenza required admission to intensive care.

COVID-19 restrictions had dramatic impacts on influenza activity with only 14 cases identified in 2020 and 2021, compared with 2073 cases 2019 and 1563 cases 2022.

There was a reduction in vaccine coverage following the COVID-19 pandemic with 19.8% of influenza negative controls vaccinated in 2022 compared to 44.1% in 2019. Reduced vaccine coverage was seen across all states, age groups and in patients with medical comorbidities.

Adjusted vaccine effectiveness was 57.4% (95%CI: 49.0, 64.4) in 2019 and 66.3% (54.9, 74.8) in 2022 with demonstrated effectiveness in all age groups and in those with and without medical comorbidities.

Conclusion:
There was reduced paediatric influenza vaccine coverage across Australia in 2022 compared to 2019, likely impacted by the COVID-19 pandemic. Despite reduced uptake, the influenza vaccine remained moderately effective in preventing influenza hospitalisations in children. Strategies to understand community sentiments and improve vaccine coverage are urgently required.

Impact of obesity in pregnancy on influenza vaccine immunogenicity and antibody transfer

Mrs Michelle Clarke[1,2], Ms Louise Goodchild[1], Associate Professor Lynne Giles[3], Professor Ian Barr[4], Professor Peter Richmond[5,6], Professor Helen Marshall[1,2]
[1]Women's And Children's Hospital, [2]Adelaide Medical School & The Robinson Research Institute, The University of Adelaide, [3]School of Public Health and The Robinson Research Institute, The University of Adelaide, [4]WHO Collaborating Centre for Reference and Research on Influenza, [5]Division of Paediatrics, University of Western Australia, Western Australia; , [6]Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute

Background and Aims: Influenza vaccination is recommended for pregnant women, offering the dual benefit of protecting pregnant women and their newborn infants against influenza. This study aimed to investigate the impact of body mass index (BMI) on influenza vaccine responses for pregnant women and their newborns.

Methods: Pregnant women attending the Women's and Children's Hospital in South Australia during 2018-2021 were invited to participate. Blood samples collected prior to and at 1- and 6-months post-vaccination to measure antibody responses by haemagglutination inhibition (HI) assay. Cord blood was collected at delivery. Seroprotection (SP) was defined as a post vaccination HI titre ≥ 40. Percent of participants achieving SP was compared between obese and non-obese pregnant women.

Results: A total of 73 women were enrolled and received quadrivalent influenza vaccination at a mean age of 32 years (range 21-44y) and median gestation of 24 weeks (range 11-37weeks). BMI at vaccination was ≥30kg/m2 for 21/73 women (28%). Most pregnant women demonstrated seroprotective antibody titres to all four influenza vaccine strains at 1 month post vaccination regardless of BMI category (19/20;95% vs 47/49;96%). At 6 months post vaccination, SP was maintained for 12/17 (71%) for obese women compared with 36/43 (84%) non-obese women (p=0.25). Cord blood serology showed HI titres ≥40 for 11/17 (65%) infants born to mothers with BMI ≥30 compared to 30/35 (86%) infants delivered by mothers with BMI <30 (p=0.08).

Conclusion: High BMI did not impair seroprotection levels following influenza vaccination in pregnant women at 1month post vaccination, however the percentage of women maintaining SP at 6 months, and cord blood samples demonstrating SP antibody titres were lower for obese vs non-obese pregnant women. Larger studies are required to assess the impact of obesity on maintenance and placental transfer of protective antibodies.

This investigator sponsored study received funding from Sanofi.

Establishing routine surveillance of barriers to influenza vaccination in young children

Dr Maryke Steffens[1], Dr Jess Kaufman[2], Suzanna Vidmar[2], Dr Kasia Bolsewicz[1], Associate Professor Frank Beard[1], Professor Julie Leask[3], Maria Christou-Ergos[3], Dr Majdi Dafallah[3], Professor Margie Danchin[2]
[1]National Centre For Immunisation Research And Surveillance (ncirs), [2]Murdoch Children's Research Institute, [3]University of Sydney

Background: Influenza vaccine coverage in children <5 years in Australia dropped from 46.1% in 2020 to 28.3% in 2023. To understand and address the reasons for this decline, we need to collect data on barriers to influenza vaccination. At present, Australia has no systematic method of identifying and tracking barriers to influenza vaccination nationally within specific population groups like young children. Without these data, programs risk implementing strategies that fail to address key barriers and are therefore ineffective in reducing vaccination gaps. We aim to establish routine national surveillance of barriers to influenza vaccination in Australian children aged <5 years.

Methods: Recruiting from an online panel, we will survey a nationally representative sample of n=2000 parents of children aged <5 years. Using a cross-sectional design and adapting the validated Vaccine Barriers Assessment Tool (VBAT), we will assess prevalence of barriers to influenza vaccination, and the association of barriers with parent socio-demographic characteristics and their child's vaccination status. Our established advisory group of policy makers and other stakeholders will disseminate these high-quality, timely data.

Findings: The first round of data collection will take place in March 2024. We will present our analysis of the first survey data, reporting on barriers relating to safety, effectiveness, trust, intention, equity, and access.

Conclusions: This study will provide stakeholders with important, high-quality data on barriers to influenza vaccination in young children. This data is necessary to inform the development of targeted strategies to address these specific barriers, with the aim of increasing uptake of influenza vaccination in this age group. This study can inform the establishment of ongoing, routine surveillance (annual or twice-yearly), which will enable the tracking of future trends, and has potential expansion to other populations such as Aboriginal and Torres Strait children, pregnant women, and other priority groups.

Refining the technique of home self-swabbing for influenza detection and surveillance

Ms Monique Chilver[1], Ms Zahra Ahsani[1], Ms Jessie Edwards[1], Associate Professor Sheena Sullivan[1], Ms Erica Dueger[2], Ms Cécile Eymin[2], Professor Nigel Stocks[1]
[1]The University Of Adelaide, [2]Sanofi Pasteur

During the first wave of the COVID-19 pandemic in Australia, the Federal Government legislated to allow General Practitioners (GPs) to bill for telehealth consultations, ensuring widespread access to care regardless of location. In future pandemics, telehealth would be instrumental in minimising risk to practice staff and patients. However, this approach presents challenges, particularly around accurately testing patients for diseases such as influenza and the subsequent collection of surveillance data.

To address this, the multi-year iSwab study assessed the feasibility and acceptability of home self-swabbing as a potential solution. Although previous studies have endorsed home self-swabbing for COVID-19, the recommended technique for influenza, the nasopharyngeal swab, is unsafe for self-administration. We compared positivity rates of a panel of respiratory pathogens from iSwab with national surveillance data. In the initial year of the study, participants were instructed to perform a shallow nasal swab resulting a 5% influenza positivity rate compared to the national surveillance data's 17%. Following slight modifications to the method in the second year of the study, we saw influenza positivity increase to 19%, aligning with the national surveillance data. This demonstrates the potential of utilising home self-swabbing in future influenza pandemics.

Influenza and RSV vaccine support: pulse survey of Australians with lung disease

Ms Lily Grigsby-duffy[1], Paige Preston[1]
[1]Lung Foundation Australia

Viral conditions that cause respiratory symptoms, such as influenza and Respiratory Syncytial Virus (RSV), can be severe, even fatal, for people living with a lung disease. Expanding eligibility for influenza vaccinations and adding RSV vaccinations to the National Immunisation Program (NIP) would have considerable benefits for Australians living with lung disease.
Lung Foundation Australia makes submissions to the Pharmaceutical Benefits Advisory Committee on medicines proposed to be listed on the PBS or NIP. To inform our submissions to a 2024 agenda, we developed a short survey to better understand the importance of influenza and RSV vaccines for those living with a lung disease. People living with a lung disease were recruited through Lung Foundation Australia's mailing list. The survey consisted of 10 questions, including quantitative and qualitative questions and ran for three weeks over December 2023 and January 2024. Data was analysed descriptively.
The survey received 860 responses. A large proportion (89%) of respondents had received an influenza vaccine in the last year. There was strong support (98% of respondents) for free influenza vaccines in Australia. For RSV, 87% supported the vaccine being available on NIP for pregnant women and 97% felt the RSV vaccine should be available on NIP for people aged 60 and over, and those with a lung disease. Most respondents were worried about contracting RSV. One respondent said, "living with a chronic lung issue it would give me peace of mind that I would be able to go out into the community better protected from catching RSV".
Vaccines are a cost-effective public health intervention that significantly reduce the risk of disease, disability, and death, particularly among at-risk individuals. This survey found strong support for influenza and RSV vaccines in those living with a lung disease.

RCTs assessing nudge interventions for influenza and COVID-19 vaccination uptake in medically-at-risk-children

Dr Bing Wang[1,2,3], Dr Prabha Andraweera[1,2,3], Prof Margie Danchin[4,5], Prof Christopher Blyth[6,7], Prof Ivo Vlaev[8], A/Prof Jason Ong[9], Prof Jodie Dodd[2,3,10], Prof Jennifer Couper[2,3,11], Dr Thomas Sullivan[12], Dr Alana Cuthbert[12], Prof Jonathan Karnon[13], Prof Nicola Spurrier[14,15], Dr Michael Cusack[15], Dr Dylan Mordaunt[14], Dr Dimi Simatos[16], Prof Gus Dekker[2,3,17], Dr Samantha Carlson[7], Dr Jane Tuckerman[5], Prof Nicholas Wood[18,19], A/Prof Lisa Whop[20], Ms Ashleigh Rak[4,5], Ms Kirsty Herewane[1,3], Ms Louisa Paparo[6,7], Prof Helen Marshall[1,2,3]

[1]Robinson Research Institute, The University of Adelaide, [2]Vaccinology and Immunology Research Trials Unit, Women's and Children's Hospital, [3]Adelaide Medical School, The University of Adelaide, [4]The Royal Children's Hospital, [5]Department of Paediatrics, The University of Melbourne, [6]Perth Children's Hospital, [7]Department of Paediatrics, The University of Western Australia, [8]School of Business, Warwick University, [9]School of Medicine, Monash University, [10]Women's and Babies Division, Women's and Children's Hospital, [11]Division of Paediatrics, Women's and Children's Hospital, [12]South Australian Health and Medical Research Institute, [13]Discipline of Public Health, Flinders University, [14]Discipline of Paediatrics, Flinders University, [15]SA Health, [16]Discipline of Paediatrics, Lyell McEwin Hospital, [17]Discipline of Women's Health, Lyell McEwin Hospital, [18]Discipline of Paediatrics, University of Sydney, [19]Children's Hospital Westmead, [20]Discipline of Public Health, Australian National University

Background: Uptake of recommended vaccines is low in medically-at-risk-children. Behavioural scientists have designed non-coercive "nudge" interventions to encourage positive health behaviours. Our study aimed to evaluate the impact of multi-component nudge interventions on the uptake of Influenza/COVID-19 vaccines in medically-at-risk-children.

Methods: Nudge development: A literature search was conducted to identify behavioural determinants that influence vaccine uptake in medically-at-risk children. Fourteen participants including medically-at-risk-children, their parents, paediatricians, nurses, hospital administrative personnel, behavioural scientists, psychologists and graphic designers from South Australia (SA), Western Australia (WA) and Victoria (VIC) participated in a nudgeathon to develop the multi-component nudge. Applying the "Mindspace" behavioural science framework, a 'nudge' comprising three SMS text message reminders with links to vaccine safety information and 3 videos of health professionals (specialist and nurse) and parent-child dyad providing advice was developed. Randomised controlled trials (RCT): Using a waiver of consent, medically-at-risk-children were enrolled to assess the effectiveness of the nudge intervention. In separate RCTs, medically-at-risk-children who had not received 1) an influenza vaccine during the 2023 influenza season, or 2) <2 doses of a COVID-19 vaccine, were randomised (1:1) to standard care or intervention.

Results: In total, 1131 for the influenza RCT and 1106 for the COVID-19 RCT, medically-at-risk-children were randomised across paediatric hospitals in SA, WA and VIC. Very few parents/caregivers in the intervention group accessed the different video links provided in the three SMS messages (n=46). The vaccine uptake was not significantly different between intervention and standard care groups for the influenza (OR: 1.11 95%CI 0.85-1.45) and COVID-19 (OR: 0.89 95%CI 0.34-2.35) cohorts.

Conclusions: Multi-component SMS text messages did not impact uptake of influenza or COVID-19 vaccines in medically-at-risk-children. Multi-component mass interventions may be less successful than personalised approaches to encourage vaccination in high risk groups.

What is going on with Immunisations in Aged Care?

Ms Carolyn Lloyd[1], Ms Angela Dawson, Ms Debra van den Berg, Dr Valerie Delpech
[1]Mid North Coast Local Health District, [2]University of Sydney

COVID 19 Immunisation administration within Residential Aged Care Homes (RACHs), was a core activity of the Australian Commonwealth Governments response to the pandemic. RACHs were rightly understood to be a high risk for transmission and have a highly vulnerable population. The delivery of the COVID19 immunisations was coordinated by the Commonwealth Government and rolled out to RACHs through contractors. This program resulted in excellent initial COVID 19 immunisation coverage rates which were then published publicly by the commonwealth.

During this period, the coordination of the National Immunisation Program (NIP), remained under the auspices of state-based immunisation programs and RACH residents were expected to receive their routine NIP vaccines, including influenza vaccines and pneumococcal vaccines from their individual routine primary care providers.

In partnership with the local Primary Health Network and local RACHs, the North Coast Population and Public Health Directorate (NCPPHD) were able to examine the immunisation records of all the residents from a significant number of RACHs. This enabled a review of facility-based immunisation coverage rates, for NIP vaccines including influenza, pneumococcal, zoster and dTpa vaccines as well as COVID 19 vaccines.

Coverage rates at the facilities ranged from 1.5-48% for pneumococcal vaccination, 51-91% to 91% for influenza 2023, 8-21% for shingles and 15-20 % for dTpa in initial analysis. The information was then provided back to the facilities, to enable them to create and implement individual resident and facility wide plans for increasing immunisation rates; with the aim of limiting outbreaks in the facilities and better engaging primary care providers in understanding the facilities needs regarding immunisation coverage and provision.

In this presentation we will provide the results of the immunisation coverage assessments at the RACHs and discuss the utility of the program in assisting the RACHs to engage in NIP as well as COVID immunisation program delivery.

Preventable Respiratory Virus Outcomes on the Sunshine Coast .....

Dr. Nicolas Smoll[1,2], Ms. Connie Schulz[6], Mrs. Dusty Lee Williams[1], Dr. Marco Giuseppin[5], Dr. Amalie Dyda[7], Prof Stephen Lambert[3], Prof. Colleen Lau[2], Prof. Gulam Khandaker[6]
[1]Sunshine Coast Public Health Unit, SCHHS, [2]UQCCR, University of Queensland, [3]Communicable Diseases Branch, Queensland Health, [4]School of Public Health, University of Queensland, [5]Community and Preventive Health Directorate , [6]Central Queensland Public Health Unit, CQHHS, [7]School of Public Health, University of Queensland

Introduction
Preventable respiratory viruses (PRVs) such as SARS-CoV-2, influenza, and respiratory syncytial virus (RSV) cause considerable healthcare burden. COVID-19, Influenza, and RSV burden is seasonal and varies across age groups. This study reviews confirmed cases of PRVs and links them to hospitalizations to better understand disease burdens on the health care system to help guide the allocation of public health resources.

Methods
We used probabilistic data-linkage (machine learning/unsupervised learning) to link the state-wide Notifiable Conditions System (NoCS) for COVID-19, Influenza, and RSV to public hospital admissions dataset for cases diagnosed between Jan 2022 and Dec 2023 and residing in the Sunshine Coast Hospital and Health Service (SCHHS) region. Any hospitalisation 30 days or less after the laboratory diagnosis were included (planned admissions e.g. dialysis/chemotherapy, excluded). We model these data using multivariable logistic regression modelling to understand the effect of PRV type, age, and time of the year diagnosed on case-hospitalisation, ICU admission and case-fatality rate.

Results
There was a total of 63899 persons with a PRV included in this cohort . A total of 54686, 6092 & 3121 persons were diagnosed with COVID-19, influenza and RSV respectfully. The case hospitalization/ICU admission/case-fatality rate was 7/0.11/0.8%, 5.4/0.39/1.1% and 16.7/0.67/2.34%, for COVID-19, influenza and respiratory syncytial virus (RSV), respectfully. Persons diagnosed with SARS-CoV-2 were OR 1.2 times as likely to be admitted than persons diagnosed with Influenza (95% CI 1.1, 1.4). Persons diagnosed with RSV were OR 2.8 times as likely to be admitted than persons diagnosed with Influenza (95% CI 2.4, 3.3).

Conclusion
RSV was the least common PRV but has the highest case-hospitalization rate, and persons with Influenza have the least likelihood of hospitalization. The high hospitalisation rate post-infection of all three conditions represents a significant burden on health care resources.

3F -
Group A Streptococcus, Mezzanine 4, June 11, 2024, 15:30 - 17:00

255

Management of an Acute Post Streptococcal Glomerulonephritis Outbreak in the Torres Strait.

Mr Darien Payne[1], Mrs Caroline Tauton[1], Mrs Nishi Moodley[2], Mrs Melissa Sprague[1], Mrs Kylie McKenna[1], Mrs Nancy Lui-Gamia[1], Mrs Emma Pickering[1], Mrs Allison Hempenstall[1]
[1]Torres and Cape Health Service , [2]Townsville Hospital and Health Service

Context and Aim:
Acute post-streptococcal glomerulonephritis (APSGN) is an autoimmune inflammatory disease of the kidneys triggered by a Group A streptococcal (Strep A) infection. In late 2023 eight cases of APSGN were diagnosed among children on Thursday Island. This presentation describes the outbreak and subsequent public health response.

Process:
All cases were treated with appropriate antibiotics and household contacts screened for skin sores, sore throats, hypertension, and oedema. A state-wide public health expert advisory group recommended a mass drug administration (MDA) program to curb spread of the circulating Strep A strain. Trimethoprim-sulfamethoxazole (Bactrim) was selected for the MDA due to a national shortage of the guideline recommended long-acting benzathine penicillin G (LA Bicillin). Children aged 12 months to less than 17 years living or schooling on Thursday Island were offered the MDA. The initiative also included Indigenous-led public health promotion including direct engagement with residents, social media platforms, and radio broadcasts.

Analysis:
Median age among the eight cases was six years (range 2-13 years), 6/8 cases (75%) were male and 6/8 cases (75%) required hospitalisation. Strep A was isolated from skin sores of 4/8 cases (50%) with all isolates identified as sequence type emm55. As part of the MDA, 789/981 (80%) of the target population was successfully contacted for follow-up, with 681/789 (86%) receiving MDA antibiotics, 43/789 (5%) receiving antibiotic coverage for other clinical presentations and 65/798 (8%) declining the MDA.

Outcomes:
The high MDA uptake was attributed to the locally led and culturally considered public health response. No further cases of APSGN have been identified among Thursday Island residents to date following the MDA program.

Focus on Aboriginal and Torres Strait Islander: Local First Nations staff involved in this public health outbreak response have provided approval. Additionally, an ethics exemption has been obtained by the Far North Queensland Human Research Ethics Committee. Four co-authors on this abstract identifies as First Nations people.

Aboriginal Health in Aboriginal Hands

Continuous Quality Improvement to overcome health inequity

Dr Lakhbinder Singh Kang[1], Dr Anna Wilshire[1]
[1]Derbarl Yerrigan Health Service

Context:
Aboriginal people have a right to high quality, evidence-based and comprehensive primary health care to meet their personal, community and cultural needs. Derbarl Yerrigan Health Services Aboriginal Corporation (Derbarl) is the largest ACCHO in Western Australia servicing more than 20,000 patients living on or visiting Wadjuk Noongar Boodja. Derbarl has embraced the NACCHO framework for CQI in primary health care and the organisation has embedded a framework which has led to significant health improvements for our patients.

Aim:
To present Derbarl' s collective commitment to building CQI into a sustainable, coordinated, and responsive primary health care model with demonstrated improvements in health outcomes.

Process:
Derbarl have incorporated a CQI working group into the clinical governance structure as a subcommittee. Derbarl staff have used audits to identify gaps in practice in accordance with current evidence-based guidelines. The audits form a basis for CQI interventions including development of more comprehensive clinical items, clinical education, patient recalls, and upskilling of GPs.

Analysis:
The group is currently working on 28 CQI projects reflecting community and practitioner identified areas of health priorities. These include Hepatitis B and C, Syphilis, Rheumatic Heart Disease (RHD), and the management of Chronic Kidney Disease.

Outcomes:
CQI has been incorporated into the core business of clinical care of Derbarl. Through CQI, Derbarl has been able to cure 82% of all our regular patients with Hepatitis C, eliminate congenital syphilis since the introduction of point of care testing, place 100% of patients with RHD on the register, and form a relationship with renal physicians to ensure Aboriginal people have access to renal transplants. Derbarl is now a place of clinical excellence. This has been proven by winning RACGP practice of the year for 2023.

Increased Notifications of Invasive Group A Streptococcal Disease in Victoria, 2022-2023

Mr Scott Umali[1,2,3], Dr Rachel Heenan[1], Dr Min-Ho Jung[1], Dr Jane Greig[2], Sheena McGowan[1], Janet Strachan[1]
[1]Victorian Department of Health, Community and Public Health Division, [2]Health Security and Pandemic Preparedness Program, Burnet Institute, [3]National Centre for Epidemiology and Population Health, Australian National University

Background
In late 2022, increases in invasive group A streptococcal (iGAS) disease were reported in the United States and several European countries as being above the levels seen during the pre-pandemic years and outside seasonally expected peaks. These trends were also observed in Victoria, where iGAS disease became notifiable in February 2022. Due to increased notifications, enhanced surveillance commenced at the Victorian Department of Health from early 2023. Using the surveillance data, we describe and characterise iGAS disease notifications between 2022 and 2023.

Method
Surveillance data collected from 1 February 2022 to 1 August 2023 were extracted from the Public Health Event Surveillance System (PHESS). Confirmed cases required laboratory definitive evidence of isolation of group A Streptococcus from culture or nucleic acid testing from a normally sterile site as per the Communicable Diseases Network Australia's national surveillance case definition.

Findings
Over the 19 months, 568 cases of iGAS fisease were notified in Victoria. Age distribution was consistent with global patterns, with 15% in children aged <5 years and 25% in people aged >65 years. All cases were admitted to hospital, and 96/288 (33%) were admitted to ICU where this was recorded. The primary clinical manifestation was bacteraemia (39%). During the period there were 50 deaths with a case fatality rate of 30/144 (21%) in people aged >65 years. The dominant emmtype, emm1.0, increased from 46/183 (25%) in 2022 to 142/385 (37%) in 2023.

Interpretation
The epidemiological trends of iGAS disease in Victoria since it became notifiable mirror the trends overseas. Further information is required to characterise the disease and its population health impacts in Australia. Several studies have hypothesised the reasons behind the increase as the emergence of the M1UK strain and concurrent surges of respiratory viral infections.

The epidemiology of invasive group A Streptococcal disease in Northern Queensland, Australia

Dr Himali Ratnayake[1], Professor Damon Eisen[1], Associate Professor Oyelola Adegboye[2], Dr Anton Pak[3], Professor Emma McBryde[1]
[1]James Cook University, [2]Menzies School of Health Research, [3]University of Queensland

Background
Invasive group A Streptococcal infection (iGAS) is a severe and life-threatening disease which became nationally notifiable in Australia in July 2021. Research on Group A streptococcal infections is ongoing due to its significant public health burden. The aim of this study is to estimate the incidence and environmental and socio-demographic predictors of iGAS in a tropical region in Australia.
Methods
Patients admitted to Townsville University Hospital from 2006 to 2020 with a diagnosis of iGAS infection were included. This is a part of a larger study involving five Hospitals and Health Services in Northern Australia using data from Tropical Australian Academic Health Centre (TAAHC) data linkage.
Results
Over the 15-year study period, 263 iGAS cases were identified. Sixty percent (n=158) were non-Indigenous. Mean age was 49 years. Seventy one percent of the population resided in areas with disadvantaged living conditions. The annual incidence for non-Indigenous population remained stable (4.8-5.6 per 100,000 per year) throughout the period while for Indigenous populations the incidence significantly reduced from 54 to 39 per 100,000 per year over the study period (p=0.046). Of the identified infections, there were 23%(n=61) cellulitis cases, 20%(n=52) septicaemia cases, 8.7%(n=23) musculoskeletal system related infections, 5.7%(n=15) pneumonia cases and 3.4%(n=9) postoperative infections. The average number of patient days per episode was 12.6. One-way ANOVA revealed no significant difference in the admission length with age (p=0.281, F-value=1.277). The case fatality rate was 2.7% (n=7) and all were due to sepsis. There was no obvious seasonal variation in iGAS incidence.
Conclusion
There is high burden of Invasive Group A Streptococcal infection in Northern Queensland, particularly among the Indigenous population, where the incidence is approximately ten times higher than for the non-Indigenous population. Further larger studies from the same region are required to determine environmental and socio-demographic predictors.

Schools out?! Absenteeism during a Group A Streptococcus outbreak in a school

Mr Aaron Osborne[1,2], Dr Julia Marshall[1], Janet Strachan[3], Dr Amy Parry[2], Dr Annaliese van Diemen,, A/Prof Hazel Clothier[2,4,5]
[1]North Eastern Public Health Unit, [2]National Centre for Epidemiology and Population Health, Australian National University, [3]Victorian Department of Health, [4]SAEFVIC, Infection and Immunity, Murdoch Children's Research Institute,, [5]Centre for Health Analytics, Melbourne Children's Centre

Background
Group A streptococcal infections are commonly mild but do rarely progress to life-threatening invasive (iGAS) disease. In July 2023, the North-Eastern Public Health Unit (NEPHU) in Melbourne received notification of severe iGAS in a grade 5/6 student at a primary school. Following reports of high absenteeism in the class, an investigation was initiated to assess risk of transmission and implement control measures.

Methods
Active case finding was conducted via school notifications and a survey administered to 5/6 class students and staff. At risk contacts were individuals who attended the class during the period 24th June to 1st September or an event on the 22nd July (n=38). Confirmed cases required laboratory and clinical evidence. Probable cases had clinical evidence with an epidemiological link to a confirmed case but no laboratory evidence. Absentee data were collated for students in the four weeks preceding the index case.

Results
We identified 11 cases (five confirmed, six probable) among 38 contacts (29% attack rate) with symptom onset dates from 24 July to 27 August. Eight of the cases were students (28% attack rate), and three cases were household contacts (33% attack rate). The index case had severe iGAS infection requiring hospitalisation; eight (73%) reported sore throat and one scarlet fever. 15 (54%) of 28 class students were absent from school in the 4-weeks preceding the index case's onset. The absenteeism cause was not determined. 16 of 27 contacts received clearance antibiotics (59%). We monitored for two incubation periods (six days) following the last case's symptom onset, with no cases identified.

Conclusions
This outbreak demonstrates the transmissibility of group A streptococcus (GAS) in a school setting with multiple clinical manifestations. Absentee data provided an early outbreak signal during the investigation. The findings supported the development of guidelines for the management of GAS in school settings to prevent severe disease.

Epidemiology of invasive group A streptococcal disease in the Northeast of Melbourne

Ms Safiya Ateekur Rahman[1], Dr Clarissa Moreira[1], Mr Aaron Osborne[1,2], Dr Annaliese van Diemen[1]
[1]North Eastern Public Health Unit (NEPHU), [2]National Centre for Epidemiology and Population Health, Australian National University

Background/aim:
Invasive group A streptococcal disease (iGAS) became nationally notifiable in July 2021. In Victoria, collection of enhanced surveillance data commenced in January 2023. From 2022, a global increase in the incidence of iGAS has caused serious illness and death. The purpose of this study was to describe iGAS epidemiology among cases in the North-Eastern Public Health Unit (NEPHU) catchment in Victoria, Australia and identify changes in local incidence.

Methods:
Data on confirmed and probable iGAS cases notified in 2022 and 2023 were extracted from the Victorian Public Health Events Surveillance System (PHESS). Descriptive analyses were conducted of demographic and risk factor data. Population estimates obtained from ABS Australian 2021 census data were used to calculate incidence rates.

Results:
In NEPHU, case numbers increased from 64 in 2022 to 153 in 2023, a 139% increase. The incidence increased from 3.6 per 100,000 in 2022 to 8.5 per 100,000 in 2023. The highest proportion of cases in NEPHU were seen among individuals aged 0-9 (18%), 30-39 (18%) and 40-49 (17%). The case fatality rate in NEPHU was 6.9%. Half of all deaths were among individuals aged 70+. Enhanced surveillance data including underlying risk factors was available for 80% of cases. Chronic conditions, for example heart disease, were the most common risk factor reported by at least 35% of cases.

Outcomes/future actions:
International trends of increase in iGAS cases were observed in NEPHU albeit with only 2 years of surveillance data. Considering these trends, NEPHU encourages increased vigilance among clinicians when reviewing patients with compatible illness. With iGAS set to become an urgent notifiable condition from 1st of March 2024, the collection of enhanced surveillance data will aid the early detection of cases, improve our understanding of iGAS, underlying risk factors for infection and severe outcomes, and inform best public health management.

An outbreak of Group A Streptococcus (GAS) in a NSW childcare centre

Ms Tove-Lysa Fitzgerald[1], Dr Kathryn Taylor[1], Ms Jackie Watson[1], Dr Megan Whitley[2], Ms Gina Stuart[1], Dr Christine Selvey[3], Ms Sally Ellis[3], Ms Melanie Middleton[3], Mr Qinning Wang[4,5], Mr Alexander Drew[4,5], Ms Grace Blackwell[4,5]
[1]Central Coast Local Health District, [2]Hunter New England Local Health District, [3]Health Protection NSW, [4]NSW Health Pathology - Institute of Clinical Pathology and Medical Research, [5]School of Medical Sciences, Faculty of Medicine and Health, University of Sydney

Streptococcus pyogenes is a Gram-positive beta-hemolytic bacteria which often causes skin and pharyngeal infections but also causes invasive disease. Children attending childcare centres (CCCs) are at increased risk of developing invasive GAS (iGAS) infections. We demonstrate how the Central Coast Public Health Unit (CCPHU) potentially prevented iGAS cases by assisting a CCC to manage a GAS outbreak associated with an iGAS case.
On 6 July 2023, CCPHU was notified of a positive GAS blood culture from a 14-month-old Aboriginal child. Their parent reported cases of impetigo in a sibling of the case who attended the same CCC as the case and other CCC attendees.
Advice was sought from Health Protection NSW and a local infectious disease physician. The sibling was referred to their GP for a swab of the impetigo and antibiotics. Advice on public health management was provided to the CCC and a line list of children with impetigo, fever, and sore throat requested. A letter for parents with advice on GAS/iGAS was distributed. Two GAS isolates were referred to the public health reference laboratory (ICPMR) for whole genome sequencing (WGS).
A total of 12 impetigo, two pharyngitis and one scarlet fever cases were identified, referred to their GP for assessment and treatment with oral antibiotics with exclusion from childcare until 24 hours after commencing antibiotics. After public health intervention, no further cases of GAS were detected in the CCC. S.pyogenes was isolated from the impetigo swab. WGS of isolates from the case and sibling demonstrated genomically indistinguishable S.pyogenes M1UK strains, indicating household transmission, however epidemiological links suggest GAS transmission in the CCC.
The role of PHUs in the management of institutional GAS outbreaks, particularly where First Nations people are affected should be considered. Further work is required to raise the profile of GAS infections in the community.

Invasive Group A Streptococcal Disease at sentinel paediatric hospitals in Australia, 2023

Ms Alissa McMinn[1], Dr Jane Oliver[1,3], Mrs Lauren Weston[1,2], Professor Nigel Crawford[1,2,3]
[1]Murdoch Children's Research Institute, [2]The Royal Children's Hospital, [3]The University of Melbourne

Internationally, there has been an increase in the incidence of invasive Group A Streptococcal (iGAS) disease, particularly in children with health alerts from nearly all States and Territories in December 2022-January 2023. Abo et al described this increase compared with pandemic years (2020-2021) in the paediatric population of the Paediatric Active Enhanced Disease (PAEDS) network. Following this study, we describe the 2023 epidemiology of iGAS within this network including a new and expanded case definition to align with the release of the Communicable Disease Network Australia guidelines.

We reviewed cases from the PAEDS Network collected for patients aged less than 18 years who were admitted to seven major paediatric hospitals in Victoria, New South Wales, Queensland, the Northern Territory, Western Australia, and South Australia. Confirmed cases were included if they had GAS isolated from a normally sterile site; probable cases were those with a severe illness including septic shock, streptococcal toxic shock syndrome (STSS) or necrotising fasciitis and isolation of GAS from a non-sterile site.

Overall, 215 cases were identified. Cases peaked in quarter two. Sixty-eight cases had a previous medical condition with skin and respiratory conditions the most common. There were four deaths and 92 had severe disease. At discharge, 66 (n=186) had ongoing deficits with four having a permanent disability. Respiratory co-infection was detected in 88 of 153 patients tested. Of those co-infected, 60% (53/88) had severe disease compared to 31% (39/127) without a known respiratory co-infection. Prophylactic antibiotics were given/recommended to close contacts of 60% (n=129) of cases.

The PAEDS Network continues to describe high numbers of often severe and at times fatal cases of iGAS at sentinel Australian paediatric hospitals. This outlines the continued need for public health awareness, monitoring, and vaccine development to prevent significant morbidity.

Abo, Y, et al. doi https://doi.org/10.1016/j.lanwpc.2023.100873

Emergence of a new clade of emm89 GAS in Queensland

Dr Rikki Graham[1], Cameron Moffatt[1], Dr Ning-Xia Fang[1], Associate Professor Amy Jennison[1]
[1]Forensic and Scientific Services, Queensland Department of Health

In 2015, an emerging clade of emm89 group A Streptococcus (GAS) was described that coincided with an increase in GAS disease in the UK (Clade 3). Strains in this clade have genomic characteristics that lead to increased expression of virulence factors and may confer a selective advantage over previous emm89 strains. In Queensland, emm89 GAS have also been associated with clusters of disease in residential aged care facilities (RACF), and since 2002 50% of identified RACF associated clusters in Queensland have been caused by emm89 GAS.
In order to investigate these RACF clusters and to determine if Clade 3 is present in the Queensland emm89 GAS population, all emm89 GAS isolates received by the Public Health Microbiology Laboratory at Queensland Health Forensic and Scientific Services since emm typing began in the early 2000s underwent genomic sequencing and analysis.
Analysis of sequences from 296 emm89 GAS isolates demonstrated the presence of distinct groups in the Queensland emm89 GAS population. Unlike emm89 GAS populations described in the UK and USA which were mostly ST101 and ST407, there were a relatively high number of ST142 and ST812 strains in the Queensland emm89 GAS population. However, the majority of Queensland isolates belonged to Clade 3, with 80% (n=233) of emm89 GAS isolated from 2006 onwards belonging to this clade. All Queensland Clade 3 isolates had genomic features associated with higher virulence potential including increased streptolysin O production and an acapsular phenotype. When the emm89 GAS RACF clusters were investigated, all isolates were Clade 3.
Clade 3, which has emerged to become the dominant clade of emm89 GAS in the UK and USA is now also the dominant clade in Queensland. The association of this clade with clusters of GAS disease in RACF populations highlights the importance of continued surveillance of GAS in Queensland.

Burden of Acute Rheumatic Fever and Rheumatic Heart Disease in Western NSW

Mrs Kathy Seward, Miss Rebecca Kingston
[1]WNSWLHD NSW Health

Western NSW Local Health District
Acute Rheumatic Fever and Rheumatic Heart Disease

This project aims to address the underestimated burden of Acute Rheumatic Fever (ARF) and Rheumatic Heart Disease (RHD) in Aboriginal peoples in Western NSW through a multifaceted, multi staged approach.

Numerous factors contribute to this significant underestimation, among which are: a false perception the disease has been eliminated in high-income countries; a relatively new ARF/RHD state-based register and notification process and a lack of awareness in clinicians and communities.

The first objective involves a detailed analysis of antibiotic prescribing behaviours in emergency departments, with a specific focus on acute pharyngitis and skin infections, such as impetigo and scabies, in populations at higher risk for ARF and RHD. By optimising antibiotic usage, the project aims to minimise the autoimmune response linked to ARF.

The second objective underscores community engagement and collaboration for the development of a culturally sensitive, community-led prevention and early intervention program. Through extensive consultations with local Aboriginal organisations, the Department of Education, childcare services, and other stakeholders, this initiative aims to raise awareness, facilitate early detection, and implement tailored preventive measures within the community.

The third objective emphasises the establishment of a school-based screening program utilising cardiac ultrasound to measure the incidence and prevalence of RHD and ARF in school-aged populations. By integrating this screening initiative into schools, the project facilitates early identification of cases, allowing for timely medical intervention and support.

In essence, this comprehensive project integrates clinical research, community engagement, and school-based screening to innovatively enhance understanding and measurement of ARF and RHD burdens in Western NSW. By addressing antibiotic prescribing behaviours, fostering community-led initiatives, and implementing school-based screening, the project endeavours to significantly contribute to the prevention and early intervention of ARF and RHD in at-risk populations, bridging the awareness gap and fostering a proactive approach to tackling these health challenges in the region.

This project is supported by local Aboriginal organisations including the Aboriginal Community Controlled Health Organisation and Aboriginal Health Manager for Partnerships and Community Engagement. Permission has been provided to present these findings at the 2024 CDIC Conference.

4A -
Public Health Genomics, Great Hall 4 - Plenary, June 12, 2024, 13:30 - 15:00

350

Tracing Hepatitis A from importation to local transmission in New Caledonia, 2018-2022

Dr Ann-claire Gourinat[1], Laura DUPONT[1], Dr Lina MOUNA[2], Pr Anne Marie ROQUE AFONSO[2], Dr Arnaud CANNET[1]
[1]Government of New Caledonia DASS-NC, [2]Assistance Publique-Hôpitaux de Paris
The hepatitis A virus (HAV) outbreak in New Caledonia, spanning January 2018 to March 2022, illuminates the critical role of imported viral strains in local transmission dynamics. This study investigates the outbreak's origins, emphasizing the initial importation of HAV through travelers from Vanuatu, and explores the interplay between environmental, socioeconomic, and infrastructural vulnerabilities in its spread.

Methodology: Employing a retrospective observational approach, the study analyzed 672 confirmed cases from New Caledonian health authority records. The methodology included demographic analysis, hospitalization rates, and an in-depth phylogenetic examination of HAV strains to identify the predominance of subgenotype IA and novel strain clusters. The approach aimed to trace the outbreak's evolution and the factors contributing to its spread.

Results: The outbreak was significantly marked by the importation of HAV strains through travelers from Vanuatu, leading to indigenous transmission within New Caledonia. A high hospitalization rate of 32.3% was observed, alongside distinct phylogenetic clusters of HAV subgenotype IA. The analysis highlighted the exacerbation of the outbreak due to environmental factors like the 2020-2023 La Niña event, and socioeconomic and infrastructural inadequacies, particularly in wastewater and drinking water management systems.

Conclusion: The study concludes that the HAV outbreak in New Caledonia was triggered by the importation of viral strains from Vanuatu, with subsequent local transmission facilitated by environmental events and infrastructural vulnerabilities. It underscores the need for improved vaccination efforts, particularly among travelers and susceptible populations, and calls for enhanced public health measures, including infrastructure upgrades and comprehensive surveillance, to prevent future outbreaks. This case study highlights the importance of global and local interconnectivity in infectious disease dynamics, advocating for a multifaceted approach to public health preparedness and response in Pacific Island Countries and Territories (PICTs).

Using genomics to understand risk factors of recurrent invasive pneumococcal disease

Miss Sarah Smith[2], Dr Rebecca Rockett, Dr Shahin Oftedah, Professor Vitali Sintchenko
[1]Centre For Infectious Diseases And Microbiology – Public Health, Westmead Hospital, Westmead, Nsw, Australia, [2]School of Medical Science, Faculty of Medicine and Health, University of Sydney

Introduction: Invasive pneumococcal disease (IPD) is a major cause of morbidity and mortality worldwide, particularly in children and elderly. Recurrent IPD (rIPD) can be difficult to manage and investigate as it is often unclear if the infection persists through treatment failure, acquisition of a new strain of Streptococcus pneumoniae, or due to acquisition of antimicrobial or virulence genes. This study aimed to characterise rIPD and identify markers and specific genes that can be used to differentiate endogenous relapse from new infections.

Methods: A total of 49 rIPD episodes (103 isolates of S. pneumoniae) where investigated. rIPD cases were defined as episodes diagnosed >31 days apart and relapse with a single nucleotide polymorphism (SNP) difference of 10 or less. All isolates were serotyped and subjected to whole genome sequencing and their genomes compared antimicrobial resistant (AMR) and virulence genes examined.

Results: The same causative serotype occurred in 27 episodes making up 55% of cases (27/49). Of these 24/27 (89%), had less than 10 SNP between them. There were 30 genomes (30/103) that showed antimicrobial resistance, and none of these were MDR. AMR mutations, however, did not appear to arise between first and second infection in relapse cases. There were 5 genomes that had high level resistance to penicillin in silico, the first line treatment against S. pneumoniae infection.

Conclusions: Genomic comparison of pneumococci associated with rIPD demonstrated a higher resolution than conventional serotyping and indicated that 49% (24/49) of events were due to relapse caused by the same strain. Genomics was also able to highlight any AMR that was present in cases. The development of resistance did not appear to be the driver for recurrent infection.

Genomic insights into recent trends of antimicrobial resistant Neisseria gonorrhoea in Queensland

Dr Alireza Zahedi[1], Kerri Le[1], Sumeet Sandhu[1], Gino Micalizzi[1], Rikki Graham[1], Amy Jennison[1]
[1]Forensic and Scientific Services, Queensland Health

The increase in transmission and antimicrobial resistance (AMR) in Neisseria gonorrhoeae is a global health concern with worrying trends of decreasing susceptibility to the last-line drug extended-spectrum cephalosporin (ESC) ceftriaxone. A dramatic increase in reported gonorrhoea cases has been observed in Australia over the last decade. The aim of the present study was to investigate the genomic epidemiology of all N. gonorrhoeae isolates received at Forensic and Scientific Services, Queensland Health from 2017 to 2022, in conjunction with phenotypic AMR and patient demographic information. In total, 8681 isolates were tested for anti-microbial susceptibility, and of these, 210 isolates that showed either decreased susceptibility to ceftriaxone or resistance to Azithromycin were subjected to whole-genome sequencing for molecular typing. Using the MLST, NG-STAR, and NG-MAST typing schemes; 26, 45, and 64 sequence types were found, respectively, where shifts in MLST patterns over the study period were identified. While ST9363 was dominant over the first three years, ST9362 and ST7822, ST11706 and ST1580 were the most predominant STs identified in 2020, 2021 and 2022, respectively. In addition, simultaneous changes in phenotypic AMR profiles were observed with an increase in proportional distribution of isolates with higher levels of azithromycin resistance per year. To better understand clonal complexes and interactions associated with increased resistance to azithromycin and how this corresponds to the shifts observed in MLST profile, genomic alterations in combination with mutations in AMR determinants were further investigated and will be discussed. Overall, this study suggests that continuous surveillance of the spread and evolution of N. gonorrhoeae, including phenotypic AMR testing and WGS in parallel, is essential for enhanced knowledge regarding the dynamic evolution of N. gonorrhoeae and clonal changes in gonorrhoea epidemiology.

Prioritising pathogens for whole genome sequencing in Australia: a Delphi study

Dr Tehzeeb Zulfiqar[1], Dr Angeline Ferdinand[2], Ms Danielle Cribb[1], Professor Kathyrn Glass[1], Professor Ma Kirk[1]
[1]National Centre of Epidemiology & Population Health, The Australian National University, [2]Peter Doherty Institute, University of Melbourne

Introduction: Whole genome sequencing aids in understanding and controlling infectious disease threats through greater resolution of typing infectious agents. However, to achieve the most significant public health benefits, sequencing efforts must be strategically focused on areas where they can make the most impact.
Aim: To build consensus among experts and stakeholders in establishing criteria to prioritise pathogens for sequencing for public health purposes in Australia and mechanisms for determining prioritisation.
Method: 83 Australian experts in infection prevention and pathogen genomics were invited to participate in a Delphi survey. In Round 1, experts evaluated 87 statements using a 5-point Likert scale. In Round 2, 39 participants from round 1 reassessed 57 statements.
Data Analysis: Survey analysis was performed using STATA-17. Thematic analysis was employed to examine participant comments provided in the first round.
Results: The largest expert groups were from Victoria (27.5%), Queensland (20%), and New South Wales and Australian Capital Territory (17.5%), with backgrounds in microbiology (31%), epidemiology (28%), and public health (20%). The first round showed 29% consensus (>80% agreement or disagreement), 32% partial consensus (60-79%), and 39% no consensus (<60%). Consensus was reached on sequencing pathogens that significantly affect institutional and hospital environments (94%), disproportionately impact Aboriginal and Torres Strait Islander communities (91%), lead to high morbidity and hospitalizations (91%), and are linked to antimicrobial resistance, high virulence, and novel or emerging threats (all 91% agreement). Pathogens such as Shigella, Salmonella, Listeria monocytogenes, Mycobacterium tuberculosis, Group A Streptococcus, Escherichia coli, Carbapenemase-producing Enterobacterales, and Neisseria meningitidis were identified as priorities for sequencing in outbreak investigation settings.
Outcome: Findings will guide the development of guidelines for prioritisation of pathogens for sequencing in public health surveillance and outbreak settings. Whole genome sequencing has capacity to significantly enhance public health responses in Australia.

Use of genomic sequencing to guide acquisition investigation of Salmonella Typhi

Dr Rehana Di Rico[1,8], Jelena Traljic[1], Clarissa Moreira[1], Su Ann Ho[2,3], Min-Ho Jung[4], Jane McAllister[4], Nicole Hughes[4], Mary Valcanis[5], Norelle L Sherry[5,6], Claire L Gordon[1,6,7], Annaliese van Diemen[1]
[1]North Eastern Public Health Unit, Austin Health, [2]Infection Prevention and Control, St Vincent's Health, [3]Department of Infectious Diseases, St Vincent's Hospital Melbourne, [4]Communicable Section, Health Protection, Victorian Department of Health, [5]Microbiological Diagnostic Unit Public Health Laboratory, Department of Microbiology & Immunology at the Peter Doherty Institute for Infection & Immunity, University of Melbourne, [6]Department of Infectious Diseases & Immunology, Austin Health, [7]Department of Microbiology and Immunology, University of Melbourne at the Peter Doherty Institute for Infection and Immunity, [8]Department of Rehabilitation, Epworth Monash Rehabilitation Medicine Unit (EMReM)

Context
As most Salmonella Typhi (S. Typhi) cases notified to public health units in Australia are acquired overseas, a case without recent travel raises concerns of local transmission. We describe a case of S. Typhi in a hospital inpatient without recent travel, where early use of genomic sequencing suggested remote acquisition from Chile in the 1980s, with chronic asymptomatic carriage. This facilitated the stand-down of a complex acquisition investigation.

Case
A notification of S. Typhi on stool culture was received for a 96-year-old female living in Melbourne, Australia in October 2023. She had been hospitalised for three weeks (unrelated illness) and transferred into a residential aged care facility (RACF) six days prior to the result being known. She was asymptomatic and the sample was collected due to a recent ward gastroenteritis outbreak.

Process
Epidemiological investigation identified the case had emigrated to Australia in 1981 from Chile. Recent typhoid-like illness, overseas travel or contact with travellers from endemic areas were excluded. Subsequent genomic sequencing identified the isolate was MLST-2 (ST2), did not cluster with any strains isolated in Victorian or international databases, and most closely clustered with historical South American strains, with potential in-host changes over time.

Analysis
The case was presumed infectious throughout their hospital stay, with chronic carriage. There were 18 contacts of which 16 provided screening samples and were negative. Antibiotic case clearance was not recommended by the treating clinician due to patient co-morbidity, treatment toxicity risks and unlikely treatment success without gallbladder removal. Enhanced infection control measures were instituted in the RACF (e.g. private bathroom, contact precautions for personal care, no food preparation). No additional cases were reported after two incubation periods (60 days).

Outcomes
Early genomic sequencing enhanced the efficiency of the public health investigation by rapidly confirming overseas acquisition and chronic carriage, obviating the need for extensive local upstream investigation.

Improving accessibility of pathogen genomic surveillance for public health units

Dr Shona Chandra[1], Carl Suster[1], Connie Lam[1], Grace Blackwell[2], Patrick Peacock[1], Alicia Arnott, Conrad Moreira[3], Ramon Shaban[3], Shopna Bag[3], Catherine Bateman[3], April Roberts-Witteveen[4], Alison Nikitas, Priscilla Stanley[5], Kerri Basile[1,2], Vitali Sintchenko[1,2], Matthew Watts[1,2], Jen Kok[1,2]
[1]Centre for Infectious Diseases and Microbiology – Public Health, Westmead Hospital, [2]Centre for Infectious Diseases and Microbiology Laboratory Services, Institute of Clinical Pathology and Medical Research, NSW Health Pathology, [3]Parramatta Public Health Unit, Western Sydney Local Health District, [4]Albury Public Health Unit, Murrumbidgee and Southern NSW Local Health Districts, [5]Dubbo Public Health Unit, Far West and Western NSW Local Health Districts

In New South Wales, whole genome sequencing (WGS) of pathogens is increasingly used to support public health investigations of outbreaks and infectious disease surveillance. WGS analysis and interpretation is qualitatively different to many conventional microbiological diagnostic assays relied upon by public health investigators. As an investigation evolves, WGS data can be re-analysed to support or refute emerging epidemiological hypotheses. Specialised training is required to interpret WGS analysis. The reporting format and types of results available will vary depending on the outbreak and epidemiological context.
In 2023, The Centre for Infectious Diseases and Microbiology – Public Health (CIDM-PH) commenced a multi-year project to support the use of pathogen genomics in public health units (PHUs) across Western Sydney LHD, Murrumbidgee and Southern NSW LHDs, and Far West and Western NSW LHDs. The project's communications and capacity building component launched with a series of workshops covering introductory pathogen genomics and genomic epidemiology for participating PHU communicable disease staff. The team conducted workshops at urban, regional and remote sites for a total of 25 participants.
The study aims to expand the capacity for WGS awareness and utilisation across urban, remote and regional NSW. The research team will assist participants to determine how WGS can benefit PHUs to address local challenges in infectious disease surveillance and investigation.

Amplicon sequencing Neisseria gonorrhoeae for public health surveillance of antimicrobial resistance

Samantha Webster[1], Olivia Jessop[1], Dr Rikki Graham[1], Associate Professor Amy Jennison[1]
[1]Queensland Health

Sexually transmitted infections (STIs) in Australia have significantly risen over the last decade and have been identified as a leading cause of morbidity for young Aboriginal people. Gonorrhoea is a bacterial STI caused by Neisseria gonorrhoeae (Ng) which may lead to sequalae including pelvic inflammatory disease, various adverse pregnancy conditions, and disseminated gonococcal infection. In Australia, Ng incidence has increased by 119% since 2013, with Aboriginal and Torres Strait Islander peoples bearing disproportionate representation . Ng is most concerning for public health professionals due to its systematic development of resistance to most classes of antibiotic, and tendency to present asymptomatically, enabling a dangerous capability to spread amongst populations undetected. In fact, an extensively drug resistant strain was detected in Queensland in 2018. More information on the genomic epidemiology of Ng in Queensland is vital in understanding how these drug resistant strains are entering and circulating in the Queensland community.
We utilised an amplicon sequencing methodology developed by our laboratory to perform epidemiological typing of Queensland Ng samples collected between 2021 and 2023. This sequence-based method can be used to examine population genetics such as long-term epidemiology (MLST), mid-term epidemiology (NG-MAST) and resistance typing (NG-STAR).
The ability to perform large scale sequence-based analysis on Ng from across Queensland allowed the identification of specific clones circulating in the community that may be associated with specific regions or population groups. In addition, it was able to provide important information on antimicrobial resistance genes present in these strains and their movement throughout the community.
In future, we aim to expand and apply this amplicon-based methodology to include bacterial pathogens of concern, including Treponema pallidum (syphilis) to allow cost-effective genomic epidemiology and surveillance to be performed on these pathogens.

Overcoming complexities of integrating NSW tuberculosis whole genome sequencing and epidemiology

Ms Catriona Furlong[1], Ms Jennifer Pett[1], Ms Ellen Donnan[1], Ms Elena Martinez[2], Ms Taryn Crighton[2], Mr Vitali Sintchenko[2]
[1]Health Protection NSW, NSW Ministry of Health, [2]NSW Mycobacterium Reference Laboratory, Centre for Infectious Diseases and Microbiology Laboratory Services, Institute of Clinical Pathology and Medical Research, NSW Health Pathology

Context
Evidence on best practices for integrating technological advances is often not available before these advances are adopted. Whole genome sequencing (WGS) for Mycobacterium tuberculosis complex isolates from culture-confirmed cases of tuberculosis (TB) has been undertaken for over a decade. However, collating and analysing associated epidemiological data for clustered cases remains challenging.

Aim
This tool aims to systematically collect detailed clinical and epidemiological data with WGS data and present to stakeholders. Challenges include identifying transmission pathways given long and often overlapping exposure and infectious periods for TB, marrying the SNP differences in the context of the epidemiology, and feeding back to clinicians.

Process
WGS has identified 152 clusters involving 514 cases, with cluster size ranging from 2 to 25. Understanding clusters that arise from a single case and those that continue to grow is vital to better understand and control TB transmission.
Since 2016, NSW has collected epidemiological data on cases in TB clusters via open ended questions including workplace, study and recreation activities, with responses recorded in free text in one file per cluster. These data are time-consuming to code and analyse (1).

A secure, web-based REDCap database has been developed to systematically collect both laboratory and epidemiological data (2). Data are collected via a standard online questionnaire using specific close-ended cascading questions. They make data entry efficient, easy to analyse and cascading questions are an effective way of gathering richer, more detailed information through the hierarchy of questions (1). The data can be extracted into MS Excel and paired with routinely collected notification data to be analysed in statistical software such as R.

Analysis
A systematic data collection tool will enable more relevant connections being made between cases to further understand, trace and prevent, transmission of TB in NSW.

References:
1. Hedberg, K., & Maher, J. (2018). The CDC field epidemiological manual: collecting data. Available: https://www.cdc.gov/eis/field-epi-manual/chapters/collecting-data.html
2. Research Electronic Data Capture (REDCap). (2024). Available: https://www.project-redcap.org/

Using genomics to investigate the drivers of the 2024 Mycoplasma pneumoniae resurgence

Dr Rebecca Rockett[1,2], Dr Kingsley King-Gee Tam[2], A/Prof Tanya Golubchik[1,2], Dr Varsha Sivalingam[3], Dr Michael C Wehrhahn[4], Dr Andrew Ginn[4], Dr Jenny Robson[5], Dr Lito Papanicolas[6], A/Prof Karina Kennedy[7], Dr Annaleise Howard-Jones[8], Prof Vitali Sintchenko[1,2,3], Dr Jen Kok[2,3]
[1]University Of Sydney, [2]Centre for Infectious Diseases and Microbiology – Public Health , [3]Centre for Infectious Diseases and Microbiology Laboratory Services, NSW Health Pathology - Institute of Clinical Pathology and Medical Research, [4]Douglass Hanly Moir Pathology, [5]Sullivan Nicolaides Pathology, [6]SA Pathology, [7]ACT Pathology, [8]The Children's Hospital at Westmead

Background: The re-emergence of M. pneumoniae infections in China in late 2023 is hypothesized to be driven not only by the lifting of COVID-19 restrictions, but also the substantial increase in macrolide resistant M. pneumoniae pneumonia (MRMP)4. In Australia, rates of laboratory confirmed M. pneumoniae infection have increased substantially since quarter 4 2023, particularly in persons <16 years of age2. In NSW, there has also been an increase in unplanned emergency department presentations amongst persons aged 5-16 years with a diagnosis of pneumonia since 1 January 2024 in comparison to the previous five years3. This resurgence of M. pneumoniae has also been observed in North America and Europe. MRMP has been attributed to the A2063G mutation in 23S rRNA and MRMP strains are reported to be circulating in China prior to the COVID-19 pandemic. There is currently limited data on contemporary circulating M. pneumoniae strains in Australia. Macrolides are recommended as first line therapy for atypical pneumonia infections in Australia, therefore investigation into M. pneumoniae resurgence is warranted to guide empirical therapy.
Aims: 1. To investigate the phylogeny of currently circulating M. pneumoniae strains in Australia. 2. To determine the prevalence of MRMP infection, including but not limited to the A2063G mutation.
Methods: Targeted metagenomic sequencing (NGS) will be performed on contemporary and historical respiratory samples or nucleic acid extracts where M. pneumoniae DNA has been detected (contemporary [n=160] and historic [n=40]). These specimens will be collated from throughout Australia as part of the SAMPLE Study. Phylogenetic analysis and resistance detection will be conducted in comparison to international M. pneumoniae genomes to uncover drivers of disease resurgence.
Hypothesis: 1. Contemporary M. pneumoniae strains in Australia mirror those that are circulating in China. 2. There is substantial A2063G MRMP strains circulating in Australia.
Impact: The results of this study are currently being analysed however the data generated will inform treatment guidelines for M. pneumoniae infections in Australia.

Democratisation of sequencing capacity improves timeliness in national genomic surveillance of listeria

Dr Patiyan Andersson[1], Ms Sally Dougall[1], Dr Kristy Horan[1], Ass. Professor Amy Jennison[2], Dr Rikki Graham[2], Professor Vitali Sintchenko[3], Dr Qinning Wang[3], Dr Lex Leong[4], Dr Louise Cooley[5], Professor David Speers[7], Dr Karina Kennedy[6], Dr Avram Levy[7], Ass. Professor Rob Baird[8], Dr Susan Ballard[1], Ms Karolina Mercoulia[1], Ass. Professor Norelle Sherry[1], Professor Benjamin Howden[1]
[1]National Listeria Reference Laboratory, at the Microbiological Diagnostic Unit Public Health Laboratory, at the Peter Doherty Institute for Infection and Immunity, The University of Melbourne, [2]Public Health Microbiology, Forensic and Scientific Services, Queensland Department of Health, [3]Centre for Infectious Diseases and Microbiology-Public Health, Institute of Clinical Pathology and Medical Research, NSW Health Pathology, [4]SA Pathology, [5]Department of Microbiology and Infectious Diseases, Royal Hobart Hospital, Tasmanian School of Medicine, College of Health and Medicine, University of Tasmania, [6]Department of Clinical Microbiology and Infectious Diseases, Canberra Health Services, Australian National University Medical School, [7]Department of Microbiology, PathWest Laboratory Medicine, [8]Territory Pathology

Genomics has profoundly contributed to the investigation of listeriosis outbreaks, providing information on links between cases and contributing evidence supporting source attribution. Since 2014, genomic analysis and reporting for listeria has been tasked by the Commonwealth Department of Health to the National Listeria Reference Laboratory at the Microbiological Diagnostic Unit Public Health Laboratory (MDU) in Melbourne, to which all listeria isolates are referred for sequencing and genomic analysis. An investigation carried out in 2019 using data from 2016-2018, showed annual improvements in timeliness across each step in the referral and analysis pathway, from time of collection through to time of reporting of genomic data. In particular, there were encouraging improvements associated with the early transition to sequence submissions from a single state.

Driven by the COVID-19 pandemic, there has been considerable improvement in the sequencing capacity around the country, meaning that a larger proportion of samples from jurisdictional public health laboratories (PHL) are referred to MDU as sequences rather than isolates. The Communicable Diseases Genomics Network is finalising an updated evaluation the impact of this sequence capacity advancement on the timeliness of genomic surveillance system. This study complements the previous report with data from 2019-2023, expanding the dataset to 1200 samples, and capturing data from the period of the rapid expansion of genomic capacity. The study examines each step of the referral pathway of the national genomic surveillance system, including: time from collection to referral to jurisdictional PHL; time from receipt at jurisdictional PHL to sequencing; time from jurisdictional PHL to MDU; time from receipt at MDU to reporting of genomic results to end-users; as well as the factors influencing each stage.

This assessment will provide tangible evidence of the benefits of the democratisation of sequencing capacity and the application of genomics for routine surveillance of pathogens beyond COVID-19.

4B -
Global health, Great Hall 3 - Break out, June 12, 2024, 13:30 - 15:00

407

Integrated surveys and mass drug administration for neglected tropical diseases in Vanuatu

Elizabeth Nguyen[1], Fasihah Taleo[2], Claire Dyer[1], David Kennedy[1], Mackline Katenga[3], Sze Fui Hii[4], Vito Colella[4], Rebecca Traub[4], Md Saiful Islam[5], Gladymar Perez Chacon[1], Anastasia Pantelias[6], Julie Jacobson[6], John Kaldor[1], Susana Vaz Nery[1]
[1]Kirby Institute, University of New South Wales, [2]World Health Organization, [3]Ministry of Health, Government of Vanuatu, [4]The University of Melbourne, [5]School of Population Health, University of New South Wales, [6]Bridges to Development

Several neglected tropical diseases (NTDs) including soil transmitted helminths (STH), scabies, and yaws remain endemic in Vanuatu despite efforts to prevent and eliminate them through regular rounds of mass drug administration (MDA) - the main control strategy recommended by the World Health Organization.

This study aims to monitor and evaluate the impact of the MDA with albendazole, azithromycin, and ivermectin via novel integrated cross-sectional parasitological surveys conducted before and after MDA in Vanuatu together with health systems strengthening.

Cross-sectional baseline prevalence surveys were conducted in 93 villages across Tafea (December 2021), Sanma (September 2022), and Shefa (May 2023) provinces. Stool samples were tested for STH species using sodium nitrate flotation (SNF) technique (three provinces) and qPCR (Tafea and Sanma). CDC EpiInfo software was used to calculate required sample size (accounting for clustering) to detect changes in scabies and STH prevalence due to MDA. Preliminary analyses adjusted for sample clustering are presented here, as the study is ongoing.

At the time of writing this abstract, a total of 7935 individuals participated in the baseline surveys. Stool samples were received for 156/1491 (10.4%) participants in Tafea, 841/2596 (32%) participants in Sanma, and 919/3848 (23.8%) participants in Shefa. At baseline, the prevalence of any STH by SNF was 58.5% (95% CI 31.1-87%) in Tafea, 17.2% (95% CI 15.5%-27.1%) in Sanma, and 33.3% (95% CI 30.2%-50.5%) in Shefa. The prevalence of Ascaris lumbricoides by qPCR was 42.7% (34.4%-51.2%) in Tafea versus Sanma 11.3% (95% CI 9.1%-13.4%).

The prevalence of typical scabies lesions was the highest in Tafea (12.9%, 95% CI 10.0%-16.9%) versus Sanma (1.6%, 95% CI 0.9%-4.4%), and Shefa (2.9%, 95% 2.2.-5.8%). Confirmed yaws cases were identified by the survey in Tafea (1/1247; 0.1%) and Shefa (2/2487; 0.1%).

The implementation of surveys integrated with MDA is a novel approach that allows more cost-efficient collection of data necessary to monitor and evaluate impact of the MDA. Our study suggests that there is a high prevalence of STH and skin diseases in Tafea. Next steps of the study include implementation of follow-up surveys to assess impact of MDA.

Staying Polio-Free: A Case Study on Assessing Surveillance Sensitivity Using Capture-Recapture Methodology

Ms Sarah Alland[1,2], Dr Maggie Wilson[3], Dr David Durrheim[2,4], Dr Matthew Kelly[1]
[1]Australian National University, [2]Hunter New England Local Health District, [3]ACT Health Directorate, [4]National Polio Eradication Certification Committee

Capture-recapture methodology originated in the field of wildlife ecology for the purpose of conducting animal censuses. The methodology has since been adapted and applied in epidemiology as a way of estimating the total number of cases of a condition or disease in a population. Applying capture-recapture techniques to potentially incomplete case lists generated from separate data sources allows an estimation of cases not captured by surveillance. The findings of this can provide more reliable estimate of total case numbers and an assessment of the sensitivity of surveillance systems for that condition.
Capture-recapture methodology has been employed commonly in Europe for epidemiological purposes but its use in Australia has been limited. This presentation will demonstrate how the methodology can be applied in the Australian context using a case study of acute flaccid paralysis (AFP) surveillance.
A two-source capture-recapture analysis was designed to assess the sensitivity of AFP surveillance in the Australian Capital Territory (ACT). AFP surveillance is used to monitor for possible cases of poliomyelitis in the community, with a reference rate of one non-polio AFP case per 100,000 population under 15 years of age. Detections of AFP in the ACT in the last two decades have been lower than the reference rate. This led to concerns that cases may not have been detected by the current surveillance system. Two data sources will be compared to estimate the true number of AFP cases in the ACT population from 2000-2021: 1) AFP notifications to the Australian Paediatric Surveillance Unit, which is the current AFP surveillance system in the ACT, and 2) ACT hospital records. The analysis aims to ensure that AFP surveillance in the ACT is sensitive enough to detect a case of poliomyelitis should it occur, so that timely public health action can be taken to prevent the reintroduction of poliomyelitis in Australia.
Through this case study, the strengths and limitations of capture-recapture methodology will be explored, and therefore its potential for evaluating and improving communicable disease surveillance systems, particularly in regions with relatively small populations.

Factors Affecting Vaccine Uptake of the National Immunization Program in the Philippines

Ms Maria Margarita M Lota[1], Dr Evalyn Roxas[1], Dr Paulyn Jean Claro[1], Mr Alvin Abeleda[1], Dr Soledad Natalia Dalisay[2], Asst. Prof. Madilene Landicho[2], Mr Yoshiki Fujimori[1], Ms Jan Zarlyn Rosuello[1], Dr Margie Danchin[3], Dr Jessica Kaufman[4], Dr Florian Vogt[5], Dr Vicente Belizario, Jr.[1]
[1]College of Public Health University of the Philippines Manila, [2]College of Social Sciences and Philosophy, University of the Philippines Diliman, [3]University of Melbourne, [4]Murdoch Children's Research Institute, [5]Kirby Institute, University of New South Wales

Vaccine uptake under the National Immunization Program (NIP) in the Philippines has declined in recent years making children vulnerable to vaccine-preventable diseases (VPDs). This study described patterns in the coverage of Fully Immunized Child (FIC) from 2018 to 2022 in selected regions and municipalities using secondary data from reporting systems. A survey of caregivers with children ages 0-5 years was done to obtain data on vaccination status, reasons for and perceptions about vaccination.

The target 95% FIC coverage was not met across all years at the regional level. Variability in coverage rates were observed at the municipal level. Average FIC coverage rates decreased during the pandemic period (2020-2022) compared to pre-pandemic rates (2018-2019). Data showed that 65% of the 950 children of 653 caregivers were fully immunized. Perceived protection from diseases (72%), recommendation from healthcare workers (53%), and vaccines being free-of-charge (31%) were top reasons for completing the vaccination. Concerns about children being sick (23%) and inaccessibility of vaccination sites (11%) were top reasons for missed vaccinations. Multilevel mixed effects logistic regression analyses identified older age (46-59 years) of caregivers as enabler for vaccine uptake (OR=3.71; 95% CI 1.54-8.87) as well as perceived safety of the vaccines (OR=1.44; 95% CI 0.93-2.23) while barrier was perceived low risks of VPDs (OR=1.11, 95% CI 0.59-2.11). Top sources of information include health and government institutions and officials (74%), healthcare workers (56%), and mass media outlets (29%).

This study offers data to support program managers and coordinators across various levels of the healthcare system, aiding in the improvement of advocacy, communication, and training for immunization programs in the country. Conducting innovative strategies such as outreach activities, along with continuing capacity building for healthcare workers, is recommended to improve vaccine uptake.

Evaluating Fiji's Early Warning and Alert Response System (EWARS) for Leptospirosis 2022-2023

Dr. Daniel Faktaufon[1,2], Dr. Aalisha Sahukhan[1], Dr. Rosalina Sa'aga-Banuve[2], Dr. Samantha Colquhoun[2]
[1]Fiji Ministry of Health and Medical Services, [2]Australian National University

EWARS was introduced in Fiji in March 2016 following the devastating impact of Tropical Cyclone Winston. The only evaluation was conducted in the same year, since then, many changes have occurred. Leptospirosis is endemic in Fiji and reported through the EWARS surveillance systems. In March 2022, Acute Jaundice Syndrome (AJS) was replaced with a Suspected Leptospirosis (SLS) in response to the increase in Leptospirosis cases. Leptospirosis is a priority disease due to high morbidity and mortality. An ideal system enables early detection and alerts to public health teams for early to reduce morbidity and prevent mortality.
A study was conducted to evaluate SLS since its implementation and it's ability to capture leptospirosis cases at national and divisional levels and the acceptance of this change. SLS data was retrieved from the EWARS database and Laboratory data from the National Public Health Laboratory database. Spearman's coefficient was used to determine the data correlation between SLS and laboratory-confirmed data at National and four geographic divisional levels for the study period. An acceptability survey was conducted through interviews with key focal points responsible for reporting throughout Fiji.

A strong correlation was shown to exist between SLS reports and laboratory-confirmed cases for the study period at National and in three divisions with a Spearman's correlation of 0.9. Participants in the survey were well-versed in EWARS and the recent changes. More training and feedback were highlighted by participants to further improve reporting.

Regular evaluation of the EWARS system is needed to identify issues and improve the system. EWARS SLS implementation has achieved its objective in capturing leptospirosis cases. The acceptability survey also provides information on the challenges and gaps that need to improve the overall functioning of the system.

REDUCTION OF SEXUALLY TRANSMITTED INFECTIONS FOLLOWING TRACHOMA MASS DRUG ADMINISTRATION IN NAURU

Dr Lucia Romani[1], Sue-Chen Apadinuwe[2], Justine Marshall[1], Aisling Byrne[1], Mitchell Starr[3], Kathleen Lynch[4], Susan Star[2], Philip Cunningham[3], Stephen Lambert[4], Prof Susana Vaz Nery[1]
[1]Kirby Institute, UNSW, Sydney, Australia, [2]Ministry of Health and Medical Services, [3]NSW State Reference Laboratory for HIV, [4]UQ Centre for Clinical Research, Brisbane

Sexually transmitted infections (STIs) are a major public health problem globally, particularly in low- and middle-income countries (LMIC). STIs are common in the Western Pacific region, including Nauru. The strategy of syndromic STI management, relying on clinical findings alone without laboratory confirmation, has long been endorsed by the World Health Organization but misses more than 80% of asymptomatic infections, especially common during pregnancy. Screen and treat strategies are not currently affordable or feasible at scale in LMIC. In areas where trachoma or yaws are endemic, mass drug administration (MDA) with azithromycin might offer an alternative approach to the population control of STIs as well as Neglected Tropical Diseases (NTDs). In Nauru, we evaluated the impact of an azithromycin-based MDA for trachoma control on bacterial STIs in a population aged 18-29 years, by conducting a before and after community survey pre and post MDA with 8-month follow-up to determine long-term impact on genital infection. The study enrolled 381 participants at baseline and 360 post-MDA. At baseline C. trachomatis infection was diagnosed in 21.7% of participants (95% CI 17.6% to 26.3%) T. vaginalis and M. genitalium were also common (21.2% and 10.9%, respectively) as well as N. gonorrhoeae 2.7% (95% CI 1.3% to 4.9%). Eight months following azithromycin MDA a reduction in prevalence was observed in all STIs except for T. vaginalis. The relative reduction in the prevalence of C. trachomatis was 34.6% (95% CI 25.7 – 45.2) and that of N. gonorrhoeae was 66.7% (95% CI 56.9 – 76.1). This study is the first to investigate the reduction of STIs using azithromycin-based MDA in the general population, not restricted to the female population and/or pregnant women. The significant decrease in STI prevalence seen in this study 8 months after azithromycin MDA is encouraging in island populations such as this, with lower mobility than other settings. Azithromycin MDA is a well-established and safe intervention which has been successfully adopted for NTD control. Prospective evaluations of MDA strategies specifically targeting common STIs should be undertaken.

Benefits of targeted vs random sampling for lymphatic filariasis surveillance in Samoa

Dr Helen Mayfield[1,2], Professor Patricia Graves[3], Dr Angus McLure[4], Dr Sarah Sheridan[1], Dr Beatris Mario Martin[1,2], Dr Robert Thomsen[5], Dr Rossana Tofaeono-Pifelti[6], Dr Satupaitea Viali[6], Professor Colleen Lau[1,2]
[1]University Of Queensland, [2]UQ Centre for Clinical Research, [3]James Cook University, [4]3 Australian National University, [5]Samoa Ministry of Health, [6]National University of Samoa

Background: Optimising lymphatic filariasis (LF) surveillance methods to more efficiently locate infected individuals is a key challenge for the Global Program to Eliminate Lymphatic Filariasis. Clustering of infections at village and household levels means that targeted sampling methods are potentially more efficient than random sampling for locating residual infections. This study aims to compare antigen (Ag) and microfilaria (Mf) prevalence in a targeted snowball sample of households against a random sample of households in Samoa.

Methods: Six villages were selected based on LF Ag prevalence from a 2019 community-based survey, comprising two each with high (13-19%), medium (6-8%) and low (2-4%) Ag prevalence. In 2023, we sampled 15-16 randomly selected houses in each village. In these same villages, 10-22 households per village were selected for snowball sampling based on being located within 200m of a household where an Ag positive participant lived in 2019.

Results: Ag prevalence (adjusted for age and sex) was higher in the snowball sample (17.0%, 95% CI 9.0-27.8%, n=400 participants) compared to the random sample (11.0%, 95% CI 3.7-23.4%, n=494 participants). Mf prevalence was also higher in the snowball vs random sample (7.3%, 95% CI 3.5-12.9% vs 5.7%, 95% CI 1.5-14.0%). The difference between the two sampling methods was largest in the medium prevalence villages.

Conclusion: Results demonstrate the efficiency of snowball sampling for locating LF infections, and the value of using targeted survey designs to support LF elimination efforts in Samoa.

Food insecurity and child morbidity in the coastal regions of Bangladesh

Mr Shuvagato Mondal[1,2], Dr Kinley Wangdi[1,3], Dr Matthew Kelly[1], Professor Darren Gray[3], Dr Haribondhu Sarma[3]
[1]National Center for Epidemiology and Population Health (NCEPH), Australian National University,
[2]Department of Fisheries and Marine Science, Noakhali Science and Technology University,
[3]Population Health Department, QIMR Berghofer Medical Research Institute

In Bangladesh, particularly in its coastal regions, household food insecurity (FI) increases the burden of infectious diseases, including fever, acute respiratory infections (ARI), cough, and diarrhea among children under-five. This study investigates the impacts of household FI on the prevalence of fever, ARI/cough, and diarrhea among under-five children in the coastal regions of Bangladesh. As part of a cross-sectional study face-to-face questionnaire interviews with married women having at least one child of under 5 years old from a total of 471 randomly selected households. We assessed household FI status based on nine questions from the Household Food Insecurity Access Scale. We performed a multivariable logistic regression model to measure the adjusted odds ratio (AOR) for assessing the effects of household FI on the prevalence of fever, ARI/cough, and diarrhea. The study revealed that, 17.2% and 11.5% of households experienced mild to moderately and severely FI, respectively and two weeks before the survey, 54.1%, 48.8% and 24.2% of children suffered from fever, ARI/cough, and diarrhea, respectively. Children from mild to moderately food-insecure households had 1.96 times higher odds of experiencing fever (AOR = 1.96, 95% CI: 1.13–3.94). Meanwhile, children from mild to moderately and severely food-insecure households had 2.46 (AOR=2.46, 95% CI: 1.46–4.16) and 3.36 (AOR=2.36, 95% CI: 1.27–4.38) times higher odds of suffering from ARI/cough, respectively, compared to children from food-secure households. However, household FI did not exhibit any significant impact on the occurrence of diarrhea among children. The findings of the study suggest the critical need for comprehensive and targeted policy interventions addressing FI to minimize the risk of contagious diseases among the under-five children in this vulnerable part of Bangladesh.

South-east Asian and Pacific NTD programs' responses to the COVID-19 pandemic

Ms Alison Jaworski[1], Dr Adam Craig[2,3], Dr Clare Dyer[1], Sr Julio Goncalves[4], Dr Nalisa Neuendorf[5], Dr Jamee Newland[1], Associate Professor Angela Kelly-Hanku[1,5], Professor William Pomat[1,5], Associate Professor David MacLaren[6], Professor Susana Vaz Nery[1]
[1]Kirby Institute, [2]School of Population Health, Faculty of Medicine University of New South Wales, [3]School of Public Health, Faculty of Medicine, University of Queensland, [4]World Health Organization, [5]Papua New Guinea Institute of Medical Research, [6]College of Medicine and Dentistry, James Cook University

Context and aim
South-East Asian and Pacific countries have made significant progress in the control of neglected tropical diseases (NTDs) such as trachoma and lymphatic filariasis, however service disruptions during the COVID-19 pandemic will likely impact elimination progress. Current studies of how NTD programs responded to pandemic-related challenges are overwhelmingly from African settings and focus on earlier periods when policy advice was most stringent. This study documents South-East Asian and Pacific NTD program experiences throughout the COVID-19 pandemic.
Methods
Data was collected through semi-structured interviews with 11 NTD program managers and related personnel from Fiji, Papua New Guinea, Philippines, Timor-Leste, and Vanuatu. Constructivist grounded theory was used to generate an explanation of factors that enabled or hindered NTD program operations during the COVID-19 pandemic.
Research findings
NTD programs used different strategies at the outset to manage the immediate challenges of strict new public health measures compared to those employed later in the pandemic's evolution when seeking to recommence usual programs. Initially, having strong relationships to initiate cross-program integration, sufficient resources to implement adapted activities or use new communications technology to deliver scaled-back programs, and dedicated administrative systems were key enabling factors. Returning to effective operations following prolonged changes in health, economic and social contexts relied on NTD staff capacity to implement efficiencies such as within-program integration to make best use of dwindling NTD funding and in promoting approaches led by changing community preferences and needs.
Outcomes and future actions
Ensuring NTD service delivery continuity under pandemic conditions requires active input and commitment from a wide range of actors. This study underscores the importance of pre-emergency planning that reinforces NTD control programs as a critical service at all levels, accompanied by governance arrangements that increase NTD staff control over their operations and strategies to maintain strong community relationships. Mainstreaming NTD control activities into national health programs and strengthening national health systems will support NTD programs to weather future crises.

Female garment workers (non-) understandings of human immunodeficiency virus in Bangladesh

Shakeel Mahmood[1]
[1]Charles Sturt University

This research critically examines female garment workers' (FGWs) gendered experiences in the factory setting and their personal (non-) understandings of the Human Immunodeficiency Virus (HIV) in the Dhaka city region of Bangladesh. Qualitative research was conducted using structured in-depth interviews with both FGWs and owners of garment factories to learn about, and critically explore, the health challenges of FGWs with HIV. FGWs are one of many key populations who are vulnerable to HIV including female sex workers (FSWs), men who have sex with men (MSM), and people who inject drugs (PWID). Many of them are vulnerable adolescents, who have limited knowledge and insufficient education about HIV and AIDS. In some cases, there are intersections between these groups. Throughout the research, the FGWs health issues addressing HIV in reference to gender and power have come to the fore. Low literacy rates and gender inequality are major causes of HIV vulnerability for Bangladeshi FGWs. While the FGWs have heard about drug use, sex workers and multiple sex partners, all the participants maintained that they do not have personal experience in these matters. Throughout the research process, low literacy rates have been prevalent among the FGW research participants. However, in selected factories, some forms of educational provision addressing HIV to the FGWs are available. Empowering FGWs through formal health education of safe sex practices is demonstrated to be essential, including the prevention of workplace violence (WPV), intimate partner violence (IPV), and the integration of work-based interventions that contribute to strengthening the empowerment of FGWs. In response to the above, this thesis argues that FGWs indicate inadequate understanding of HIV, and proposes a partnership commitment between community leaders, the private sector, and non-government organizations as well as the Bangladesh government, as focusing on the prevention of HIV needs to be encouraged. Safe sex practice, health education, especially regarding HIV is pivotal to further empower FGWs in Bangladesh.

4C -
RSV, Mezzanine 1, June 12, 2024, 13:30 - 15:00

362

Immunogenicity and tolerance of RSV prefusion F-protein vaccine in adults 50-59 years

Dr Murdon Ferguson[1], Prof Tino F Schwarz[2], Dr Sebastián A. Núñez[3], Dr Juan Rodríguez-García[4], Dr Marek Mital[5], Dr Carlos Zala[6], Dr Bernhard Schmitt[7], Dr Nicole Toursarkissian[8], Hitesh Ghai[9], Dr Dolores Ochoa Mazarro[10], Dr Josef Großkopf[11], Dr Christine Voors-Pette[12], Dr Hemalini Mehta[13], Dr Hiwot Amare Hailemariam[14], Dr Magali de Heusch[14], Dr Silvia Damaso[14], Dr Marie-Pierre David[14], Dr Dominique Descamps[14], Dr Judith Hill[14], Dr Corinne Vandermeulen[14], Dr Veronica Hulstrøm[14]
[1]Colchester Research Group, [2]Klinikum Würzburg Mitte, Campus Juliusspital, [3]Centro Medico Maffei, [4]Preventive Medicine Service, Immunocompromised Patient Vaccination Unit, Son Espases University Hospital, [5]Clinical Agniszka Mital Centrum Badan Klinic, [6]Vacunar, Sede Las Caňitas, [7]Studienzentrum Mainz Mitte, [8]Praxis Dr. Med. Nicole Toursarkissian, [9]GSK, [10]Clinical Pharmacology Department, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria La Princesa (IP), Universidad Autónoma de Madrid (UAM), [11]Praxis Dr. Med. Josef Großkopf, [12]QPS Netherlands B.V., [13]Clinical Research Institute, [14]GSK

AIM
Adults 50-59 years of age (YOA) with specific chronic medical conditions are at increased risk for severe RSV disease. We report immunogenicity and safety data of RSVPreF3 OA in adults 50-59 YOA without/with chronic conditions that increase the risk for RSV disease.

METHODS
This phase 3, observer-blind, placebo-controlled multi-country study (NCT05590403) enrolled adults 50-59-YOA, including those at increased risk (AIR) for RSV disease due to specific chronic conditions. Participants were randomized (2:1) to receive RSVPreF3 OA (AIR-RSV, non-AIR-RSV) or placebo (AIR-placebo, non-AIR-placebo). A control group of adults ≥60-YOA received RSVPreF3 OA (OA-RSV). We assessed non-inferiority of the humoral immune response in 50-59-YOA versus ≥60-YOA, cell-mediated immunity and safety.

OUTCOMES
1533 participants received RSVPreF3 OA or placebo. Non-inferiority criteria were demonstrated for RSV-A and RSV-B neutralization titers. RSVPreF3-specific CD4+ T-cell median frequencies increased at 1 month post- versus pre-vaccination in all RSV groups. Some solicited adverse events (AEs) were reported with higher incidences, but similar severity and duration, in 50-59-YOA versus OA-RSV. Across all groups, 10.5%-16.3% of participants reported unsolicited AEs within 30 days post-vaccination, and 0.5%-3.6% of participants reported serious AEs within 6 months post-vaccination. One potential immune-mediated disease (cold-type haemolytic anemia, OA-RSV group) was considered vaccine-related by the investigator. No deaths were reported.

FUTURE ACTIONS
RSVPreF3 OA immune responses in adults 50-59-YOA were non-inferior to the immune responses in ≥60-YOA, in whom efficacy was demonstrated. The overall safety profile in 50-59-YOA was consistent with the favourable safety profile in ≥60-YOA.

Funding: GSK (NCT05590403)

Annual Economic Burden of Respiratory Syncytial Virus among Older Adults in Australia

Mr Masnoon Saiyed[1], Ian Teichert[1], Alysia Thrasis[1], Marcus Tan[1], Yufan Ho[2], Aruni Seneviratna[2], Daniel Molnar[3]
[1]GSK, [2]GSK, [3]GSK

Background/Purpose: Respiratory syncytial virus (RSV) commonly causes respiratory infections that may lead to severe clinical complications in older adults (OA). Recently, the Therapeutic Goods Administration approved the first vaccine, AS01E-adjuvanted RSV prefusion F protein-based vaccine (adjuvanted RSVPreF3 OA), to prevent lower respiratory tract disease (LRTD) caused by RSV in OA ≥60 years of age (YOA). Reliable estimates of the economic burden of RSV among OA may assist policymakers in making informed decisions on vaccination strategies, however, the cost associated with RSV is not currently well-understood in Australia. Here, we estimate the economic burden of RSV among OA ≥60 YOA in Australia.
Methods: Using a static multi-cohort Markov modelling approach, a cost-of-illness model assessed RSV disease states (upper RTD [URTD] and LRTD) and the associated cost of RSV cases (healthcare system perspective) over a one-year time horizon. Due to the paucity of RSV burden of disease data in OA ≥60 YOA in Australia, epidemiologic outcomes of RSV were derived from estimates reported in robust global prospective observational studies which were considered generalisable to the Australian setting. Direct medical costs included costs associated with RSV infection cases from hospitalisations (including intensive care unit admissions), emergency department visits, and outpatient settings.
Results: Among 6,479,378 OA ≥60 YOA in Australia (2025 population), 366,822 RSV cases (192,205 URTD; 174,617 LRTD) and a total direct medical cost of 550 million Australian dollars (AUD) were estimated annually. The 6% of RSV cases which resulted in hospitalisation contributed to 1,874 RSV-related deaths and 89% of the total direct medical cost (487 million AUD).

Conclusion: RSV disease among OA ≥60 YOA represents a substantial economic burden in Australia, however, this is likely underestimated as indirect costs were not included in these estimations. Preventive interventions such as vaccination could help alleviate the burden on the healthcare system during RSV seasons.

Funding: GSK (Study identifier: VEO-000563)

Final efficacy and birth outcomes from a global maternal RSVpreF vaccine study

Dr James Baber[1], Prof Peter Richmond[2], Dr Barbara Pahud[3], Mr David Radley[3], Dr Emma Shittu[4], Dr Uzma Sawar[3], Dr Phillip Zachariah[3], Dr Maria Maddalena Lino[5], Dr Kena Swanson[3], Dr Annaliesa Anderson[3], Dr Alejandra Gurtman[3], Dr Iona Munjal[3]
[1]Pfizer Vaccine Research and Development, [2]Vaccine Trials Group, Telethon Kids Institute and School of Medicine, [3]Pfizer Vaccine Research and Development, [4]Pfizer Vaccine Research and Development, [5]Pfizer Safety Surveillance and Risk Management

Background
A maternal bivalent RSV prefusion F vaccine (RSVpreF) demonstrated efficacy against RSV-associated lower respiratory tract disease in infants, with acceptable safety and tolerability in the primary analysis (1). Final efficacy, safety and birth outcomes data are now available.

Methods
In this phase 3 study, pregnant participants between 24-36 weeks gestation were randomized 1:1 to receive a single IM injection of RSVpreF 120 µg or placebo. Birth outcomes and safety were collected in infants through 12 or 24 months. Vaccine efficacy (VE) was assessed against infant RSV-positive medically-attended severe lower respiratory tract illness (RSV-MA-sLRTI), RSV-MA-LRTI and RSV-associated hospitalisation.

Results
Overall, 7385 maternal participants (3698 RSVpreF: 3687 placebo) were vaccinated; 7305 infants (3659 RSVpreF: 3646 placebo) were enrolled.
Final VE against RSV-MA sLRTI was 82.4% (95% CI: 57.5%, 93.9%) and 70.0% (95% CI: 50.6%, 82.5%) within 90 and 180 days after birth respectively. VE against RSV-MA LRTI was 57.6% (95% CI: 31.3%, 74.6%) and 49.2% (95% CI: 31.4%, 62.8%) within 90 and 180 days after birth respectively. VE against infant RSV-associated hospitalisation was 69.7% (95% CI: 37.1%, 86.7%) and 55.3% (95% CI: 23.8%, 74.6%) within 90 and 180 days after birth respectively.
Infant birth outcomes including GA at birth, Apgar scores & birthweight were comparable in each group. A numerical imbalance in preterm infants in RSVpreF (5.7%) vs placebo groups (4.7%) was not statistically significant and observed only in upper middle-income countries. There were 19 stillbirths (10 RSVpreF, 9 placebo) & 22 infant deaths (8 RSVPreF, 14 placebo). Overall, RSVpreF was safe in maternal participants, and their infants through 24 months.

Conclusion
Final analyses demonstrate that RSVpreF was efficacious at preventing RSV-associated MA-LRTI and hospitalisation with acceptable safety.

(1) Kampmann B et al. Bivalent Prefusion F Vaccine in Pregnancy to Prevent RSV Illness in Infants. N Engl J Med. 2023;388(16):1451-1464. doi:10.1056/NEJMoa2216480

Efficacy, Immunogenicity and Safety of mRNA-1345 against RSV-LRTD in adults ≥60 years

Eleanor Wilson[1], Jaya Goswami[1], Gonzalo Perez-Marc[2], Abdullah H. Baqui[3], Lan Lan[1], Jiejun Du[1], Archana Kapoor[1], Wenmei Huang[1], Honghong Zhou[1], Frances Priddy[1], Nina Lin[1], Nancy Le Cam[1], Sonia K. Stoszek[1], Christine A. Shaw[1], Karen Slobod[1], Catherine A. Panozzo[1], Lauren Wilson[1], Caroline Reuter[1], Emilio Fumero[4], Chris Clarke[5], Andrea McCracken[5], Jacqueline M. Miller[1], Rituparna Das[1]
[1]Moderna, Inc., [2]Hospital Militar Central Cirujano Mayor Dr. Cosme Argerich, [3]Johns Hopkins Bloomberg School of Public Health, [4]Moderna EMEAC, [5]Moderna, Inc Australia

Background: In this ongoing phase 3, multi-country, double-blind, placebo-controlled study (NCT05127434), adults ≥60 years were randomly assigned (1:1) to receive 1 dose of mRNA-1345 (50 µg) or placebo.1 Primary objectives included evaluation of safety and tolerability, and vaccine efficacy (VE); secondary endpoints included analysis of respiratory syncytial virus (RSV)-A and RSV-B neutralizing antibodies (nAbs).

Methods: Here, we report the end of Northern Hemisphere season efficacy (to 30 April 2023; median follow-up, 8.6 months) and safety analysis, and immunogenicity at Day 29 (D29).

Results: mRNA-1345 was well-tolerated; no safety concerns were identified. Efficacy was assessed in 36,157 participants (mRNA-1345, n=18,112; placebo, n=18,045) for a median follow-up of 8.6 months. mRNA-1345 VE was 63.3%, 63.0%, and 53.9% against RSV-lower respiratory tract disease with ≥2 and ≥3 symptoms, and RSV-associated acute respiratory disease, respectively. Results show protection against RSV continues for an additional 5 months of median follow-up compared with a previous analysis.[1] RSV-A and RSV-B nAb geometric mean titers (GMTs) were assessed at baseline and D29; seroresponse rates were calculated in a randomly selected per-protocol immunogenicity set (n=1848; mRNA-1345, n=1515; placebo, n=333). mRNA-1345 boosted nAbs (RSV-A and RSV-B), including in those at higher risk for severe disease. mRNA-1345 increased nAb GMTs from 2552.8 (95% CI, 2414.3-2699.4) and 1425.4 (95% CI, 1352.7-1501.9) IU/mL at baseline to 21,475.4 (95% CI, 20,273.9-22,748.1) and 7246.0 (95% CI, 6864.8-7648.4) IU/mL at D29 against RSV-A and RSV-B, respectively. Robust increases in nAb GMTs were observed across all subgroups assessed, including in those ≥80 years.

Conclusion: A single dose of mRNA-1345 was immunogenic and well-tolerated, with no safety concerns identified, and continued to demonstrate efficacy for the prevention of RSV disease through ≥6 months among adults ≥60 years.

Reference: 1. Wilson E, et al. N Engl J Med. 2023;389(24):2233-2244. doi:10.1056/NEJMoa2307079.

Clinical presentation of RSV, influenza, parainfluenza and metapneumovirus hospitalisations in WA children

Dr Minda Sarna[1,2], Dr Huong Le[1,2], Dr Belaynew Taye[1,2], Professor Peter Richmond[1,4], Professor Kathryn Glass[1,5], Dr Avram Levy[6,7], Associate Professor Hannah Moore[1,2]
[1]Telethon Kids Institute, [2]Curtin University, [3]School of Medicine, University of Western Australia, [4]Perth Children's Hospital, [5]National Centre for Epidemiology and Population Health, Australian National University, ANU College of Health and Medicine, [6]PathWest Laboratory Medicine, QEII Medical Centre, [7]School of Biomedical Sciences, University of Western Australia

Introduction
Acute lower respiratory infections (ALRI) are a major contributor to global infectious disease burden and one of the most common causes of hospitalisation for children under the age of 5 years. We aimed to assess the severity of hospitalisations due to respiratory syncytial virus (RSV) compared with parainfluenza viruses (PIV), human metapneumovirus (hMPV), and influenza (IFV) virus.
Methods
We used a probabilistically linked whole-of-population-based birth cohort of children born in Western Australia between 2010 and 2020 and hospitalised for laboratory-confirmed RSV, PIV, hMPV and IFV hospitalisations before age 2 years. Study outcomes included median length of hospital and intensive care unit stay, need for ventilatory support, ALRI-specific re-admissions within 30-days, and a complex hospital course (length of stay (LOS) >75th percentile, admission to ICU, death, or mechanical ventilation required).
Results
Of 365,592 children, 36,801 (15.1%) children were tested for a respiratory virus during a hospital stay. Infants <6months had the highest rates for all virus-specific hospitalisations. Infants <6months had lower odds of an ICU admission (adjusted odds ratio [aOR]: 0.44, 95% CI: 0.25, 0.78) if hospitalised with PIV compared to hospitalisation with RSV. Compared with RSV, those hospitalised with PIV (aOR: 0.38, 95% CI: 0.30-0.48), hMPV (aOR: 0.56, 95% CI: 0.43-0.73), or IFV (aOR: 0.31, 95% CI: 0.21-0.48) had lower odds of a complex hospital course. There was no difference in the median LOS between virus-specific hospitalisations (median 2 days). Re-admissions for ALRI were higher for PIV, hMPV, and IFV in all age groups compared with those for RSV (infants <6months, ALRI: 6.9% vs 9.2%, 8.7%, 10.2% respectively).
Discussion
Infants with RSV hospitalisation have a more severe and complex hospital course compared with hospitalisation associated with other respiratory viruses. This has implications for target populations to be administered future therapeutics and a consideration in cost-effectiveness estimates.

The distribution of RSV in Tasmania in its first year of notification

Ms Bhavika Yadav[1], Associate Professor Nicola Stephens[1], Associate Professor Michelle McPherson[1], Dr Shannon Melody[2]
[1]Tasmanian School of Medicine, University of Tasmania, [2]Public Health Services, Department of Health

Introduction:
Under the Tasmanian Public Health Act 1997, Respiratory Syncytial Virus (RSV) became a notifiable disease from 1 July 2022. This descriptive analysis of the distribution of RSV in Tasmania in the first year since it became a notifiable disease will provide important baseline data for the ongoing surveillance, evaluation, and monitoring of this highly contagious virus. It will also evaluate the quality and completeness of the data collected.

Methods:
A case was defined as a person with laboratory confirmed RSV with specimen collection date from 1 July 2022 to 30 June 2023. Laboratory evidence was defined in accordance with the Communicable Diseases Network of Australia guidelines. Cases were identified from the Tasmanian Notifiable Diseases Database held within Public Health Services in the Tasmanian Department of Health. All data fields were analysed for completeness. The number and rates of notifications per 100,000 population were analysed by sex, age, geographic region, local government area, vaccination status, presentation type (case found by), and Socio-Economic Indexes for Australia (Australian Bureau of Statistics, 2021) based on postal area of case residence. Population denominators were derived from the estimated resident population of each collection district obtained from the Australian Bureau of Statistics. Data were analysed using Microsoft Excel and Stata SE17.0. Ethical approval was received from the University of Tasmania Human Research Ethics Committee.

Results: A total of 3975 cases were eligible for inclusion in our study. The number and rate of notifications by each variable will be presented.

Conclusion: This study describes the epidemiology of RSV in the first twelve months as a Notifiable Disease and will serve as a baseline for the ongoing surveillance of RSV in Tasmania. Results of this study will highlight whether the surveillance activities align with the surveillance objectives and will provide valuable information to evaluate vaccination programs when they are established.

Epidemiology and hospital burden due to respiratory syncytial virus in Central Queensland

Dr Mahmudul Hassan Al Imam[1], Dr Reema Goswami[1], Ms Caitlyn Bolck[1], Ms Jacina Walker[1], Dr Sunday Pam[1], Dr Michael Kirk[1], Dr Robert Menzies[2], Professor Gulam Khandaker[1,3,4]
[1]Central Queensland Hospital and Health Service, [2]Sanofi Pasteur, [3]Research Division, Central Queensland University, [4]Discipline of Child and Adolescent Health, Sydney Medical School, The University of Sydney

Context and aim: There is limited data on RSV circulation and related hospital admissions in sub-tropical regions of Australia. We assessed the epidemiology and hospital burden of RSV in Central Queensland (CQ), a subtropical region in Australia.

Methods & analysis: As part of RSV surveillance, RSV-specific ICD-10-AM codes (J12.1, J20.5, J21.0 and B97.4) and Palivizumab administrations data between January-2010 and September-2023, and RSV notification data from July-2021 to September-2023 were collected and analysed.

Research findings: A total of 1,610 RSV-related hospital admissions were documented: mean age 21.3±28.6 years, 46.5%(n=749) female and 20.9%(n=336) Indigenous population. RSV was the primary diagnosis in 59.9% (n=964) of admissions. Among these, 12.8%(n=204) were in infants aged <12 months and 17.6%(n=283) were among those aged 60 years and over. The mean length of stay was 4.5±20.0 days. Ventilation was required in 13.5% (n=218) of cases, with 2.2%(n=35) needing ICU support and 0.7%(n=11) resulting in deaths. During the study period, 56 high-risk infants were administered Palivizumab. Notably, 27.0%(n=434) of hospital admissions occurred outside the recommended Palivizumab administration period (March-August). Between July 2021 and September 2023, 2,274 lab-confirmed RSV notifications were reported, with 22.1%(n=502) necessitating hospital admissions. Of all RSV notifications in CQ, 82.1%(n=1,867) were reported between March and August.

Outcome and future actions: The burden of RSV-related hospital admission is markedly high in CQ, with notifications and hospital admissions occurring throughout the year with a winter peak. A substantial proportion of hospital admissions transpire outside the Palivizumab recommended period, suggesting a need for a reassessment of existing preventive policies for RSV.

Funding declaration: The authors acknowledge that this work was supported by Sanofi Pasteur S.A.(RSV00061).

Paediatric respiratory syncytial virus (RSV) associated hospitalisations in Sydney: Enhanced surveillance.

Dr Gemma Saravanos[1], Ms Kathryn Meredith[2,3], Ms Shirley Wong[2], Dr Nusrat Homaira[2,4], Dr Adam Bartlett[2], Prof Nicholas Wood[1,2,3], A/Prof Philip Britton[1,2,3], Dr Rama Kandasamy[1,2,3]
[1]Faculty of Medicine and Health, University of Sydney, [2]Sydney Children's Hospitals Network, [3]National Centre for Immunisation Research, [4]Discipline of Paediatrics and Child Health, School of Clinical Medicine, University of New South Wales

Background
Respiratory syncytial virus (RSV) is a leading cause of acute lower respiratory infection in young children and a major contributor to paediatric hospitalisations. Comprehensive, population-specific clinical data on Australian children experiencing RSV disease are needed to inform cost-effectiveness analyses, guide policy recommendations, and assess the impact of future interventions. We aimed to describe risk factors for RSV-associated hospitalisations in children admitted to two tertiary paediatric hospitals in Australia.

Methods
Children under 2 years of age with laboratory confirmed RSV, admitted to The Children's Hospital at Westmead and Sydney Children's Hospital from 2019 to 2023 inclusive were identified for enrolment in the study. A random sample of 200 children admitted to hospital with RSV but not admitted to ICU were enrolled from each year, whilst all ICU admissions were enrolled into the study. Enhanced clinical data were extracted from hospital medical records and entered into a REDCap database.

Results
Between January 1st 2019 and December 31st 2023, 3767 children under 2 years of age were hospitalised with RSV and 486/3767 (12.2%) of these cases required ICU admission. To date 753/3767 (20%, 267 non-ICU and 486 ICU) cases are enrolled into the enhanced surveillance study. The median age of enrolled cases was 3.9 months (IQR 1.6-10.7) whilst it was 6 (IQR2.4-13.9) and 3.2 (1.4-9.2) months among non-ICU and ICU cases respectively. Most (463/753, 61.5%) cases were male (167, 62.5% and 296, 60.9% in non-ICU and ICU respectively). RSV subtype A was most frequently detected with 183 (68.5%) non-ICU and 257 (52.9%) ICU cases. Seven deaths, all in the ICU, were identified.

Conclusions
RSV was responsible for a large number of admissions to paediatric hospitals with a substantial proportion of children under 2 years of age requiring high acuity care. Further collection and analyses of data in this study may identify risk factors for severe RSV illness and inform policy related to therapeutics for its prevention.

Introducing the STAMP (Surveillance-Transmission-Attitudes-Modelling-Policy) RSV Program: a holistic program for RSV control

A/prof Hannah C Moore[1,2], Dr Samantha Carlson[1,3], Ms Fiona Giannini[1], Dr Minda Sarna[1,2], Dr David Foley[1,4], Ms Catherine Hughes[5], Prof Peter Richmond[1,6,7], Dr Avram Levy[4], Dr Ewan Cameron[1,2], Prof Christopher Blyth[1,4,6,7]

[1]Wesfarmers Centre for Vaccines and Infectious Diseases, Telethon Kids Institute, [2]School of Population Health, Curtin University, [3]School of Social Sciences, University of Western Australia, [4]PathWest Laboratory Medicine, [5]Immunisation Foundation of Australia, [6]Perth Children's Hospital, [7]School of Medicine, University of Western Australia

Respiratory syncytial virus (RSV) is a pathogen of global importance. Contemporary local data are needed to fully enumerate the burden at all levels of severity, especially with post-COVID-19 RSV resurgence and the rapidly advancing immunisation landscape. STAMP-RSV (Surveillance-Transmission-Attitudes-Modelling-Policy) is a multifaceted program of work based in Western Australia (WA) focusing on preparing the community for the rollout and uptake of emerging RSV immunisation strategies for infants and providing evidence to inform public health policy. STAMP-RSV is a holistic program consisting of four interrelated research aims.

Aim 1 builds on community awareness pilot work. While >79% of 1992 survey-respondents had heard of RSV, only 50% associated pneumonia with RSV. We will conduct in-depth interviews with RSV at-risk groups (e.g., those born preterm and/or with chromosomal abnormalities, Aboriginal and/or Torres Strait Islander families) to develop and evaluate education materials for RSV awareness and immunisation strategies.

Aim 2 enhances RSV hospital surveillance activities monitoring disease severity. Partnering with early childhood education centres, we will establish community surveillance providing a clearer picture of the unrecognised community burden of RSV. Genomic sequencing will allow mapping of genomic strain diversity circulating within WA linked to infection severity.

Aim 3-4 utilises state-wide linked data from administrative and health datasets characterising RSV real-world population-level epidemiology. These data will be used in mathematical transmission models to predict the impact of immunisation strategies with either monoclonal antibody and/or maternal vaccine and explore population connectivity patterns specific for RSV.

STAMP-RSV is guided by a community reference group with lived experiences of RSV. Our goal is to translate research findings into effective and efficient RSV control policies to reduce the health and economic burden of RSV. We will create a respiratory infection platform that can be adapted for other viruses (e.g, parainfluenza, human metapneumovirus) likely to be on vaccine development pathways.

Nirsevimab: Overview of Current Recommendations and Real-World Evidence Generated Thus Far

Mrs Sarah Goffin[1]
[1]Sanofi

Nirsevimab, a long-acting passive immunisation designed to protect all infants from RSV within their first season and those deemed high-risk within their second season, was recently registered in Australia and overseas. The 2023-2024 northern hemisphere winter season has been the first where nirsevimab has been implemented in a number of countries and this southern hemisphere winter will likely see the first usage of nirsevimab.

Spain and Luxembourg have implemented nisevimab and have started to collate real-world evidence: Nirs-Gal,1 the investigator-sponsored trial funded by Sanofi, focusses on coverage rates and infant hospitalisations within Galicia. For infants born between 1st April and 24th September 2023, average immunisation coverage was 85.4% versus 92.9% born in-season. The peak rate of RSV hospitalisation in the 2023-2024 season observed was 27.4 per 100,000 in the 4th week of 2024 versus 312.6 (range 246.4-283.6) per 100,000 in previous years and occurred in the first week of the year. For infants under 2 months, the peak rate was 87.5 per 100,000 in the 5th week of 2024 versus 1,103.9 (range 391.9-1,119.6) per 100,000 in previous years and occurred in the 2nd week of the year.

López-Lacort et al.2 focusses on coverage rates and infant hospitalisations within Valencia, Murcia and Valladolid. The coverage rates up to 15th Jan 2024 are 89.8, 88.9 and 98.6% across the different hospitals respectively. RSV-related hospitalisations in infants reduced by 83% in a real-world clinical trial setting following implementation of nirsevimab.

In Luxembourg,3 neonatal coverage within maternity wards from the beginning of October to mid-December 2023 was estimated at 84%, ranging from 66% to 94% between maternity wards. In 2023, 241 children under 5 years of age were hospitalised with a laboratory-confirmed RSV cases, compared with 389 cases in 2022, representing decreases of 38% in cases under 5 years of age and 69% in infants under 6 months.

This publication will focus some of the currently available real-world evidence evaluating the impact of nirsevimab since all-infant programs have been implemented in several countries.

References

1. https://www.nirsegal.es/en (Accessed 19-02-2024)
2. López-Lacort et al., Eurosurveillance, 2024, 29(6), 1-6
3. Ernst et al., Eurosurveillance, 2024, 29(4), 1-5

4D -
Vaccine-preventable diseases, Mezzanine 2, June 12, 2024, 13:30 - 15:00

53

Invasive meningococcal disease contact tracing: Implications for policy and practice

Dr Adriana Milazzo[1], Ms Manjusha Sathiananthan[1], Associate Professor Lynne Giles[1], Dr Louise Flood[2], Professor Helen Marshall[1]
[1]The University Of Adelaide, [2]Department for Health and Wellbeing, Government of South Australia

Context and aim
The purpose of contact tracing cases of Invasive Meningococcal Disease (IMD) is to identify close contacts to eliminate the bacteria from potential carriers within the case's network of close contacts, thus reducing the risk of further transmission. The aim of this study was to describe the characteristics of these close contacts and to gain in-depth understanding of their experience during the contact tracing process.

Methods & analysis/research findings
Close contacts participated in semi-structured interviews (2019 to 2020) to identify type of contact with the case, and to understand their experience and level of satisfaction concerning contact tracing Thematic analysis was used to identify themes.

We interviewed 26 close contacts of IMD cases and identified four major themes – knowledge about IMD/perception of risk; adherence to recommendations provided by the health department; quality of management and public heath response by the health department, and experience in receiving antibiotic prophylaxis. Majority of close contacts had prior knowledge about IMD but experienced anxiety about their risk of contracting it; many believed that the function of clearance antibiotic was to prevent them from contracting the disease; contacts were satisfied with the information they received during the initial contact from the health department and presented to the emergency department of a hospital to receive clearance antibiotics within 24 hours of notification. Most close contacts did not receive any information at the hospital on the side effects or purpose of the antibiotics that they received.

Outcomes
This study provided an in-depth insight on the experience of contact tracing for IMD close and identified gaps in the public health follow-up of close contacts.

Future actions
Findings from this study has implications for the public health response and management of close contacts recommended in jurisdictional IMD guidelines, for Australia and more broadly internationally.

Accuracy of thresholds for measles seroprotection in immunized young adults

Dr Sumanta Saha[1], Associate Professor Gabrielle Davie[1], Brandon de Graaf[1], Melanie Millier[1], Professor James Ussher[1], Professor Rob van Binnendijk[2], Professor Peter McIntyre[1]
[1]University of Otago, [2]National Institute for Public Health and the Environment (RIVM)

Background
All health science students at the University of Otago undergo screening tests for measles immunity. The DiaSorin assay for measles IgG has a threshold of ≥16.5 arbitrary units (AU) for seroprotection, and a third dose of the measles-mumps-rubella (MMR) vaccine is required if below this level, irrespective of immunization status. We compared DiaSorin IgG at screening with a microbead immunoassay (MIA) and the gold standard plaque reduction neutralization (PRNT) assay.

Methods
The DiaSorin assay was undertaken according to manufacturer recommendations at Awanui Laboratories, Dunedin. MIA and PRNT assays were conducted at the Netherlands Public Health Reference Laboratory. The threshold for seroprotection was >0.12 international units (IU)/ml for both the MIA and PRNT assays, the reference standard (PRNT) for calculation of sensitivity, specificity, and positive and negative predictive values.

Results
Sera from 91 students (mean age: 19.8 years, standard deviation: 1.6) were tested, with median (interquartile range) for DiaSorin, MIA, and PRNT levels of 16.1(7.7, 76.2)AU, 0.44 (0.24, 0.87), and 0.32 (0.18, 0.65) IU/ml, respectively. By the DiaSorin assay, 49.45% (95% CI: 39.21, 59.74) were seroprotected versus 84.6% (95% CI: 75.5, 90.7) by the PRNT gold standard. The sensitivity of the DiaSorin threshold relative to PRNT was 53.2% (95% CI: 41.5, 64.7) at 16.5 AU, with a maximal sensitivity of 80.5% (95% CI: 69.9, 88.7) with a cut point of 8 AU. Compared to PRNT, DiaSorin misclassified 36/77 (46.75%) of students as seronegative and 4/14 (28.57%) as seropositive. Results using MIA as the gold standard were similar.

Conclusion
Using PRNT as the gold standard, the DiaSorin assay misclassifies a high proportion of seropositive as seronegatives but also misclassifies some seronegatives as seropositive. These data are informing a clinical trial currently underway to evaluate protection against measles via a challenge dose of MMR vaccine delivered by aerosol to seropositive students.

The role of schools in meningococcal carriage prevalence among adolescents

Dr Hassen Mohammed[1,2], Mr Christian Peut[3], Dr Mark McMillan[1,2], Dr Bing Wang[1,2], Dr Thomas Sullivan[4], Prof Helen Marshall[1,2]
[1]Vaccinology and Immunology Research Trials Unit, Women's and Children's Health Network, [2]Robinson Research Institute and Adelaide Medical School, The University of Adelaide, [3]SA Health, [4]SAHMRI Women and Kids Theme, South Australia Health and Medical Research Institute

Background: Neisseria meningitides causes invasive meningococcal disease (IMD), associated with high morbidity and mortality. The only natural reservoir for N. meningitidis is the human nasopharyngeal mucosa, and transmission occurs through the exchange of respiratory droplets or saliva in close contacts. Carriage is often asymptomatic and peaks in adolescents and young adults. A small proportion of carriers typically develop IMD shortly after acquiring the bacterium. Our study aimed to explore how school characteristics influence meningococcal carriage prevalence in adolescents.
Methods: This is a secondary analysis derived from a large cluster RCT (NCT03089086) conducted between 2017-2018 to investigate the impact of 4CMenB vaccination on carriage of meningococci in senior school students. To assess the correlation between school attributes and carriage at baseline, we employed univariable and multivariable logistic regression models using Generalized Estimating Equations (GEEs) to account for clustering at the school level. In the mutually adjusted models, we included covariates, including demographic and behavioural risk factors, identified as known potential confounders associated with carriage based on the literature.
Results: A total of 235 schools in South Australia were randomised, with 34,489 Year 10 to 12 students eligible for inclusion following consent. Oropharyngeal swabs were collected from 34,459 students. The baseline carriage prevalence was 3.6% (n=1222). Carriage was higher in students attending 1. single-sex schools; including girls schools (aOR=1.48, 95% CI: 1.10-1.98) and boys schools (aOR=1.51, 95% CI: 1.05-2.16) 2. boarding schools (aOR 1.92, 1.13-3.27), and 3. government schools (aOR 1.32, 1.09-1.61). Students in very remote locations (8.3%) had higher carriage rates than those in metropolitan areas (3.4%), but this association was no longer statistically significant after adjustment.
Conclusions: This study demonstrates moderate correlations between school characteristics and N. meningitidis carriage in senior school students. Schools, as environments for adolescent social behaviours, may facilitate bacterial transmission, contributing to elevated IMD rates in adolescents.
Funding: GSK.

Onward transmission following measles secondary vaccine failure: a systematic review and meta-analysis.

Dr Isaac Tranter[1]
[1]University Of Queensland

Background: Measles in individuals with secondary vaccine failure (SVF) may be less infectious than cases in unvaccinated individuals. This systematic review and metanalysis aims to assess transmission risk (attack rates and effective reproductive number) of measles post-SVF.

Methods: Pubmed, Embase, and Web of Science databases were each searched from inception until 31 May 2023. Inclusion criteria included articles describing individual/s who were exposed to measles infected persons who had experienced SVF. SVF was defined as PCR proven measles despite evidence of immunity prior to infection through one or more of 1) documentation of positive measles IgG result prior to exposure, 2) high avidity measles IgG post infection (>60%), 3) concurrent positive IgG and negative IgM results within seven days of infection, 4) early positive IgG alone within seven days of infection.

Results: Across the thirteen studies that met the inclusion criteria, 2930 individuals were exposed to the virus from SVF cases, of which 314 were susceptible – this resulted in secondary attack rates ranging from 0% to 6.25%. From the studies, 117 cases of SVF were identified, with 10.26% (n=12) transmitting the virus, resulting in 25 further cases, and yielding an effective reproduction number (Reff) of 0.21. Mean cycle threshold values (28.94-32.58) and IgG avidity (71.25%-88.6%) were reported.

Discussion: This review suggests a remarkably low attack rate in SVF cases and implies potential for nuanced public health responses. In outbreak settings, persons with SVF may be considered to have lower transmission risk than immunologically naïve persons.

Long-term impact of invasive meningococcal disease in Australian adolescents and young adults.

Dr Mark McMillan[1,2], Jim Buttery[3,4], Margaret Angliss[3], Belinda Barton[5], Christopher Blyth[6,7,8], Robert Booy[9], Suja Mathew[1], David Shaw[10], David Gordon[11,12], Shalem Leemaqz[13], Morgyn Warner[14], Renjy Nelson[14], Rory Hannah[15], Naomi Runnegar[16], Allen Cheng[17,18], Helen Marshall[1,2]
[1]Vaccinology and Immunology Research Trials Unit, Women's and Children's Health , [2]Robinson Research Institute and Adelaide Medical School, The University of Adelaide, Adelaide, South Australia, Australia., [3]Department of Paediatric Infection and Immunity, Monash Health, [4]Department of Paediatrics, Monash University, [5]Psychological Sciences, Faculty of Health, Southern Cross University, [6]Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute, University of Western Australia, [7]School of Medicine, University of Western Australia, [8]Department of Infectious Diseases, Perth Children's Hospital, [9]University of Sydney, [10]Infectious Disease Unit, Central Adelaide Local Health Network, [11]Department of Microbiology and Infectious Diseases, Flinders Medical Centre, [12]College of Medicine and Public Health, Flinders University, [13]South Australian Health and Medical Research Institute, Women's and Children's Hospital, [14]Faculty of Health and Medical Sciences, University of Adelaide, [15]Infectious Diseases, Clinical Immunology and Allergy Division of Medicine Lyell McEwin Hospital, [16]Infectious Management Services, Princess Alexandra Hospital, University of Queensland, [17]Infectious Diseases, Monash Health School of Clinical Sciences, Monash University, [18]Infection Prevention and Healthcare Epidemiology, Alfred Hospital

Context and Aim: In adolescents, invasive meningococcal disease (IMD) often presents as a life-threatening acute illness, yet the long-term consequences for adolescents and young adults (AYA) are not well understood. This study aimed to evaluate the long-term impact of IMD on the intellectual functioning and quality of life of Australian AYAs. Secondary objectives include assessing the effects of IMD on neurocognitive (e.g., academic achievement, executive functioning, memory), psychological, and physical functioning.

Methods and Analysis: A matched cohort study was conducted with AYAs aged 15-25 years at the time of IMD, compared to controls without a history of IMD, across all mainland Australian states. Participants underwent medical, neuropsychological, and audiology assessments between 2 and 10 years post-acute illness. Multiple linear and logistic regression models adjusted for socioeconomic status, age, and gender were used to analyse outcomes.

Research Findings: The study included 41 IMD cases (93% group B) and 52 controls. The median time from illness to assessment was 3.4 years (IQR 2.5-6.2 years). Results showed no significant difference in Full-Scale IQ scores (cases: mean 106, SD 11; controls: mean 109, SD 14; p=0.3) or HUI3 quality of life scores (cases: mean 0.80, SD 0.21; controls: mean 0.89, SD 0.10; p=0.3) between cases and controls. However, IMD cases exhibited significantly higher prevalences of Post-Traumatic Stress Disorder (PTSD) (10% vs 0%, p=0.03) and Alcohol Dependence (18% vs 4%, p=0.04). The International Classification of Functioning assessment also revealed significant impairments in energy and drive functions and difficulties in daily activities among the IMD cases, compared to controls.

Future Actions: Study findings demonstrate the potential psychological effects of IMD, notably PTSD and alcohol dependence, as well as ongoing physical impairments. Comprehensive follow-up of IMD cases after hospital discharge, focusing on both physical rehabilitation and mental health care is required.

Funding: This study was funded by Pfizer

Pertussis hospitalisations in Australia: impact of COVID-19 related non-pharmaceutical interventions

Dr Paul Young[1,2], Ms Saskia van der Kooi[1], Ms Han Wang[1], Dr Joanne Jackson[1], Dr Aditi Dey[1,3], A/Prof Frank Beard[1,3], Prof Peter McIntyre[1], Dr Tehzeeb Zulfiqar[2], Prof Martyn Kirk[2], A/Prof Stephen Lambert[1]
[1]National Centre for Immunisation Research and Surveillance, [2]National Centre for Epidemiology and Population Health, [3]University of Sydney

Background:
In response to the COVID-19 pandemic, Australia implemented a range of non-pharmaceutical interventions (NPIs) in 2020 and 2021, which resulted in a substantial reduction in the incidence of other communicable diseases, including pertussis, influenza, and respiratory syncytial virus. Unlike case notification counts, hospitalisations should be less impacted by changes in healthcare seeking and testing behaviour. Here we report the epidemiology of pertussis hospitalisations between 2017–2021, covering the years of the pandemic.

Methods:
Hospitalisation data from the Australian Institute of Health and Welfare for ICD-coded episodes of pertussis (A37.x) from January 2002 to December 2021 were available. Our analysis focussed on comparing the three-year period preceding the pandemic (2017–2019) to 2021–2022.

Results:
During the COVID-19 pandemic the total number of pertussis hospitalisations for all age-groups decreased substantially. In the pre-pandemic period (2017–2019), there were on average 499 hospitalisations per year. In 2020, this decreased by 39% to 197 hospitalisations for the year, with a further decrease of 39% to 76 in 2021. Hospitalisation rates followed a similar pattern.
The pre-pandemic period had a mean annual incidence of 2.00 per 100,000 per year which decreased to 0.77 per 100,000 per year in 2020 and then to 0.30 per 100,000 per year in 2021. The greatest absolute reduction in hospitalisations was for those aged younger than 4 months. This group had mean annual incidence of 76 per 100,000 per year in the per-pandemic period which decreased to 20 per 100,000 per year in 2020 and then 6 per 100,000 per year in 2021.

Conclusion:
COVID-19 NPIs and targeted immunisation programs (including maternal immunisation) have resulted in gradual reductions in pertussis hospitalisations. This aligns with previous findings for notifications in Australia and highlights the preventive power of social distancing and isolation for known and suspected pertussis cases.

Measles antibody responses in tertiary students to third dose of measles-mumps-rubella vaccine

Dr Sumanta Saha[1], Associate Professor Gabrielle Davie[1], Brandon de Graaf[1], Melanie Millier[1], Professor James Ussher[1], Professor Rob van Binnendijk[2], Professor Peter McIntyre[1]
[1]University of Otago, [2]National Institute for Public Health and the Environment (RIVM)

Background
Students entering clinical placements at the University of Otago, irrespective of MMR status, are required to undergo screening antibody tests for measles and mumps IgG using a commercial assay (DiaSorin) and to receive MMR vaccine if either measles or mumps IgG is below the manufacturer's threshold for seroprotection. We evaluated antibody responses to measles before and after vaccination in students requiring MMR using the DiaSorin assay performed at Awanui Labs compared to the gold standard [plaque neutralization assay (PRNT) performed at the Netherlands public health laboratory (RIVM)].

Methods
Measles IgG was measured pre- and post-MMR by the DiaSorin assay (≥16.5 arbitrary units (AU): seroprotective) and PRNT (≥0.12 international units (IU): seroprotective). We compared the number and proportion meeting the DiaSorin and PRNT cut-offs for seroprotection pre- and post-MMR and the proportion with at least a two-fold antibody titer rise post-MMR.

Result
Pre-MMR DiaSorin measles IgG was available for 91 students (see companion abstract), with pre-and post-MMR IgG available for 59 (64.8%), with 28 (47.5%) seroprotected. By PRNT, 52/59 (88.1%) were seroprotected. Post MMR, 57/59 (96.6%) reached the seroprotection threshold by DiaSorin and 59 (100%) by PRNT. Measured by the DiaSorin titers, an increase in antibody post-MMR of at least twofold was seen in 13/28 (46.8%) of students seropositive pre-MMR (i.e., only mumps antibody below threshold) versus 28/31 (90.3%) of measles seronegative (OR 0.09; 95% CI 0.02 – 0.38). Measured by PRNT, 7/7 (100%) of that seronegative pre-MMR versus 27/52 (51.9%) with higher titers achieved a twofold or greater rise post-MMR.

Conclusion
Post-MMR, 97% (by DiaSorin) and 100% (by PRNT) reached protective levels. Students who were seropositive pre-MMR by either assay were half as likely to have at least a twofold increase in measles IgG post-MMR than seronegative.

Measles cases and sequelae between 2006-2018 in Aotearoa New Zealand: case-control study

Victoria King[1], Dr Alana Cavadino[4], Dr Anna Howe[1], Dr Catherine Gilchrist[1], Dr Jocelyn Neutze[1,3], Associate Professor Rachel Webb[1,2,3], Associate Professor Teuila Percival[1,3], Dr Edwin Reynolds[6,7], Dr Kuang Hsiao[1,2], Dr Fiona Perelini[1], Associate Professor Emma Best[1,2,7]
[1]Department of Paediatrics, University of Auckland, [2]Starship Children's Health, Te Toka Tumai, [3]Kidz First, Middlemore Hospital , [4]School of Population Health, The University of Auckland, [5]Waitakere Hospital, Watemata, [6]Auckland Regional Public Health Service, [7]Immunisation Advisory Centre, The University of Auckland

Background
Measles is a highly infectious vaccine-preventable disease. Complications at time of measles infection and during recovery may result in measles virus-mediated immune dysregulation persisting beyond the infective period. As part of a larger study of measles infection severity and sequelae, we aimed to describe hospitalised measles cases in Aotearoa New Zealand (NZ) between 2006-2018 and determine their risk of future healthcare use through comparison with controls.
Design and methods
Cases were children/youth aged 0-30y with a measles hospitalisation event recorded in the NZ National Minimum DataSet between 2006-2018. Data included post-measles hospitalisations (categorised as all-cause, infection-related, and specific respiratory events) and pharmaceutical dispensing (anti-infectives) from >30d after the start of first admission for measles. Controls were from the NMDS and matched 3:1 with cases on sex, birth month and year, deprivation quintile, and healthcare district.
Results
There were 224 measles hospitalisations, including four intensive care (ICU) admissions, identified from 215 individuals (40% female) and matched to 642 controls. Of the cases, 47% identified as Māori and/or Pasifika (37% of controls). 48% were <2y when first admitted (median 2y, IQR[1,15]), 38% were in the most deprived quintile. Median length of stay was one night, IQR[0,2].
There were 348 post-measles all-cause hospitalisations, identified from 104 (48%) cases (median 3, IQR [1,9]) including eight ICU admissions. Of these, 97 (28%) were respiratory-related. We identified 406 all-cause hospitalisations from 177 (28%) controls (median 2, IQR[1,3]), including three ICU admissions and 94 (23%) were respiratory-related.

Conclusion:These preliminary results suggest that there may be more all-cause hospitalisations post-measles compared with matched controls. Further analyses will establish if those hospitalised with measles have more frequent and/or clinically relevant infection related events post-measles. This work supports public health interventions for those most at risk of severe measles and may help inform targeted measures to prevent sequelae.

Estimating Australia's measles-susceptible population to inform strategies following global resurgence

Ms Zoe Croker[1,2], Dr Helen Quinn[1,3], A/Prof Stephen Lambert[1], Dr Angus McLure[2], Dr Aditi Dey[1,3], Ms Alexis Pillsbury[1,3], Professor Peter McIntyre[1,4], Professor Kristine Macartney[1,3], A/Prof Frank Beard[1,3]
[1]National Centre for Immunisation Research and Surveillance, [2]National Centre for Epidemiology and Public Health, Australian National University, [3]Faculty of Medicine and Health, The University of Sydney, [4]Department of Women's and Children's Health, University of Otago

BACKGROUND:
The World Health Organization (WHO) certified Australia as having eliminated measles in 2014. Since the COVID-19 pandemic, global measles vaccination rates have declined, and the number of countries experiencing large measles outbreaks has grown. Identifying and addressing immunity gaps in Australia will be necessary to maintain elimination status. No Australian studies have systematically combined data from different sources across all age groups. We will triangulate data sources to estimate the measles susceptible population by birth year in Australia as of 2019.

METHODS:
Estimation of the Australian population susceptible to measles in 2019 by using routinely collected national data on measles vaccination coverage from the Australian Immunisation Register and survey data, serosurveys, and published estimates of vaccine effectiveness to assemble a cross-sectional epidemiological picture of measles susceptibility for birth-year cohorts from 1920–2019.

RESULTS:
Serosurvey results from 12,813 people born 1958–2012 showed an unadjusted overall seropositivity of 90.7%, below the WHO threshold required for herd immunity of 92–95%. When stratified by age, seropositivity increased from 84.6% for people born 2011–12 to 97.6% for those born before 1968, the year measles vaccine was introduced in Australia. Seropositivity was below 90% for those born 1994 and after, and above 90% for those born 1993 and earlier. We will present expanded estimates of age-specific population susceptibility to measles as of 2019.

CONCLUSION:
Existing data suggest a significant immunity gap among older children, adolescents, and young adults. Extension of data on the susceptibility profile for Australia will inform strategies to maintain elimination in the context of global measles resurgence post-pandemic.

4E -
Immunisation programs and delivery, Mezzanine 3, June 12, 2024, 13:30 - 15:00

165

Response to Revaccination Advice Following a Large-Scale Cold Chain Incident in Tasmania

Dr Margot Tidey[1], Jon Moore
[1]Public Health Services

Background
In March 2023 Public Health Services (PHS) identified a prolonged and large-scale cold chain incident at a General Practice in Southern Tasmania. PHS used registered mail to contact patients who had received a vaccine at the practice between 2003 and 23 March 2023 to provide information and recommendations to seek further revaccination advice from their General Practitioner or PHS.

Objectives
We aimed to understand the public response to this incident by characterising individuals who sought further advice from PHS and those who proceeded to receive revaccination in the12 weeks after information was issued.

Methodology
We defined two cohorts. The contacted cohort included those who were issued a letter by PHS. The revaccination cohort were a subgroup of the contacted cohort, namely those who had received a vaccine, where revaccination would likely be recommended. We compared age, sex and residential location by fact of engagement or revaccination within the respective cohorts. Data were collected from the Australian Immunisation Register. We conducted analyses in Microsoft Excel (v2308).

Results
Among the contacted cohort, 8.1% (157/1948) sought further advice from PHS, most within the first six weeks. Enquiry rates declined with increasing age and were highest for the youngest cohort (22.4%; 13/58 of 0-4 years old). Among the revaccination cohort, 8.7% (135/1552) were vaccinated within 12 weeks. Younger children (0-4 years old) were most likely to be revaccinated (36.8%; 21/57). Females were more likely to both submit enquiries and receive revaccination.

Discussion & Conclusion
The proportion of the cohort that submitted enquiries or proceeded to receive revaccination within 12 weeks was low but greater among young children and females. Understanding the public response to such a large-scale incident is useful for resource planning.

Introducing a new NSW Immunisation Strategy 2024-2028

Dr Sonya Ennis[1]
[1]NSW Ministry Of Health

Context: A new NSW Immunisation Strategy 2024 – 2028 (the Strategy) has been developed to provide a system-wide framework for NSW Health and its partners to improve vaccine access and uptake to reduce the impact of vaccine preventable diseases (VPDs). The Strategy recognises that immunisation is everyone's business.
Process: The Strategy acknowledges the structural, economic and geographic barriers that impact immunisation coverage. It recognises the importance of engagement and program co-design with partners and the community to improve or sustain high immunisation coverage, including in priority populations.

Analysis: In NSW, there are communities or individuals that experience an increased risk of: exposure to VPDs, more severe disease from VPDs, and significant barriers to accessing immunisation services. It is important that initiatives are tailored to meet differing needs.

Outcomes: The Strategy's key priorities are to:
- embed immunisation into routine healthcare.
- enhance community awareness and understanding of immunisation.
- maximise workforce capacity to support immunisation.
- use data better to drive performance, improve outcomes and address inequities.
- optimise the use of digital systems to support programs.
- prepare to adopt and implement new vaccine programs.

The strategy emphasises the need for immunisation through all stages of an individual's lifespan and highlights the need to address inequities in knowledge, access, and uptake across the population to maximise the benefits of immunisation for all.

Vaccination uptake post specialist immunisation service intervention for Adverse Events Following Immunisation

Dr Jialin Sabrina Yee, Ms Rebecca Doyle[1,2], Dr Sophie Wen[1,3]
[1]Children's Health Queensland, [2]University of Queensland, School of Nursing, Midwifery and Social Work, [3]University of Queensland Centre for Clinical Research (UQCCR)

Background: Adverse Events Following Immunisation (AEFI) have significant implications for public health, potentially leading to decreased immunisation rates and vaccine hesitancy. Understanding the characteristics and outcomes of children experiencing AEFI is crucial for effective intervention strategies and informed decision-making.

Objectives: This study aimed to describe the range of AEFI presentations, identify common referral sources, and assess factors influencing vaccination uptake following specialist consultation.

Methods: A retrospective cohort study was conducted from 2019 to 2022, analysing data from 191 children referred to a Specialist Immunisation Service (SIS) at an Australian paediatric hospital. Demographic data, referral details, vaccination history, and AEFI types were recorded. Statistical analyses including univariate and multivariate models were employed to predict vaccination outcomes post-SIS consultation.

Results: Median age of children referred was 2 yrs. General Practitioners were the major referral source (68%). Urticarial rash was the most prevalent AEFI referred (29%). Pneumococcal conjugate vaccine was the most implicated vaccine (38%). Majority (69%) were successfully vaccinated following SIS consultation with 3% experiencing a subsequent AEFI (all mild). Older age is found to be associated with less likelihood for vaccination (OR 0.93). Formal reporting of AEFI was low (26%).

Conclusion: Severe adverse events, including anaphylaxis, were rare, and a SIS played an important role in vaccinating children following AEFI. Vaccination following urticarial rash is likely safe and options such as a drop-in immunisation centre in a hospital setting may reduce delay. AEFI reporting needs to be promoted and patient-initiated reporting system may enhance this.

Prospective Cohort Study Evaluating Australian Children Presenting to Specialist Immunisation Clinics

Miss Hannah Stubbs[1,2], Professor Pamela Palasanthiran[2,3], Dr Archana Koirala[1,3], Dr Amelia Lee[3], Dr Robert C. Duguid[3], Mrs Deidre Brogan[1,3], Associate Professor Nicholas Wood[1,3,4], Dr Rama Kandasamy[1,3,4]
[1]National Centre For Immunisation Research And Surveillance, [2]University of New South Wales, [3]Sydney Children's Hospital Network, [4]University of Sydney

Objective: Prior experience of an adverse event following immunisation is a known barrier to vaccination. Limited Australian data evaluating adverse event recurrence among children exists to inform clinical decisions. We aimed to assess adverse event following immunisation recurrence among children with prior adverse events and to evaluate if family history increased adverse event risk.

Methods: A prospective cohort study was conducted from March 3rd until August 18th, 2023. Children ≤16 years with prior adverse events following immunisation in themselves or family were recruited from specialist immunisation clinics at two quaternary paediatric hospitals. Adverse event outcomes were collected via surveys administered at presentation, three, and eight days post vaccination, and analysed by key characteristics and potential risk factors.

Results: Forty three of forty nine (43/49, 87.8%) children enrolled received further vaccines. Of those who completed the follow up surveys, 50.0% (16/32) reported an adverse event. Recurrence of prior adverse events occurred for 23.3% (10/43, 95% CI: 11.8% – 38.6%) of the cohort. Two of twelve (2/12, 16.7%) participants with prior serious adverse events who received further vaccines reported a serious adverse event recurrence. No post review serious adverse events were observed in children with prior non serious adverse events. Neurological conditions were a risk factor for prior (neurological condition 3/3 versus no neurological condition 2/40, $p < 0.001$) and post review (neurological condition 2/3 versus no neurological condition 0/28, $p = 0.006$) post vaccination seizures. Family history had no relationship to post review adverse events (family history 5/8 versus no family history 11/23, $p = 0.685$).

Conclusion: Revaccination is safe for the majority of children with a personal or family history of adverse event following immunisation.

Improving provider confidence in communication skills: the value of dedicated training

Mrs Rachael McGuire[1], Ms Katie Butler[1], Ms Francesca Machingaifa[2], Ms Georgina Lewis[1,3], Prof Nigel Crawford[1,3,4,5], Dr Wonie Uahwatanasakul[1,3,4,5]
[1]Melbourne Vaccine Education Centre (MVEC), Murdoch Children's Research Institute, [2]Infection Prevention and Control, Royal Children's Hospital, [3]SAEFVIC, Murdoch Children's Research Institute, [4]Department of Paediatrics, University of Melbourne, [5]Department of General Medicine, Royal Children's Hospital

Effective communication is essential for promoting vaccine acceptance and uptake. However, teaching in this area is limited, leaving some clinicians lacking the confidence to engage in these important conversations. With an expanding workforce administering vaccines, the Melbourne Vaccine Education Centre (MVEC) identified the need for dedicated communication training. The interactive Immunisation Skills Workshop offers participants a chance to refine their communication skills in an authentic, supportive learning environment.
Full-day, face-to-face workshops were offered annually over a three-year period (2022-2024) to accredited immunisation providers from all disciplines with any level of experience. Participant numbers were limited (36) to maximise educational impact and enhance learning outcomes.
2 key themes were consistent across each workshop: promoting vaccine confidence through conversation and facilitating open-disclosure discussions. Before the workshop, completion of pre-readings was strongly recommended to ensure a minimum baseline level of knowledge. The workshop program comprised demonstration of effective communication strategies and participant engagement in groupwork and discussions. Simulations with trained actors followed, allowing participants to rehearse their learnings in a high-fidelity setting.
Participants were asked to rate their confidence in communication skills via confidential pre- and post-workshop surveys. There was a 100% response rate (N=36) in pre-workshop surveys in 2022 and 2023 and an 88.8% (2022) and 83.3% (2023) response rate for post-workshop surveys. Results demonstrated a 52.9% (2022) and 72.9% (2023) increase in providers reporting the highest category of confidence in facilitating conversations promoting vaccination. There was a 64.2% (2022) and 66.2% (2023) increase in providers reporting the highest category of confidence in holding open-disclosure discussions.
These findings support the value of providing dedicated communication training as a tool to increase provider confidence in engaging in difficult conversations. Themes of future workshops could be modified to address the need for dedicated training in other skills required to support vaccine provision.

Injections of Innovation: A Pharmacist's role within a State-wide Specialist Immunisation Service

Ms Anita McConaghy[1], Dr Chien-Hui (Sophie) Wen[1,2], Ms Rebecca Doyle[1,3]
[1]Children's Health Queensland, [2]University of Queensland Centre for Clinical Research, [3]University of Queensland School of Nursing, Midwifery and Social Work

Aim
Evaluate the role of a Senior Pharmacist within a State-wide Specialist Immunisation Service.
Background
The Queensland Specialist Immunisation Service (QSIS) has delivered a state-wide paediatric immunisation service since 2016 with a focus on addressing immunisation needs of medically complex children. This multidisciplinary service consists of:

- drop-in immunisation centre
- specialist outpatient clinics
- education and research
- immunisation advice service

The service employs Specialist Physicians, Immunisation Program Nurses (IPNs), Nurse Practitioners, Nurse Educator and Researcher, Pharmacy Technician, and Senior Pharmacist.
Process
Data pertaining to pharmacist tasks were recorded for 12 months to support local organisational business plans. Information collected included date, category of task, details of task, completion status and timeframe. This data were collated from local databases on pharmacist administered vaccinations for the same time period to create a snapshot of pharmacist activity.
Analysis
Data were recorded in an Excel spreadsheet and analysed with descriptive statistics to ascertain primary workload (including complex vaccine reviews +/- catch up plans, immunosuppression histories and calculation of live vaccine washout periods), and secondary activity including: COVID-19 related tasks; vaccine management; software management; education; process development and vaccination.
Outcomes
Clinical activity (29%) and vaccine management (25%) accounted for over half of the Pharmacist's time. Other tasks included: COVID-19 vaccine related tasks (20%), data/software management (13%), guideline/process development (7%), education (5%) and patient vaccination (1%).
The pharmacist role has rapidly evolved over recent years to include clinical immunisation practice as well as complex vaccine management including mRNA vaccines. The pharmacist plays a crucial role in the clinical management of patients, particularly with regards to complex medication histories and immunosuppression use. With the recent changes to the Pharmacists Extended Practise Agreement (EPA), the scope of the pharmacist within the service is due to expand again, to include education targeting community providers of paediatric vaccinations.

Audit of Cold Chain Management in Tasmanian General Practices-What Have We Learnt?

Mrs Leah Willis[1], Mrs Kerry Cleaver[1], Ms Nikole Lane[1], Dr Shannon Melody[1]
[1]Public Health Services, Tasmania

Context:
In 2023, Public Health Services (PHS) conducted a comprehensive statewide audit of vaccine storage practices among all General Practice National Immunisation Program (GP NIP) vaccine providers. We aimed to provide support to promote adherence to best-practice cold chain management.
Process:
To identify the extent of adherence with principles outlined in the National Vaccine Storage Guidelines ('Strive for 5') and ensure best practice in vaccine storage, we developed a vaccine management audit survey based on the 'Strive for 5' self-audit tool using Survey Monkey. In May 2023, we invited Tasmanian GP NIP providers to participate in this survey. Responses were classified using a risk matrix as low, medium, or high risk to prioritise follow-up and support by phone and email.
Analysis:
Invitations were sent to 169 GP NIP providers; 154 participated and 15 were identified as no longer active. Of these, 89% responded online and 11% via phone. 15% of providers demonstrated cold chain practices that were classified as medium or high risk. Common risks included the use of domestic fridges, insufficient temperature monitoring and documentation, no data logger use and insufficient review of data logger data. Practice-level factors associated with greater risk include single-practitioner clinics, the absence of a practice nurse, and lack of accreditation. Education and support were provided using the 'Strive for 5' guidelines.
Outcomes:
Most GP NIP vaccine providers in Tasmania self-reported adherence with 'Strive for 5.' Notwithstanding some limitations of self-reporting processes, the audit generated useful information. PHS has updated cold chain breach resources and implemented changes to the vaccine account application process and vaccine ordering interface to clarify and emphasise 'Strive for 5' requirements. Ongoing cold chain auditing is planned.

Expanding vaccinators foundation education using simulations, and scenario-based learning.

Mrs Jane Morphet[1], Ms Sally Schnauer[1]
[1]Immunisation Advisory Center

New vaccinators need safe opportunities to practice translating theory into practice. Most education offers limited opportunity for role play.

Objective: Design 4hr practical session to follow online theory course

Leaning outcomes: Integrate theoretical knowledge with practical skills to apply best practices in the vaccination role. Gain confidence in communication, vaccination procedures, and decision-making by actively participating in simulated activities.

Process: Investigation of vaccination education in other countries, identifed that simulation is rarely included in core education and requires significant additional time. Course was designed to follow a vaccinators' day and includes:

Problem solving activities: Cold chain, emergency equipment, AEFI diagnosis.

Discussions: Setting up a vaccination space for diverse range of consumers, informed consent, optional additional scenarios provided

Role play scenarios: Welcoming consumers, building rapport, responses, providing accurate information, vaccine hesitancy, maternal and infant concerns and vaccinations.
Completing pre vaccination screening, identification of specific consumer issues and how to address. Informed consent, maternal vaccinations, baby vaccinations. Discussions about risk and vaccine safety.

Practical skills: Selecting correct vaccines, reconstituting vaccines, holding positions, landmarking, administering the vaccine, and drawing up adrenaline doses.

Resources: To add realism and to assist with timing, we produced videos to introduce and define each section. Detailed lesson plan with answers and activity resources supplied to facilitators. Student guide provided as a workbook. Educators were introduced to this new delivery and participated as students to experience the training in February 2024

The result: One region was slower to adopt, and needed additional support, the other regions embraced the project and sessions worked well with positive survey feedback from students and facilitators. Comments were positive with all commenting on enjoying the teaching style and the practical activities.

Next steps: Ongoing review and editing following student and facilitator evaluation.

Abridged Catch up Program (ACP): Streamlining at its best!

Ms Lisa Beck[1]
[1]City Of Greater Dandenong

Aim: Increased client acceptability, timelier completion of adolescent catch up vaccination and increased access
Process: City of Greater Dandenong (CGD) has provided immunisation at the Noble Park English language School (NPELS) since the 1990's. Many adolescent students were requiring up to seven injections at one visit and up to 18 injections over the course of the standard catch up schedule. Discussions with the Royal Children's Hospital Refugee Health service and funding from the Victorian Department of Health, along with a successful application to the Victorian Chief Health Officer for expanded immuniser scope for a limited time. In February 2022, ACP was created for students at NPELS aged 10-17 years. The CHO approval meant that Infanrix-Hexa and Priorix-Tetra could be administered outside the usual age recommendations to ensure adolescents are protected in a timely manner with less injections. Finalisation of the program was in March 2024.
Analysis: 309 students commenced the program with 303 completing their catch up. Active surveillance post vaccination was undertaken with telephone calls to parents/guardians 3-5 days post vaccination. Only one vasovagal and one 'rash' was reported and notified to SAEFVIC.
Outcomes: ACP has been well accepted by the NPELS students and their parents, with <2% refusal. This is demonstrated by a shorter completion time and a higher completion rate of adolescents undertaking ACP, compared to primary care. Anecdotally, less needles in arms reduces anxiety and distress in these students who may have otherwise been given numerous injections at one sitting. The reported side effects have been less than usual schedule application, with an increase in efficiency by CGD. An evaluation has been undertaken as part of a larger program which indicated positive clinical outcomes. ACP would be of great benefit Australia wide if future approval was obtained.

Protecting Communities: ensuring Vaccine Service Providers provide safe and effective vaccines

Tracy Bladen[1], Ms Fiona Vosti[1], Bree Cullen[1], Rachael Young[1], Moira Dora[1], Gavin Bowman[1], Jayde Porter[1], Dieter Jurgeneit[1], Katherine Kerr[1,2], Shichao Chen[1,3], Paul Trinh[1,3], Daniel Charlesworth[1,4], Fiona May[1], Dr Candice Colbran[1], Dr Vicki Slinko[1,2], Dr Kate Alexander[1]
[1]Gold Coast Public Health Unit, [2]School of Public Health, University of Queensland, [3]Bond University, [4]Griffith University

In 2023, community pharmacies in Queensland were permitted to administer publicly funded influenza vaccines. At the time, pharmacies were exempt from providing a Vaccine Management Protocol (VMP).

In June 2023, a pharmacy on the Gold Coast reported a vaccine cold chain breach (CCB) when trying to place an order for publicly funded vaccines. The Gold Coast Public Health Unit (GCPHU) investigated the CCB and significant concerns were raised regarding the quality of vaccine storage, management and administration on the pharmacy premises. Given there are 84 pharmacies offering funded vaccines on the Gold Coast, broader concerns were raised regarding the ability of pharmacies to provide safe and effective vaccines.

GCPHU conducted a comprehensive audit of vaccine management and administration at twelve pharmacies over two weeks. The locally developed audit tool was based on relevant National and State legislation and guidelines.

Ten pharmacies (83%) audited were suspended from ordering vaccines due to inadequate vaccine management. The audits identified pharmacies had limited understanding of legislative and procedural requirements of vaccine management and administration, including a lack of equipment or space to support administration of NIP vaccines and management of adverse events, absent or insufficient records management, evidence of unreported CCBs, and inability to store vaccines following a CCB.

It cannot be assumed that people working in pharmacies are aware of all the requirements to appropriately manage vaccines and their cold chain. To ensure safe and effective NIP vaccines are provided to the community, pharmacy staff require more education and support. Audit findings contributed to a change in state policy, in which Queensland Health now require pharmacies to register as Vaccine Service Providers and must provide a Vaccine Management Protocol that is approved by the local Public Health Unit

4F -
COVID vaccination, Mezzanine 4, June 12, 2024, 13:30 - 15:00

211

Effectiveness of COVID-19 vaccine booster doses in Victoria: a data linkage study

Dr Joshua Szanyi[1], Yue Yang[1], Dr Driss Ait Ouakrim[1], Sharon Williams[2], Caroline Sumpton[2], Dr Chris Clarke[3], Dr Amanda Buttery[3]
[1]Population Interventions Unit, Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, [2]Victorian Department of Health, [3]Moderna

To inform evidence-based vaccine policy decisions in the long-term, policy makers require accurate, contemporary and locally contextualised information regarding COVID-19 vaccine effectiveness (VE). However, few studies analysing COVID-19 VE have been conducted in Australia. This is likely due to Australia's unique epidemiological situation early in the pandemic but may also have been influenced by local challenges in obtaining data to conduct such analyses compared to other countries.
We developed a novel linked data set from routinely collected health and administrative information including the Australian Immunisation Register to follow Victorian individuals aged ≥5 years from 1 December 2021 to 1 February 2023, and, using a modified Cox model, determined relative VE over time of monovalent COVID-19 boosters (3 v. 2 and 4 v. 3 doses) against hospitalisation and death due to COVID-19.
We found that the benefit of booster doses varied depending on the clinical outcome of interest, the recipient's age, time since receipt of a booster dose, and calendar time. The greatest relative benefit was observed when comparing three doses of vaccine administered to individuals aged ≥65 years between December 2021 and June 2022 compared to doses (relative VE against death 28 days post-booster 80.9%, 95% confidence interval 76.5–84.4%). Relative VE was also initially high against death for those aged 50 to 64 years, albeit with more uncertainty (52.5%, 95% confidence interval -16.9–80.7% for three v. two doses 28 days post-booster during the same period).
These findings are supportive of Australian COVID-19 booster vaccination policy which primarily targets older adults. The data linkage infrastructure, relationships between government, academia and industry, and insights into optimal approaches to evaluating VE in the Victorian context developed over the course of this project can be leveraged to improve future evaluation of vaccines in Australia.

Association between COVID-19 vaccination and myocarditis/pericarditis, GBS and TTS in NSW, 2021

Ms Nicole Sonneveld[1], Mr Anish Scaria[1], Dr Lucy Deng[1,2], Professor Nicholas Wood[1,2], Professor Kristine Macartney[1,2], Associate Professor Bette Liu[1,3]
[1]National Centre for Immunisation Research and Surveillance, [2]The University of Sydney, Children's Hospital at Westmead Clinical School, [3]University of New South Wales, School of Population Health

Introduction: Adverse events of special interest (AESI) with temporal associations to COVID-19 vaccines have been identified. Here, we assess associations for four AESIs using administrative data in New South Wales (NSW), 2021.
Methods: We identified AESIs using coded NSW hospital admission (all AESIs) and Emergency Department presentation (myocarditis/pericarditis only) data, 1 February–31 December 2021 (administrative cohort). We linked these records to COVID-19 vaccination information from the Australian Immunisation Register. The administrative cohort was also linked to a clinical register containing confirmed cases of adverse events reported to NSW Health. We used self-controlled case series (SCCS) methods to estimate relative risks (RR) by comparing events in a risk window post-COVID-19 vaccination to a control window.
Results: We identified 312 myocarditis, 785 pericarditis, 64 Guillain-Barre syndrome (GBS) and 189 thrombosis with thrombocytopaenia syndrome (TTS) cases in the administrative data, of which respectively 119(38%), 81(10%), 14(22%) and 33(17%) were confirmed cases in the clinical register. For the administrative cohort, we found an association between mRNA COVID-19 vaccination, and myocarditis and pericarditis. For myocarditis: RR=7.84 (95%CI: 5.08–12.10) day 0–29 post-dose 2 and RR=6.01 (95%CI: 1.58–22.78) post-dose 3. For pericarditis: RR=2.13 (95%CI: 1.62–2.78) day 0–41 post-dose 1, RR=3.48 (95%CI: 2.69–4.50) post-dose 2, RR=23.20 (95%CI: 10.02–53.72) post-dose 3. GBS risk was increased 22–42 days post-dose 1 viral vector vaccine: RR=4.30 (95%CI: 1.11–16.61). TTS risk was increased 1–42 days post-viral vector vaccination: RR=1.80 (95%CI: 1.29–2.51). In analyses using only confirmed cases, RRs were significantly elevated for myocarditis/pericarditis and TTS, as found using the administrative cohort.
Conclusion: We found associations between mRNA COVID-19 vaccination and myocarditis/pericarditis, and between viral vector COVID-19 vaccination and GBS and TTS. These data will contribute to a global meta-analysis providing greater detail on associations with specific vaccine types/schedules and patient subgroups.

Monitoring of COVID-19 vaccine effectiveness against COVID-19 mortality in Australia

Associate Professor Bette Liu, Ms Sandrine Stepien[1], Mr Anish Scaria, Professor Kristine Macartney
[1]Ncirs

Background: With changing variants and new vaccines, there is still a need for ongoing monitoring of COVID-19 vaccine effectiveness in the Australian population to inform programmatic decision-making.
Methods: We used linked data from the 2021 Australian Census, Australian Immunisation Register (AIR) and Death Registrations, available via the Person Level Integrated Data Asset (PLIDA) Project. Vaccine effectiveness (VE) against COVID-19 specific mortality in adults aged 65+ years was estimated by dose number, vaccine type and time since dose receipt using survival analysis. Three-monthly assessments of VE have been made to account for differences in circulating viral variants.
Results: We followed over 4.1 million people aged 65+ years between 1 March and 30 September 2023 (dominant variants Omicron XB/XBB) during which time there were 2100 COVID-19 deaths. Compared to those who received a booster dose more than a year ago, the relative VE of a recent booster dose (within 3 months) was 69% (95%CI 46-83%) for monovalent ancestral vaccines and 65% (95%CI 59-70%) for bivalent vaccines. The relative effectiveness waned over time, being 51% (95%CI 41-60%) for those receiving bivalent vaccine 3-6 months earlier and 15% (95%CI 5-25%) for any vaccine type received 6 to 12 months ago. Updated VE assessments including in aged care residents, and other sub-populations will be presented at the conference.
Conclusions: Recency of COVID-19 booster dose (within 6 months) conferred greater protection against COVID-19 mortality compared to those for whom it was more than a year since dose receipt. During this period dominated by XB and XBB variants, the bivalent (BA.4/5 and ancestral) vaccines did not appear to confer substantially greater protection against mortality than ancestral-only vaccines. Regular COVID-19 vaccine boosters for the vulnerable continue to provide significant additional protection against death.

Social inequity and COVID-19 vaccination in Central Queensland, Australia

Ms Connie Slater[1,2], Dr Mahmudul Hassan Al Imam[1], Mrs Jacina Walker[1], Dr Nicolas Roydon Smoll[3], Dr Emma Field[2], Dr Gulam Khandaker[1]
[1]Central Queensland Hospital & Health Service, [2]Australian National University, [3]Sunshine Coast Hospital & Health Service

The impact or socioeconomics and remoteness on COVID-19 vaccination in regional and rural populations of high-income countries like Australia remains mostly unknown.

A cross-sectional analysis of COVID-19 vaccine uptake in Central Queensland (CQ) was undertaken to evaluate the correlation between vaccine uptake and associated factors (e.g. age, gender, Indigenous status). Locality classification data (Modified Monash Model classifications (MMM)) and Index of Relative Socioeconomic Disadvantage (IRSD) deciles from the Socio-Economic Indexes for Areas (SEIFA) were used in a multivariate regression analysis to determine the predictors of social inequity on receiving one or more COVID-19 vaccinations.

A total of 223,748 individuals were included in this analysis; 76.1% received at least one dose of COVID-19 vaccine, of which 49.6% were females and 42.9% aged ≥50 years. Vaccination rates improved consistently with age group (5-19 years 49.2%; 20-39 years 80.0%; 49-59 years 83.1%; ≥ 60 73.7%), amongst those residing in areas not particularly at socioeconomically advantaged nor disadvantaged (IRSD 4-6 78.0%) and within regional centres (MMM 1-2 79.5%). In multivariable logistic regression, male gender (OR 0.85 CI 0.83-0.87, p<0.001), Aboriginal and/or Torres Strait Islander persons (OR 0.64 0.62-0.67, p<0.001), and residents in remote to very remote towns (MM 6-7 OR 0.72 0.68-0.77, p<0.001) had lower odds of being vaccinated. Older age groups (≥ 60 OR 6.66 CI 6.45-6.87, P<0.001) and residents in areas at most disadvantage had higher odds of being vaccinated (IRSD 1-3 OR 1.12 CI 1.05-1.18, P<0.001).

Vaccination campaigns in future should target areas of high socioeconomic disadvantage and classified as more remote to improve uptake. Socioeconomics and remoteness cause the greatest amount of vaccine uptake variation within CQ's population.

Modelling long-term vaccination strategies to mitigate the impact of endemic SARS-CoV-2 transmission

Dr Alexandra Hogan[1,2], Dr Daniela Olivera Mesa[2], Dr Patrick Doohan[2], Dr Sean Wu[3], Dr Jaspreet Toor[2], Dr Oliver Watson[2,4], Dr Peter Winskill[2], Giovanni Charles[2], Gregory Barnsley[2,4], Prof Eleanor Riley[5], Dr David Khoury[6], Prof Neil Ferguson[2], Prof Azra Ghani[2]
[1]UNSW Sydney, [2]Imperial College London, [3]IHME, University of Washington, [4]London School of Hygiene and Tropical Medicine, [5]University of Edinburgh, [6]Kirby Institute

In an era of endemic SARS-CoV-2 transmission, countries are continuing to evaluate how best to schedule ongoing COVID-19 booster vaccinations. Mathematical modelling therefore provides a useful tool to predict the benefit of future vaccination strategies, incorporating the loss of protection due to waning immunity and the emergence of new variants.

We developed a combined immunological-transmission model parameterised with data on transmissibility, severity, and vaccine effectiveness. Within our underlying immunological model, we introduced a method (the “variant fold reduction”) for capturing loss of immune recognition against new variants, and the increased protection afforded by variant-adapted vaccines [1,2]. We used our model to simulate SARS-COV-2 transmission and vaccine rollout in different characteristic global settings (considering population age-structures, contact patterns, health system capacities, prior transmission, and vaccine uptake) [3]. We considered a range of future variant emergence scenarios and quantified the impact and efficiency of a different age-based annual and biannual vaccine booster scenarios. We also considered the additional value of switching to vaccines that have been adapted to match more recently circulating variants of concern.

Our modelling suggested that vaccination of the high-risk population remains an important tool to reduce morbidity and mortality from current and future SARS-CoV-2 variants. Of the vaccination strategies considered, it is anticipated that focusing vaccination in the highest-risk cohorts will be the most efficient (and hence cost-effective) strategy to reduce morbidity and mortality.

References
[1] D.S. Khoury et al. Neutralizing antibody levels are highly predictive of immune protection from symptomatic SARS-CoV-2 infection. Nature Medicine 27:1205–1211, 2021.
[2] A.B. Hogan et al. Estimating long-term vaccine effectiveness against SARS-CoV-2 variants: a model-based approach. Nature Communications 14:4325, 2023.
[3] A.B. Hogan et al. Long-term vaccination strategies to mitigate the impact of SARS-CoV-2 transmission: A modelling study. PLOS Medicine 20(11):e1004195, 2023.

Addressing barriers to COVID-19 vaccine uptake among aged care residents

Ms Deborah Judd[1], Ms Anna Smith[2], Mr Christian James[1], Dr Satyamurthy Anuradha[1]
[1]Metro South Public Health Unit, [2]Brisbane South Primary Health Network

Context: The Metro South Public Health Unit (MSPHU), Queensland supports 96 residential aged care facilities (RACFs). COVID-19 may not be a public health emergency, but it is harming our elderly. Only one in three aged care residents nation-wide have had their COVID-19 booster vaccine in 2023. There is overwhelming evidence on effectiveness of COVID-19 vaccine boosters in reducing disease severity, hospitalisations, and ICU admissions. However, it is unclear what the reasons for the low vaccine uptake are and how to address the overall complacency towards COVID-19 in this sector.

Aim: This project aims to:
1. Understand the barriers to COVID-19 vaccine uptake in RACFs and
2. Roll-out a targeted campaign to empower staff, residents, and families with knowledge to dispel myths surrounding COVID-19 vaccines.

Process: A survey of clinical and facility managers of RACFs in the region was undertaken in January 2024 to collect data on challenges faced in vaccinating residents. Based on the survey results, MSPHU is developing a face-to-face education package to be rolled out for staff at the facilities. This will include a presentation on COVID-19 vaccines, effectiveness, side-effects and most importantly timing of vaccines. An interactive session targeting COVID-19 vaccines with real-life scenarios will be offered to staff at all levels of seniority across the facility. A personalised letter to each resident/family will be distributed highlighting the benefits of COVID-19 vaccination.

Analysis: Data from the survey undertaken showed an immediate need to educate staff, residents and families on the importance of COVID-19 vaccination. The campaign roll-out is expected to be completed by end of May 2024.

Outcome: This project is anticipated to target key decision makers / influencers who care for our vulnerable people in RACFs that COVID-19 continues to pose a real threat and we need to continue to get our residents vaccinated.

COVID-19 Vaccination and Consent in Young People; Perspectives in Primary Healthcare

Dr Veronica Cerratti[1,2,3], Professor Margie Danchin[1,2,3], Dr Jane Tuckerman[1,2,3], Dr John Massie[1,2,3], Associate Professor Paula O'Brien[3], Professor John Tobin[3], Associate Professor Megan Munsie[3], Dr Bridget Pratt[4]
[1]Murdoch Children's Research Institute, [2]Royal Children's Hospital, [3]University of Melbourne, [4]Australian Catholic University

In Victoria, young people aged 12-17 years may provide consent for COVID-19 vaccination independent of their parent or legal guardian if they are assessed by a healthcare provider as having capacity to do so.(1) The medical decision-making process is complex, with clinical, ethical, and legal ramifications posing potential barriers to vaccination. Current practice in Australia is not well understood.
Aim:
To describe the extent to which young people (aged 12-17 years) sought COVID-19 vaccination without parental consent through general practitioners (GPs) and pharmacists in Victoria from January 2022 to June 2023.
Methods:
Observational cross-sectional survey of GPs and pharmacists practising in Victoria.
Results:
One hundred and sixty healthcare providers completed the survey (44 GPs and 116 pharmacists). Overall, 23% of GPs (10/44) and 43% (50/116) of pharmacists had consulted with a young person aged 12-17 years seeking COVID-19 vaccination without parental consent in the prior 12 months. Nine of 60 providers (15%) reported proceeding with vaccination in all of their encounters. Healthcare providers were satisfied by their assessment of capacity in few cases, and reported a number of concerns including patient age, safety, ethical and moral objections, and a worry of legal repercussions.
Conclusion:
Despite Victoria's legislation supporting self-consent for young people seeking COVID-19 vaccination, few young people satisfied an assessment of capacity for informed consent. Healthcare providers identified several clinical, ethical and legal concerns. GPs reported more ethical conflict than did pharmacists, while pharmacists were more often approached by young people seeking COVID-19 vaccination than were GPs. More support and education directed at both healthcare providers and young people is needed to facilitate vaccination in cases where parents are unavailable or unwilling to consent.
References:
1. Australian Technical Advisory Group on Immunisation (ATAGI). Australian Immunisation Handbook, Australian Government Department of Health and Aged Care, Canberra, 2022, immunisationhandbook.health.gov.au.

Immunisation coverage and the relative effectiveness of COVID-19 vaccination against Omicron

Dr Janine Paynter[2], Prof Peter McIntyre[3], Dr Jesse Wiki[1], Associate Professor Bette Liu[4], Associate Prof Nhung Nghiem[3], Dr Lukas Marek[1], Dr Matthew Hobbs[1]
[1]University of Canterbury, [2]University of Auckland, [3]University of Otago, [4]National Center for Immunisation Research and Surveillance

Background: Vaccines may protect against infection as well as prevent disease and/or mitigate disease severity. The study had two aims, it aimed to examine vaccine coverage and relative vaccine effectiveness of the Comirnaty mRNA vaccine against the Omicron variants (BA.1 and BA.2) during the 2022 wave in Aotearoa New Zealand (NZ). It adds evidence by examining vaccine effectiveness in an infection naive population.

Method: The study analysed a national cohort of individuals who received one, two, three and four doses of the Comirnaty mRNA vaccine utilising a variety of data encompassing vaccination records, hospitalisation data, ICU admission and death during the 2022 Omicron wave in NZ.

Results: While our study highlighted good coverage of two/three doses prior to Omicron outbreak in NZ, there were disparities in third vaccine dose uptake among Māori, Pacific Peoples, and younger ages, highlighting the ongoing challenges in equitable access to vaccines. Our coverage data are available to explore interactively by Statistical Area 2 (SA2) geospatially here. We generated three key findings in relation to relative vaccine effectiveness. First, in this highly vaccinated but almost entirely infection-naive population, at least two doses of the Comirnaty mRNA vaccine was effective in reducing hospitalisation, severe disease and death. Second, dose three and four of the Comirnaty mRNA vaccine improved protection against severe disease particularly for older adults. Third, and importantly, we saw at least comparable vaccine effectiveness for Māori and Pacific populations.

Conclusion: Our study provides critical insights into coverage as well as relative vaccine effectiveness of the Comirnaty mRNA vaccine against Omicron variants in Aotearoa New Zealand in 2022. The findings underscore the importance of vaccine coverage and booster dosage in combating severe disease and hospitalisation during the 2022 Omicron wave. Our study emphasises vaccines as an important tool for reducing inequity due to infectious disease.

Vaccine effectiveness against severe COVID-19 disease in the Northern Territory, 2022

Mr Jerry Chen[1,2], A/Prof Bette Liu[3,4], Mr Anthony Draper[1,2,6], Ms Guddu Kaur[2], Dr Alyson Wright[5], Ms Linda Ward[6], Dr Rosalind Webby[1], Dr Vicki Krause[1]
[1]Centre for Disease Control, Northern Territory Department of Health, [2]National Centre for Epidemiology and Population Health, Australian National University, [3]National Centre for Immunisation Research and Surveillance, [4]School of Public Health and Community Medicine, University of New South Wales, [5]Health Statistics and Informatics, Northern Territory Department of Health, [6]Global and Tropical Health Division, Menzies School of Health Research, Charles Darwin University

Background: The Northern Territory (NT) is unique with 30% of the population identifying as Aboriginal. A high prevalence of co-morbidities exist among the NT population. Prior to widespread transmission of SARS-CoV-2 in 2022, 91% of NT residents ≥16 years had received at least two doses of a COVID-19 vaccine.

Aim: To describe the epidemiology of COVID-19 hospitalisation and death in the NT in 2022, and estimate the effectiveness of a third dose of vaccine against severe disease (hospitalisation and/or death).

Methods: For COVID-19 cases notified among NT residents in 2022, we performed descriptive analysis of COVID-19 hospitalisations and deaths by Aboriginal status, age, sex, vaccination status, prior infection and co-morbidities. We conducted a retrospective cohort study of NT residents ≥18 years linking COVID-19 immunisation with hospitalisation and death data. We estimated relative vaccine effectiveness (rVE) of 3 versus 2 vaccine doses by time since receipt using survival analysis.

Results: There were 1,162 hospitalisations (1.2%) and 85 deaths (0.1%) due to COVID-19 out of 96,975 cases. The age-standardised rate ratio between Aboriginal and non-Aboriginal people was 5.0 (95%CI 4.5-5.6; p<0.01) for hospitalisation and 4.1 (95%CI 2.9-5.7; p<0.01) for death. The most common co-morbidities for cases with severe disease were diabetes (46%), cardiac disease (41%) and kidney disease (33%). We followed 157,292 adults (median age 41 years) who received either 2 or 3 vaccine doses for 143,578 person-years for COVID-19 hospitalisation and/or death. The rVE at 8-89 days was higher among those who received 3 compared to 2 doses (rVE 54%; 95%CI 41-65%; p<0.01), adjusted for Aboriginal status, age and co-morbidities. This effect waned beyond 90 days.

Conclusion: Receipt of a third dose of COVID-19 vaccine significantly reduced severe disease among the NT adult population. Elderly with co-morbidities, especially Aboriginal people, would benefit from additional and timely COVID-19 vaccination.

5A -
Vaccination social and behavioural science, Great Hall 4 - Plenary, June 12, 2024, 15:30 - 17:00

32

Supporting healthcare providers and communities with communication resources for better vaccine conversations

Dr Katarzyna Bolsewicz[1], Dr Maryke Steffens[1], Ms Bianca Bullivant[1], Ms Katrina Clark[1,4], Dr Ikram Abdi[1,2], Dr Catherine King[1], Dr Jessica Kaufman[3], Prof Margie Danchin[3], Ms Salema Barrett[1], Prof Julie Leask[2]
[1]the National Centre for Immunisation Research and Surveillance, [2]the University of Sydney, [3]the Murdoch Children Research Institute , [4]Hunter New England Population Health
Background: SKAI (Sharing Knowledge About Immunisation) provides community members and healthcare providers (providers) with information and tools to have helpful conversations about vaccination across the vaccine acceptance spectrum. The original program, designed to support childhood (SKAI) and pregnancy (MumBubVax) vaccination conversations is now being expanded to support conversations about immunisation across the lifespan and across the wider population.

Methods: As part of the expansion, the team from the National Centre for Immunisation Research and Surveillance, Murdoch Children's Research Institute and the University of Sydney has conducted research and, in consultation with providers, consumers and Aboriginal and Torres Strait Islander people developed resources.

Results: The skai.org.au website now contains resources supporting conversations about a) pregnancy and newborn vaccinations; b) childhood vaccinations; b) adult vaccinations; d) vaccinations for Aboriginal and Torres Strait Islander people, and e) vaccine misinformation. Providers and community vaccination champions have step-by-step guidance on how to talk with individuals who may be vaccine hesitant including example expressions to use. Mainstream health services have guidance on how to build cultural safety in the service and how to build trust with Aboriginal and Torres Strait Islander families to then have supportive vaccination conversations. Providers and communities may use community resources to address frequently asked questions about vaccines and vaccine preventable diseases. Since launching on the website in July 2023, these resources have received over 2,900 page views. The conversation guides for providers for talking with adults who have questions and addressing vaccine misinformation have been the most viewed.

Discussion: While for optimal vaccination uptake, practical barriers to vaccination must also be addressed, SKAI Across the Lifespan resources can facilitate vaccination conversations to help address communities' information needs and motivation to vaccinate. The next stage in the SKAI expansion will include communication support for adolescent vaccinations.

Attitudes, Perceptions, and Experiences of Western Australians towards Vaccine Safety Surveillance Systems

Mr Denis Liu Shiu Cheong[1], Mr Jayden Tran[1], Mr Wyitt Chong[1], Mr Scott May[1], Dr Samantha Carlson[2,3], Dr Sandra Salter[1], Associate Professor Katie Attwell[2,3]
[1]School of Allied Health, The University of Western Australia, [2]Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute, [3]School of Social Sciences, The University of Western Australia

Context and aim: Concerns regarding adverse events can be a barrier to vaccine uptake. Governments, health authorities and healthcare providers use vaccine safety surveillance systems (VSSS) to monitor vaccines and inform the public and providers of safety data. Little is known about public attitudes, perceptions, and experiences with VSSS in Australia. We sought to examine these concepts in the Western Australian population.
Methods: We conducted 158 qualitative interviews with adults (aged 18+ years) between March 2021 to May 2022. Participants were asked about their knowledge of VSSS, expectations of follow-up post COVID-19 vaccination, whether they received follow-up and their experience of this, and attitudes towards follow-up. Data was coded in NVivo 2020 using deductive and inductive methods. We classified participants' attitudes towards and/or uptake of COVID-19 vaccines to pay attention to hesitant and refusing people.
Findings: Our results indicate a lack of understanding and knowledge about VSSS in Australia. Participants nevertheless expected follow-up post COVID-19 vaccination and most expressed positive attitudes. Some, however, queried the reliability of the data collected by these systems. Some participants who were hesitant about or had refused COVID-19 vaccines were aware of VSSS. They described these systems as reassuring, even if this remained insufficient to convince them to vaccinate.
Outcomes: Lack of public understanding of how VSSS operate may be stymying attempts to build vaccine confidence. These systems did not cue hesitancy and reassured the hesitant and refusers. Healthcare providers and governments could build knowledge and understanding of VSSS through communication campaigns and targeted clinical conversations to mitigate concerns of adverse events following immunisation.
Future actions: Studies should further explore the public's understanding of VSSS particularly regarding routine vaccines, how and whether these systems improve confidence in vaccinations, and how governments and health authorities can best communicate to the public about how VSSS operate.

Understanding Religious Leader's Role in HPV Vaccine Acceptance in Bangladesh

Mr Md Towhidur Rahman[1], Dr. Katie Attwell[1], Mr Sultan Mahmood[1]
[1]University of Western Australia (UWA)

Context and Aim:
Cervical cancer is the second most common cancer among Bangladeshi women (8,268 cases and 4,971 deaths annually), mainly caused by the Human Papillomavirus (HPV). Bangladesh's Government recently introduced a free single-dose HPV vaccine to the country's Expanded Programme on Immunisation (EPI) for girls aged 10-14 years. Vaccine hesitancy towards newly introduced vaccines during the Covid-19 pandemic indicates a similar possibility for age- and sex-specific HPV vaccine. In Bangladesh, where Islam is the constitutionally declared 'state religion' and 91.04% of the population are Muslims, religious leaders have considerable influence on public perceptions.

This study aims to assess religious leaders' thoughts, feelings, and communication practices regarding HPV vaccine as it is rolled out to girls.

Methods and Research Findings:
This qualitative study explores religious leaders from five groups based on religious education systems and organizations: Qoumi and Aliya; Islamic Foundation, Tablihg, and Sufism. Semi-structured interviews were employed and the data were analysed thematically using NVivo 20, incorporating both inductive and deductive coding approaches.

The results indicate vaccine-specific concerns about enabling promiscuity, fear of side effects like reduced fertility, and stigma against STDs. Additionally, macro-level concerns surfaced, such as mistrust towards foreign investment in mass vaccination in Muslim communities. Country-level and religious issues included unwillingness to follow government instructions due to political distrust, an extreme lack of information about the disease and vaccine, and unwillingness to accept opinions from doctors who are not Muslim and pious. We also identified the significant influence of senior religious leaders on other religious leaders.

Outcomes:
The study emphasizes the urgency of engaging with religious leaders about cervical cancer and the HPV vaccine for fostering community acceptance.

Future Actions:
We recommend that the government convene a diverse pool of religious scholars to establish effective communication for a successful nationwide HPV vaccination program in Bangladesh.

Better Conversations With Parents About Immunisation: Healthcare Professionals are Listening

Dylan Maiden[1], Maryke Steffens[1], Julie Leask[2], Margie Danchin[3,4], Jackson Young[1], Salema Barrett[1]
[1]National Centre for Immunisation Research and Surveillance, [2]School of Public Health, University of Sydney, [3]Vaccine Uptake Group, Murdoch Children's Research Institute, [4]Department of Paediatrics, University of Melbourne

Background:
Sharing Knowledge About Immunisation (SKAI) is a suite of evidence-based resources designed to support healthcare professionals (HCPs) in having better immunisation conversations with patients. Despite SKAI's unique support offering, HCP awareness and utilisation of the resources have been suboptimal due to limited funding for trade media promotional activities.

To increase SKAI awareness and utilisation, we developed a creative promotional campaign with funding from the Department of Health and Aged Care. 'I'm listening' was the central theme for the campaign, highlighting the important role of HCPs in having supportive conversations with parents about childhood immunisation. Campaign assets included advertisements, editorials, email newsletters, podcasts and social media posts – each specifically designed to target midwives, nurses, general practitioners, and allied health professionals. We aimed to evaluate the processes underpinning the campaign implementation and its effectiveness in reaching HCPs and prompting their engagement with SKAI.

Methods:
To evaluate the campaign, we measured implementation processes that included planned channel dissemination practices and analytics metrics. We also measured early impact through engagement rates (frequency, views, clicks), SKAI website page views, traffic sources and overall reach.

Results:
Interim analysis results show the creative campaign was effectively rolled out across multiple trade media channels and successfully reached the target HCP audiences who actively engaged with the campaign assets and the SKAI support suite. In this presentation, we will share the final analysis.

Discussion:
Initial findings for this campaign indicate an increase in HCP reach and the overall engagement with campaign assets and the SKAI support suite was successful, showing the value and necessity of pairing resource development with promotional campaigns. Further evaluation is needed to understand what elements of the campaign most contributed to its success, as well as evaluation of the broader impacts of SKAI itself on the quality of immunisation practice and vaccination uptake.

Involving consumers in immunisation research processes and outcomes - lessons learned

Mr Justin Boxall[1], Dr Katarzyna Bolsewicz[1], Dr Maryke Steffens[1], Kathleen Prokopovich[1], Dr Frank Beard[1], Catherine Hughes[2]
[1]National Centre for Immunisation Research and Surveillance, [2]Immunisation Foundation of Australia

Background:

Consumer involvement is transforming immunisation research by injecting real-world perspectives into research design, outputs, and communication. Although many research organisations try to engage consumers, maintaining and strengthening consumer involvement is challenging. At the National Centre for Immunisation Research and Surveillance we are in our second year of piloting a Consumer Advisory Group (CAG), with this presentation focusing on key lessons learned.

Methods:

We conducted an online survey to evaluate CAG members' perspectives on what worked in the first year and what needed improvement. We adjusted CAG processes in light of this feedback and monitored outcomes into the second year.

Results:

We identified two key lessons.

Firstly, robust administrative processes are important, for example scheduling meetings at times when consumer input is most needed, having an experienced chair and well-structured meetings with small breakout room discussions.

Secondly, enhancing consumer representatives' involvement, for example facilitating their input into major research projects, improves their engagement in advisory processes and results in benefits to the organisation. Involving CAG members more directly through participation and input into major research projects has enhanced their involvement in meetings, with attendance and contributions at meetings now consistently high.

For example, CAG members have been included on the stakeholder advisory group for a national surveillance of drivers of under-vaccination study, in which they are actively involved in decisions around study design, implementation and dissemination of findings. Additionally, they are being involved in a consumer reviewer program, in which they provide detailed and in-depth feedback on specific research questions. All input into such projects will be appropriately acknowledged in resultant products.

We will also describe the range of challenges we have faced in this process.

Conclusions:

These lessons will help other organisations to implement or strengthen their own consumer involvement strategies.

Vaccine hesitancy from behavioural perspectives: A TCVCM analysis

A/Prof Tom Aechtner[1]
[1]University Of Queensland

This study presents a Theories-Constructs-Variables-Contexts-Methods (TCVCM) analysis of vaccine hesitancy academic literature focussed specifically on behavioural perspectives, published from 2015 to 2022. In this review, the 8-year sample of academic articles is examined to highlight the most prominent theoretical approaches, abstract concepts, research variables, global contexts, and academic techniques employed across a range of vaccine hesitancy studies. The result is a consolidation of research and the schematisation of the factors influencing vaccine hesitancy and vaccination behaviours. These include individual-level, contextual, vaccine-specific, organisational, and public policy related dynamics. The findings corroborate the complexity of vaccine hesitancy and emphasise difficulties in pursuing vaccine advocacy. The analysis also identifies several directions for future research, as well as the need to conduct more contextual studies in low- and middle-income nations to bring out the cross-cultural nuances of vaccine hesitancy.

What motivates young people to get vaccinated? A longitudinal field cohort study

Dr Laura Ferris[1], Ms Jemima Kang[1,4], Dr Joanne Rathbone[2], Prof Tegan Cruwys[1,2], Dr Mark Stevens[2], Assoc Prof Jamie Ranse[3], Prof Fiona Kate Barlow[1]
[1]The University Of Queensland, [2]The Australian National University, [3]Griffith University , [4]University of Melbourne

Adolescents and young adults have high social circulation and show higher infection rates for viral threats like SARS-CoV2 than other age groups. How young people self-manage their elevated communicable disease risk in high-exposure settings such as mass events is under-researched. This study examined vaccination rates, non-pharmaceutical adherence (e.g., mask-wearing, physical distancing), and vaccine-related attitudes in people at a youth mass gathering event during the global COVID-19 pandemic (Oct-Dec 2021). Longitudinal cohort design with online surveys pre- (T0), peri- (T1-T3) and post- (T4) event. Participants were N=291 Australian school-leavers (16-19 years) during end-of-school celebrations called 'Schoolies'. Surveys measured COVID-19 vaccine uptake, non-pharmaceutical adherence intentions, and vaccine-related attitudes. Results showed high rates of vaccine uptake and longitudinal effect of vaccination on non-pharmaceutical adherence to health recommendations. Qualitative data reveal themes on why young people were motivated to vaccinate. Findings provide the first longitudinal picture of non-mandated COVID-19 vaccination rates together with non-pharmaceutical adherence at a youth mass gathering, with insights for prospective management of health behaviours post-vaccination in mass gathering contexts and beyond.

HPV promotion to 16-25 years: Lessons learnt from “viral” social media posts.

Miss Philippa Holland[1]
[1]City of Melbourne

From February 2023, the City of Melbourne Council actively promoted HPV immunisation aimed towards students 16-25 years. The promotion was through many mediums including social media. In July 2023, students started sharing and creating their own social media posts which resulted in a four thousand percent increase in eligible HPV bookings. More than 2,500 students were immunised over four months. Much of what was shared by students on social media was in languages other than English on platforms not accessible to City of Melbourne communications team.
A survey of 743 students explored vaccine awareness and motivation towards immunisation. It also uncovered access issues and myths about HPV immunisation. This presentation will explore gaps in the way we are communicating and building vaccine confidence with students.
The presentation will also highlight challenges and successes faced by a single service provider. Successes include seeing an increase in other immunisations as a result of promotion of HPV. Challenges include extreme increase in service demand, inability to control accuracy and scope of online messaging.

5B -
Arboviruses, Great Hall 3 - Break out, June 12, 2024, 15:30 - 17:00

344

A tale of two mosquito-borne illnesses in the Ovens Murray region, Victoria

Ms Holly Caldwell[1], Mr Michael Enright[1], H Rathnayake[1], Ms Emily Ozolins[1], Ms Samantha Percy[1], Ms Mashael Alghamdi[1], Ms Jessica Ceeney[1], Ms Terri Gallacher[1], Ms Jenny Keogh[1], Dr Anthony Zheng[1,2], Dr Elizabeth Peach[1,2]
[1]Ovens Murray Public Health Unit, Albury Wodonga Health, [2]The School of Clinical Medicine, The University of New South Wales

Background: Japanese Encephalitis Virus (JEV) and Murray Valley Encephalitis Virus (MVEV) have emerged as significant public health threats in North-East Victoria, Australia, with outbreaks declared in 2022 and 2023 respectively. Future seasonal large-scale exposures in the immunologically naïve population of Ovens Murray in North-East Victoria have the potential to result in significant morbidity and mortality.
Methods: Ovens Murray Public Health Unit (OMPHU) delivered a multi-pronged public health response in collaboration with state and local partners that included vaccination, primary research, and a health promotion campaign focused on behaviour change communications.
Results: Behaviour change messages were delivered through multiple modalities including social and mainstream media, local posters, and over 25 community engagement events across the catchment, where OMPHU staff spoke with and provided mosquito repellent and fact sheets directly to communities. Communications were amplified through local stakeholders including health services and local government. Targeted education was provided to high-risk workplaces, including piggeries. OMPHU recruited 561 and 136 local participants to Department of Health-led bio-behavioural surveys aiming to better understand the extent of JEV and MVEV exposures respectively. OMPHU assisted with the local coordination of the JEV vaccination response, delivering 4075 vaccinations through the vaccination hub and through extensive outreach into rural communities.
Discussion: This public health response generated several key learnings. Key issues included ensuring balanced media messaging, elevating the needs of high-risk groups within our communities, and managing recruitment challenges for the serosurveys conducted. By delivering this public health response, OMPHU has fostered valuable partnerships and developed our community presence as a trusted source of public health information. This foundational work will enable continued momentum for addressing this and future public health issues and emerging threats.

Climate change and the risk of Flavivirus outbreaks in Victoria, Australia.

Dr Mariel Flores Lima[1], Jacqueline Cotton[2], Robert Faggian[1]
[1]Deakin University, Centre for Regional and Rural Futures, Faculty of Science, Engineering and Built Environment, [2]Deakin University, National Centre for Farmer Health, School of Medicine

Zoonotic flaviviruses are mosquito-borne diseases widely distributed worldwide and classified into Dengue, Japanese encephalitis, and Yellow fever groups. The most critical flaviviruses in Australia are Murray Valley encephalitis (MVE), Kunjin, and Japanese encephalitis (JE), all from the Japanese encephalitis group. Australia experienced outbreaks of flaviviruses with unexpected presence in southern parts of the country. Although climatic conditions were previously linked to flavivirus activity, there is a lack of studies on how climate change can determine the future risk of outbreaks in temperate regions of Australia.
To address this gap, the State of Victoria's climatic suitability and the risk of JE, MVE, and Kunjin outbreaks were modelled under the SSP1-2.6 and SSP5-8.5 climate scenarios from 2021 to 2100. The projections were presented for the five regions of Victoria and the Metropolitan areas. The methodology used was the analytical hierarchy process with an experts' system approach previously developed and displayed using geographic information system software.
Under both scenarios, the climate suitability and risk of outbreaks are projected to increase in Victoria in the summer months. Under the SSP5-8.5 scenario, the climate suitability is projected to be extended to the autumn and spring, expanding the risk of outbreaks throughout the seasons. Gippsland, Hume, and the Metropolitan areas are the regions that showed the highest geographic expansion for the risk outbreaks under both climatic scenarios.
These results suggest that climate change may increase the risk of flavivirus outbreaks in Victoria by expanding its geographic suitability limits and seasonality, which may lead to future epidemic events. One Health preparedness and response become essential due to the zoonotic nature of these diseases and their linkage with climate. These results can support the development of targeted epidemic preparedness strategies by integrating climate change as a critical risk factor influencing flavivirus outbreaks.

User-testing and expert review of a Japanese encephalitis vaccine decision aid

Dr Sarah McGuinness[1,2], Mr Owen Eades[1], Ms Jennifer Morris[3], Prof Allen Cheng[1,4], A/Prof Holly Seale[5], Prof Karin Leder[1,6]
[1]School of Public Health and Preventive Medicine, Monash University, [2]Department of Infectious Diseases, The Alfred Hospital and Central Clinical School, Monash University, [3]Independent Consumer Advisor, [4]Monash Infectious Diseases Service, Monash Health and School of Clinical Sciences, Monash University, [5]School of Population Health, Faculty of Medicine and Health, University of New South Wales, [6]Victorian Infectious Diseases Service, Royal Melbourne Hospital at the Peter Doherty Institute for Infection and Immunity

Context and Aim: Japanese encephalitis (JE) vaccine uptake rates remain low among travellers, with barriers including low risk perception and cost. Decision aids for other vaccines have proven effective in enhancing vaccine decision-making and potentially increasing uptake. Following the International Patient Decision Aids Standards, we conducted user testing and expert review to refine a prototype JE vaccine decision aid developed through a previous co-design process.

Methods: We conducted semi-structured interviews via Zoom with consumers (travellers) and healthcare providers (GPs, nurses and pharmacists) not involved in the co-design process. Participants were asked to provide feedback on the JE decision aid using a “think aloud” methodology. A follow-up survey assessed the acceptability, understandability and actionability of the information using questions from validated tools. Experts in vaccination, social science, Japanese encephalitis and travel health also provided feedback on the prototype via an online survey with open and closed questions. We used findings from inductive thematic analysis of interview transcripts and open survey question responses to refine the content of the decision aid.

Results: Sixteen consumers, six healthcare providers and five content experts participated. Most found the decision aid balanced and the amount of information appropriate. Thematic analysis guided revisions to language, data visualisation and information sequence. Participants highlighted the need to emphasise the lack of available treatment for JE, risks and benefits of alternative options to vaccination, and duration of vaccine adverse events. All participants believed the decision aid would be useful to travellers considering JE vaccines and could be integrated into shared decision-making processes.

Outcomes: Through user testing and expert review, we refined a patient-centred vaccine decision aid for Australian travellers to JE-endemic areas. Our next step is to evaluate its efficacy through a randomised controlled trial. This approach could serve as a prototype for supporting decision-making for a range of vaccines.

Prevalence of Murray Valley encephalitis virus antibodies in northern Victoria following the 2023 outbreak: a cross-sectional serological survey

Ms Marie Heloury[1,2,3,4], Dr Joshua Szanyi[1,5], Dr Maxwell Braddick[1,3], Mr Alexander Fidao[1], Ms Kylie Carville[3], Dr Md Rezanur Rahaman[2], Dr Jim Black[1], Dr Helen O'Brien[1]
[1]Victorian Department Of Health, [2]Master of Philosophy in Applied Epidemiology (MAE), Australian Field Epideimiology Trianing Program (FETP) National Centre for Epidemiology and Population Health Australian National University, [3]The Peter Doherty Institute for Infection and Immunity, [4]Australian Centre for Disease Preparedness (CSIRO), [5]Murdoch Children's Research Institute (MCRI)

Context & aim:
An outbreak of Murray Valley encephalitis (MVE) occurred in Victoria in early 2023, the first in the state since 1974. Given asymptomatic infection with the mosquito-borne Murray Valley encephalitis virus (MVEV) predominates, the true size of the outbreak is unknown. We aimed to determine the prevalence of MVEV antibody seropositivity and associated risk factors in a population of northern Victorian residents in late 2023 to early 2024.

Methods:
As of 19 February 2024, of the target of 500 participants, 487 individuals (97%) have been recruited across 11 local government areas in Victoria. All participants completed a questionnaire identifying potential protective and risk exposures. Blood samples were tested at the Victorian Infectious Diseases Reference Laboratory for MVEV total antibody. Positive samples were also tested for MVEV IgM and antibodies to other flaviviruses to identify cross-reactivity.

Findings:
Based on preliminary analysis, 10 participants have tested positive for total MVEV antibodies (2.1%, 95% CI 0.8% to 3.3%). Of these seropositive participants, 70% were aged 60 years and older and 70% reported residing in the Loddon Mallee region. No statistically significant associations were found between MVEV seropositivity and any of the investigated exposures. Among the 10 MVEV seropositive participants, 8 also tested positive for antibodies to other flaviviruses.

Outcomes:
MVEV total antibody seroprevalence in this study is comparable to background levels of seropositivity found in northern Victoria in 2022 prior to the 2023 outbreak. This serosurvey has indicated that following the 2023 MVE outbreak, MVEV seropositivity in this region remains low. This does not point towards more extensive transmission than was suggested by notified encephalitis cases and other surveillance data. However, this does indicate ongoing population vulnerability to MVEV infection in future mosquito seasons. Cross-reactivity among most seropositive samples highlights the limitations of flavivirus serology in the presence of co-circulating viruses.

Intradermal Japanese encephalitis vaccination is a safe and immunogenic dose sparing strategy

Prof Nicholas Wood[1], Dr Emma Goeman, Dr Yuanfei Huang, Dr Alison Nikitas, Ms Fatima Gondawala, Ms Emma Carey, Mr Ajay Jadhav, Dr Greg Devine[2], Mr Narayan Gyawali[2], Ms Jennifer Case[3], Dr Kerry Chant[3]
[1]NCIRS, [2]QIMR Berghoffer, [3]NSW Ministry of Health

Background: The emergence of Japanese Encephalitis (JE) Virus in Australia in 2022 triggered a Communicable Disease Incident of National Significance declaration by the Commonwealth Department of Health. Concerns about vaccine shortages led ATAGI to review the evidence on the potential use of intradermal (ID) (0.1ml = one fifth of full dose) administration of JE vaccine (Imojev) as a dose-sparing and cost-saving mechanism. ATAGI concluded that there was insufficient data to recommend ID Imojev over subcutaneous (SC) use and that there was an urgent need to build the evidence base, including studies on safety and immunogenicity of SC compared to ID vaccination.

Aim: To measure and compare the immunogencity and safety of ID versus SC administration of Imojev vaccine.

Methods: Adults and children >10 years old in NSW were randomised to receive ID (0.1ml) or SC (0.5ml) dose of Imojev vaccine. Safety was assessed by a standardised 7 day post vaccination diary card. Immune responses to Nakayama and NSW22 strains of JE virus were assessed prior to, 1 and 6 months post vaccination by plaque reduction neutralisation test (PRNT) at QIMR Berghoffer. Seroconversion was defined a % participants who were non reactive at baseline and achieved >50% PRNT titre at 1:10 dilution 1 month post vaccination.

Results: 254 participants were enrolled with 237 vaccinated (ID n=119, SC n=118). The commonest systemic side effect was headache (37% ID vs 29% SC), followed by fatigue (22% ID vs 25% SC). Fever was uncommon (<10%) in both groups). Redness at the injection site was more common in ID compared to SC group (22% vs 4%). Seroconversion was high >90% in both groups and non-inferior between ID and SC groups.

Conclusion: This is the largest trial comparing ID vs SC vaccination and shows one fifth of a dose of Imojev given ID is safe and as immunogenic as a full dose given SC. Assessment of the longevity of antibody responses is underway. These data provide evidence to support any policy decision to recommend ID Imojev vaccine as a dose sparing strategy in the event of an expansion of JE infections and shortage of vaccine supply.

A brief description of the epidemiology of Dengue in Dili, Timor-Leste, 2018–2022.

Mr Anthony Draper[1,2,3], Dr Filipe de Machado[4], Dr Frederico Bosco Alves dos Santos[4], Dr Marcelo Amaral Mali[4], Dr Ari Jayanti Pereira Tilman[5], Mrs Endang Soares da Silva[5], Dr Noel Gama Soares[6], Mr Nevio Sarmento[2], Mrs Maria Angela Varela Niha[7], Mrs Ana Fatima Soares[8], Dr Abdoulie Taal[7], Dr Joshua Reginald Francis[2], Dr Jennifer Yan[2], Dr Megge Miller[9], Mr James Flint[9]
[1]Northern Territory Centre For Disease Control, [2]Menzies School of Health Research, Timor-Leste, [3]National Centre for Epidemiology and Population Health, Australian National University, [4]Instituto Nacional de Saude Publica de Timor-Leste, [5]Laboratorio Nacional da Saude, [6]Surveillance Department, Municipality of Dili, Ministry of Health, [7]World Health Organization Timor-Leste Country Office, [8]Surveillance Department, Ministry of Health, [9]Field Epidemiology In Action, School of Medicine and Public Health, University of Newcastle

Timor-Leste is a small Southeast Asian nation with a population of 1.3 million, which shares a land border with Indonesia and is 550km from Darwin. Timor-Leste achieved independence for the second time in 2002 and although there has been significant development, high levels of poverty remain. Timor-Leste consists of 13 municipalities, with the most populous being the Municipality of Dili which includes the capital city of Dili. Dengue virus (DENV) infection causes 390 million infections per year and 40,000 deaths globally. It is endemic in many countries in Asia, Africa, the Americas, Caribbean and Oceania. Dengue is endemic in Timor-Leste year-round, but peak transmission occurs during the rainy season. We briefly describe the epidemiology of DENV in the Municipality of Dili between 2018 and 2022. There were 6,234 cases notified, with a mean annual incidence rate of 330 cases per 100,000 population. Case ascertainment was likely lower during 2020-2021 due to the coronavirus disease 2019 (COVID-19) pandemic and higher during 2022 due to increased access to rapid tests and improved surveillance systems. There were 55 deaths (case fatality rate 0.9%). The peak annual incidence (3,904 cases) occurred in 2022 after an outbreak was declared in January of that year which included 760 cases of dengue haemorrhagic fever and 35 deaths. The number of outbreak cases requiring hospital treatment exceeded usual capacity but facilities established for COVID-19 isolation and treatment were repurposed to meet this demand. Existing strategies of vector control, minimising breeding sites and promoting early presentation for treatment should continue as should the utilisation of surveillance systems and treatment facilities established during the COVID-19 pandemic. However, dengue incidence remains high and other dengue control strategies including deployment of Wolbachia-infected mosquitoes should be considered in Timor-Leste.

Mosquito-borne flavivirus seroprevalence in a blood donor population.

Miss Shayal Prasad[1], Dr Archana Koirala[1,2,3], Dr Joanne Jackson[1], Ms Noni Winkler[1], Dr Rena Hirani[4,5], Dr Linda Hueston[6,7], Dr Veronica Hoard[4], Dr Matthew O'Sullivan[2,5], Dr Jen Kok[5], Professor Iain Gosbell[4,8], Professor Dominic Dywer[2,5], Professor David Irving[4,9], Professor Kristine Macartney[1,2]
[1]National Centre For Immunisation Research And Surveillance (ncirs), [2]Faculty of Medicine and Health, University of Sydney's Hospital Westmead Clinical School, [3]Department of Infectious Diseases, Nepean Hospital, [4]Australian Red Cross Lifeblood, [5]Macquarie University Faculty of Science and Engineering, [6]Institute of Clinical Pathology and Medical Research, [7]Griffith University Menzies Health Institute Queensland, [8]Western Sydney University School of Medicine, [9]University of Technology Sydney Faculty of Health

Context and aim

Japanese encephalitis virus (JEV), Murray Valley encephalitis virus (MVEV) and Kunjin virus are mosquito-borne flaviviruses transmitted by Culex species mosquitoes. MVEV and Kunjin virus are endemic to Australia. JEV is endemic to Asia, with only rare episodic human case detections in Northern Australia until 2021 when spread occurred across mainland Australia. All three viruses can cause asymptomatic or mild infections to severe encephalitis. We aimed to determine seroprevalence of JEV, MVEV and Kunjin virus antibodies in blood donors and targeted high-risk human populations.

Methods & analysis/research findings

A series of multimodal cross-sectional human seroprevalence surveys of targeted high-risk and control populations in five Australian jurisdictions, were undertaken in 2021-2022. Sera from Australian Red Cross Lifeblood donors and targeted high-risk human populations, in an active consent-based collection were tested for antibody to JEV, MVEV and Kunjin virus.

Outcomes

In the Lifeblood donor sample population, the overall crude JEV seroprevalence was 2.5% (112/4508; 95%CI 2.1%–3.0%), MVEV seroprevalence was 3.6% (162/4508; 95%CI 3.1%-4.2%) and Kunjin virus seroprevalence was 5.5% (249/4508; 95%CI 4.9%-6.2%). A total of 69 (1.5%) samples were seropositive for all three viruses. Six (0.1%) samples were JEV and MVEV seropositive and Kunjin virus seronegative; 20 (0.4%) samples were JEV and Kunjin virus seropositive and MVEV seronegative; and 56 (1.2%) were Kunjin virus and MVEV seropositive and JEV seronegative. Testing and data analysis is continuing, and further results will be presented.

Future actions

Seropositivity rates of flaviviruses can give insight into its spread and understanding of human infection rates. This informs public health interventions to prevent further infections, including mosquito bite prevention and targeted allocation of JEV vaccines to at high-risk population groups.

In vitro evaluation of JEV-GIII vaccine induced antibodies against all JEV genotypes

Dr Sultan Asad[1], Dr Thomas Tran[1], Dr Julian Druce[1], Dr Danielle Anderson[1,2]
[1]Victorian Infectious Diseases Reference Laboratory, [2]University of Melbourne

Japanese encephalitis (JE) is a viral zoonotic disease caused by Japanese encephalitis virus (JEV) and spread by mosquitoes. JE can cause reproductive losses and encephalitis in pigs and horses, and in rare cases can cause severe disease in humans. In humans, JEV infection produces mild symptoms or is asymptomatic, but 1:250 people can develop life-threatening encephalitis.
Although JEV is endemic to many parts of Asia, the incidence in Australia is extremely low with the last locally-acquired case on the Australian mainland occurring in 1988. However, in 2022, Australia experienced outbreaks of JEV genotype IV in four Australian states with reports of 45 human cases of JEV infection, including 7 deaths.
JEV is an enveloped, positive-sense single-stranded RNA virus and to date, 5 different JEV genotypes have been identified (I, II, III, IV, and V). Although all JEV genotypes form a single serotype, there is some degree of antigenic variation among circulating JEVs. Thus, the genetic and antigenic heterogeneity of JEV may have a significant impact on JEV detection, prevention and control.
Due to the lack of therapeutics, vaccination is the only reliable means of prevention, other than avoiding mosquito bites. There are several types of JEV vaccines, and the vaccine predominantly used in Australia is based on the GIII strain. Research has demonstrated that the antibodies generated by the GIII strain vaccine exhibit limited capacity to neutralize the GI and GV strains, consequently, limiting cross-protection. Following the GIV JEV outbreak in Australia, we evaluated the protective efficacy of the GIII based JE vaccine against all 5 JEV genotypes using virus neutralization tests paired with xCELLigence impedance measures.

Diagnostics and One Health phylogeny of Murray Valley encephalitis outbreak in Australia

Dr Annaleise Howard-Jones[1,2], Dr Jackie Mahar[4], Dr John-Sebastian Eden[5], Prof Dominic Dwyer[2,3], Dr Matthew O'Sullivan[2,3], Dr David Williams[4], Dr Jen Kok[3], MVEV diagnostics group
[1]The Children's Hospital At Westmead, [2]Sydney Institute for Infectious Diseases, University of Sydney, [3]NSW Health Pathology-ICPMR, [4]Australian Centre for Disease Preparedness, [5]Westmead Institute for Medical Research

Background: Over the last two years, emergent flavivirus outbreaks have presented significant clinical and public health concern across mainland Australia. This study provides a comprehensive characterisation of the 2023 Murray Valley encephalitis virus (MVEV) outbreak, the largest outbreak of this virus since 1974, focusing on utility of diagnostic platforms, testing algorithms and genomic characteristics.

Methodologies: A nationwide case series of Murray Valley encephalitis (MVE) cases from 1 January to 31 July 2023 was collated across all state-based arbovirus reference laboratories. Multimodal diagnostic frameworks incorporated individual flavivirus-specific serology and nucleic acid amplification testing.

Results: Our case series identified 27 MVE cases spanning 6 weeks to 83 years of age with a male preponderance (3.5:1). Incidence varied widely by geographic region, and was highest in the Northern Territory (3.2 per 100,000 population). MVE diagnosis was achieved with a median of 6 days from symptoms to diagnostic specimen collection (IQR 4 to 9 days). MVEV-specific IgM was detectable in serum in 76% of patients by day 7 and MVEV IgG or total antibody in 100% by day 30. MVEV-specific IgM and molecular testing of CSF was confirmatory in 36% and 30% patients, respectively. Co-circulation of two MVEV genotypes, G1A and G2, was demonstrated, although only G1A was present in Southeast Australia, most likely introduced from enzootic foci in northern Australia.

Conclusions: This study provides a comprehensive overview of the 2023 MVE outbreak in Australia, emphasising the importance of a multimodal diagnostic approach for accurate and timely case confirmation. Further One Health surveillance for MVEV and other zoonotic flaviviruses is critical given potential expanded ecological niches in the context of episodic climatic events.

† MVEV diagnostics group: Kate Proudmore, Grace Butel-Simoes, Matthew J Neave, Patrick Mileto, Linda Hueston, Kevin Freeman, Justin Ellem, Leon Caly, Ashmita Thomas, Carmel Taylor, Nina Kurucz, Kirsten Smyth, Amy Jennison, Peter Moore, Rose Wright, Andrew A Mahony, Morgyn Warner, Lito Papanicolas, Sanmarie Schlebusch, Chuan Kok Lim, Robert Baird, David Speers & Bart Currie.

Epidemiology of lymphatic filariasis antibodies in Samoa: results from a community-based serosurvey

Dr Harriet Lawford[1], Dr Helen Mayfield[1], Filipina Amosa-Lei Sam[2], Satu Viali[2], Tito Kamu[3], Robert Thomsen[4], Gretchen Cooley[5], Ashley Simon[5], Diana Martin[5], Kimberley Won[5], Professor Patricia Graves[6], Professor Colleen Lau[1]
[1]UQ Centre for Clinical Research, The University of Queensland, [2]National University of Samoa, [3]Tupua Tamasese Meaole Hospital, [4]Ministry of Health, [5]US Centers for Disease Control and Prevention, [6]College of Public Health, Medical and Veterinary Sciences, James Cook University

Background: Lymphatic filariasis (LF) is a mosquito-borne helminth infection caused by filarial nematodes. Recent evidence suggest that anti-filarial antibodies (Ab) may be more sensitive than antigen (Ag) for LF surveillance. This study aimed to compare the epidemiology of LF Ag and Abs in Samoa.

Methods: A community-based sero-survey of participants ≥5-years-old was conducted in 2018 in 35 primary sampling units (PSUs) (30 randomly-selected, and five purposively-selected 'suspected hotspots'). Ag-positivity was detected using Alere Filariasis Test Strips, and Ab-seropositivity (Bm14 Ab, Wb123 Ab, Bm33 Ab) were measured using multiplex bead assays. Prevalence was adjusted for study design and standardised for age and gender.

Results: Of 3795 participants (mean age: 20.7 [SD:19.1]; 51.2% female), 117 (3.1%) were Ag-positive, 1889 (49.8%) seropositive for at least one Ab, and 1892 (49.9%) Ag- and/or Ab-seropositive. Adjusted prevalence for Ag, Bm14 Ab, Wb123 Ab, and Bm33 Ab were 3.7%, 20.3%, 32.2%, and 51.0%, respectively. Significant risk-factors for seropositivity were male gender (adjusted odds-ratios [aOR]: Ag=1.82, Bm14 Ab=1.91, Bm33 Ab=1.34, Wb123 Ab=1.75), 40–59-year-olds vs 5-9-year-olds (aOR: Ag=6.13, Bm14 Ab=6.84, Bm33 Ab=4.58, Wb123 Ab=4.03), and purposive PSUs (aOR: Ag=3.27, Bm14 Ab=2.16, Bm33 Ab=1.95, Wb123 Ab=1.81). Significant associations but poor correlation was seen between prevalence at the PSU level among participants 5–9-years-old and the overall population ≥5-years-old (rho: Bm33 Ab=0.807, Wb123 Ab=0.775, Bm14 Ab=0.659, Ag=0.460). Clustering of seropositive persons was significantly higher in households (Intraclass correlation [ICC]: Ag=0.45, Bm14=0.31, Bm33=0.31, Wb123=0.29) vs PSUs or regions. Of 3678 Ag-negative participants, 1775 (adjusted proportion: 56.5%) tested seropositive for at least one Ab, 1548 (49.5%) for Bm33 Ab, 882 (29.9%) for Wb123 Ab, and 479 (17.7%) for Bm14 Ab.

Conclusions: Higher odds of Ag- and Ab-seropositivity were found among older males in suspected hotspots. A high proportion of Ag-negative persons were Ab-seropositive, suggesting that Abs have higher sensitivity for detecting seropositive persons.

5C -
Respiratory surveillance, Mezzanine 1, June 12, 2024, 15:30 - 17:00

212

An integrated respiratory virus wastewater surveillance program in Perth, Western Australia

Dr Alexander Shivarev[1], Mr Paul Knight[1], Mr Jake Gazeley[2], Ms Carolien Giele[1], Dr Avram Levy[2], Dr Meredith Hodge[2], Ms Sandra Sjollema[2], Dr Paul Armstrong[1], Dr David Speers[2], Dr Jelena Maticevic[1]
[1]Communicable Disease Control Directorate, WA Department of Health, [2]PathWest Laboratory Medicine WA, WA Health

Background
The Western Australian (WA) Wastewater Surveillance (WWS) Program undertakes quantitation and genome sequencing of SARS-CoV-2, and quantitation of respiratory syncytial virus (RSV), influenza A (IAV) and influenza B (IBV). SARS-CoV-2 analyses began in July 2022, and RSV, IAV and IBV analyses began in June 2023.
A previous evaluation of the Program confirmed the effectiveness of WWS in quantitatively monitoring wastewater levels of SARS-CoV-2 and monitoring circulation of associated sub-lineages. The Program contributes to understanding the burden of SARS-CoV-2 in metropolitan Perth, particularly in the context of reduced clinical testing.

Aim
To determine the Program's contribution to respiratory disease surveillance beyond COVID-19 by evaluating the correlation between wastewater quantitation of RSV, IAV and IBV to clinical notifications.

Methods
Bi-weekly composite 24-hour samples from three metropolitan Perth wastewater treatment plants (WWTPs) (Beenyup, Subiaco and Woodman Point) covering approximately 79% of Perth's population, were analysed using multiplex quantitative real-time PCR for RSV, IAV and IBV from June to December 2023. Results were adjusted for the population size of WWTP catchments and averaged to generate a metropolitan average. Spearman's rank correlation (rs) was used to compare RSV, IAV, and IBV wastewater quantitation with clinical notification rates which were matched to the corresponding WWTP catchment.

Results
From June to December 2023, there was significant correlations for RSV, IAV and IBV between quantified wastewater results and notified clinical cases per 100,000 population (Spearman's rank correlation coefficient RSV, $rs=0.863$, $p< 0.0001$; IAV, $rs=0.734$, $p< 0.0001$; IBV, $rs=0.802$, $p< 0.0001$).

Conclusions
WWS of RSV, IAV and IAB strongly correlate with clinical notifications in WWTP catchment-matched areas in metropolitan Perth, demonstrating that WWS contributes to the surveillance of endemic respiratory viral disease activity. It complements existing surveillance methods by enhancing the understanding of disease burden in community and provides surveillance information unaffected by testing or healthcare seeking behaviours.

Respiratory viral testing patterns in children attending tertiary care across Western Australia

Dr Belaynew Taye[1,2], Dr Mohinder Sarna[1,2], Dr Huong Le[1,2], Dr Avram Levy[3,4], Prof Peter Richmond[1,5,6], Prof Christopher C Blyth[1,5,6], Dr Robert Menzies[7], Assoc Prof Hannah Moore[1,2]
[1]Telethon Kids Institute, [2]Curtin School of Population Health, Curtin University, [3]Pathogen Genomics and Surveillance Unit, PathWest Laboratory Medicine, QEII Medical Centre, [4]School of Biomedical Sciences, University of Western Australia, [5]School of Medicine, University of Western Australia, [6]Department of Paediatric Infectious Diseases, Perth Children's Hospital, [7]Sanofi Vaccines, Australia and New Zealand

Background: An understanding of viral testing rates is critical to accurately estimate the respiratory virus-specific hospitalisation burden in young children. We aimed to estimate the patterns of testing for respiratory syncytial virus (RSV), influenza, parainfluenza viruses (PIV), and human metapneumovirus(hMPV) by geographical location, age, and time in children <5 years in Western Australia (WA).

Methods: We conducted a population-based cohort study through linked administrative data incorporating birth/death records, hospitalisations, and routine respiratory viral surveillance testing records from statewide public pathology data between 01 January 2012 and 31 December 2021. We examined within-hospital testing rates using survival analysis techniques and identified independent predictors of testing using binary logistic regression.

Results: Our dataset included 45,606 laboratory tests for RSV, influenza, PIV, and hMPV from 355,020 children (52.5% male). Testing rates were higher in Goldfields and Kimberley (e.g.,influenza, infants: 446.91/1,000 and 322.43/1,000 child-years respectively), and lower in Wheatbelt(e.g.,influenza, infants: 160.62/1,000 child-years) regions. Testing rates were higher in children aged <12 months than those 24–59 months of age (RSV: 229.11 vs 24.78/1,000 child-years). Testing rates declined in the metropolitan region from 2012 to 2018 (e.g.,RSV, infants: from 229.11 to 140.28/1,000 child-years) and increased thereafter, but increased in non-metropolitan areas (e.g.,RSV, Goldfields: from 344 to 450/1,000 child-years). RSV testing rate was higher in RSV-specific ICD-coded admissions (e.g., 68% in J12.1, RSV pneumonia vs 21% in J20, acute bronchiolitis). The strongest predictors of testing were age <12 months (adjusted odds ratio[aOR]=2.15, 95%CI 2.10–2.20), preterm birth (<32 weeks: aOR=2.89, 95%CI 2.75-3.03), and remote residence (aOR=0.77, 95%CI 0.73-0.82).

Conclusions: Higher respiratory virus testing rates suggest an underlying high disease burden, whereas declining rates in metropolitan regions may indicate increases in private-sector testing. These current testing rates highlight the potential underestimation of respiratory virus hospitalisations by routine surveillance and the need for estimation of the true burden of respiratory virus.
Acknowledgements: We thank the staff at WA Data Services and relevant Data Custodians. This study was funded by Sanofi.

Evaluation of a novel digital tool for residential care respiratory outbreak management

Ms Safiya Ateekur Rahman[1], Ms Dana Thomson[1], Mr Hugh Smith[1], Ms Esther Field[1], Ms Tania Delahoy[1], Ms Asmara Jammali-Blasi[1], Dr Annaliese van Diemen[1]
[1]North Eastern Public Health Unit (NEPHU)

Context/aim:
During the first COVID-19 omicron wave, the North Eastern Public Health Unit (NEPHU) developed an Outbreak Management System (OMS), a purpose-built digital solution to streamline COVID-19 outbreak data collection from Residential Aged Care Facilities (RACFs) and automate aspects of NEPHU's outbreak management. In 2023, the OMS was upgraded to give more settings access, and facilitate support with influenza and respiratory syncytial virus (RSV) outbreaks. Here we present an evaluation of the upgraded digital tool (OMS2).

Process:
A summative outcomes evaluation approach was used to assess whether the OMS2 met the short and medium term outcome goals of being a highly adaptable system that enables additional modules for new diseases, and has high end-user satisfaction.

Analysis:
Between 21 August 2023 (OMS2 launch) and 31 January 2024, NEPHU's OMS2 supported 265 COVID-19, 24 RSV, and 10 influenza outbreaks across 278 RACFs, 10 Supported Residential Services (SRS) and 11 residential disability settings. During this time, at least ten minor upgrades were made in response to evolving contexts and user feedback, demonstrating the system's adaptability. Examples of upgrades include automated stand downs and epidemiological curve generation. A short optional user survey revealed 79% (n=33/42) agreement that OMS2 was easy to use; and 81% (n=34/42) agreement that the system's questions were easily understood. A longer optional survey found that all of the respondents (n=12) rated NEPHU's timeliness of response as very quick and agreed that recommendations and actions assisted keeping staff and residents safe. Most users (92%, n=11/12) reported being satisfied or very satisfied with upgrades over time. All facilities (n=12/12) reported being confident to self-manage outbreaks, after using the system.

Outcomes/future actions:
These results indicate that OMS2 is meeting user needs and facilitating efficiencies while being adaptable to evolving policy contexts. Further expansion is planned to expand OMS2 into other outbreak management areas.

Biases in routine influenza surveillance and recommendations for improvement

Dr Oliver Eales[1], Dr Freya Shearer[1]
[1]University Of Melbourne

The prevailing systems and methodologies for the surveillance of influenza infection levels have not changed substantially since their inception (e.g., sentinel surveillance of influenza-like illness). Many different surveillance indicators are routinely reported from these surveillance activities (e.g., influenza-like illness, lab confirmed influenza, test-positive proportion). These indicators are often considered to reflect trends in the infection incidence. However, what does it mean when there are substantial differences in the trends between these surveillance indicators? Which indicator(s), if any, are likely to reflect the underlying trends in the infection incidence? Here, using routine surveillance data collected over multiple seasons in Australia, Singapore, and the United States of America, we demonstrate how ubiquitously reported influenza surveillance indicators relate to the incidence of influenza infections. We highlight how these relationships can be highly complex and how it can be difficult to comprehend what these surveillance indicators are actually measuring --- for example, due to differences in behaviour and symptom rates by age and over time, and due to the circulation of other respiratory pathogens. This begs the question if the relationships between influenza incidence and these commonly reported surveillance indicators are so difficult to comprehend, why are we reporting them? We suggest six practical recommendations to improve influenza surveillance, aspects of which are already implemented in Australia. The implementation of these recommendations would enable the construction of surveillance indicators that are more readily interpretable due to their simple relationship to influenza infection incidence.

Digital data sources and machine learning to enhance infectious disease surveillance, Australia

Dr Aminath Shausan[1], Professor Adam Dunn[1], Dr Fiona May[1], Dr Satyamurthy Anuradha[1], Dr Amalie Dyda[1]
[1]University Of Queensland

Background: To effectively respond to infectious diseases such as COVID-19 and influenza, timely and detailed information about the spread of infection is required. Recently, novel methods of surveillance have emerged including the use of social media data and Google trends in conjunction with machine learning methods to predict disease outbreaks. This project investigated the use of novel data sources for infectious disease surveillance in the Australian context using respiratory illness as a case study.

Methods: Data from Google Trends (GT) from January 2018 to January 2020 were collected for each state within Australia based on 22 key word searches. These were compared to influenza data from the National Notifiable Disease Surveillance System (NNDSS). Four machine learning regression models were developed including Least Absolute Shrinkage and Selection Operator (LASSO), support vector machine (SVM), random forest (RF) and feedforward neural network (FNN). In each model, we used the percentage of influenza cases per week as the response variable and the GT data as covariates. Predictive performance of each model was assessed using root mean squared error, (RMSE), maximum absolute error (MAE), and Pearson correlation coefficient (PCC).

Results: With the exceptions of the Northern Territory and Tasmania, GT search queries showed moderate to strong Pearson correlation with the NNDSS influenza data during 2019. Predictive performance of each model varied depending on the state and the type of prediction (nowcast or forecast) performed. Overall, the RF model for one-week or two-weeks ahead showed the best predictions for each state.

Conclusion: These results show a proof of concept that GT data can provide timely prediction of influenza in the Australian context. Further work is required to investigate the utility of these methods at more geographically specific levels.

311

Surveillance for viral respiratory infections: lessons learned from Australia's COVID-19 response

Dr Freya Shearer[1]
[1]University Of Melbourne

Disease surveillance data was critical in supporting public health decisions throughout the COVID-19 pandemic. At the same time, the unprecedented circumstances of the pandemic revealed many shortcomings of surveillance systems. The recent establishment of the Australian Centre for Disease Control represents a critical opportunity to review pre-pandemic and pandemic surveillance practices, and decide on future priorities, during both pandemic and inter-pandemic periods. On 20 October 2022, we ran a workshop on "the role of surveillance in epidemic response", at the University of New South Wales, Sydney, Australia. Workshop participants had contributed to the COVID-19 response in Australia through roles in academia and/or government agencies. Following the workshop, we developed five recommendations to strengthen respiratory virus surveillance systems in Australia, which will be described in this presentation. Our recommendations are not intended to be exhaustive. We instead chose to focus on data types that are highly valuable yet typically overlooked by surveillance planners. Three of the recommendations focus on data collection activities that support the monitoring and prediction of disease impact and the effectiveness of interventions (what to measure) and two focus on surveillance methods and capabilities (how to measure). Implementation of our recommendations would enable more robust, timely, and impactful epidemiological analysis.

421

Nowcasting severe COVID-19 and influenza infection outcomes for epidemic intelligence

Dr David Muscatello[1], Dr Nectarios Rose[1], Dr Kishor Paul[1]
[1]University of NSW

Emergency department (ED) data can be used for rapid pandemic and epidemic surveillance. Surveillance using only ED data includes limited information on confirmed infections and outcomes, and confirmed infections are usually under-ascertained. Time series models can more completely estimate morbidity and mortality attributable to respiratory viruses in a population, that is, “excess” deaths or hospitalisations.

The PEARL record linkage database includes NSW ED presentations, 2005 through February 2023, for acute respiratory infection, fever, unspecified infection, breathing problems (non-asthma) or sepsis linked with COVID-19 and influenza notifications, ambulance calls, hospital admissions and deaths.

This study aimed to iteratively apply time series models to linked data in a surveillance context to provide daily updated estimates (nowcasts) of current population-level, severe, epidemic outcomes.

The PEARL database was used to retrospectively emulate daily ED surveillance using a 2-year moving baseline time series of ED presentations with a severe outcome, either intensive care unit (ICU) admission or death, at 28 days.

Using the coefficients from a gaussian generalised additive model (GAM), nowcasts were produced of daily virus-attributable presentations with a severe outcome for each day from 27 to 3 days before each surveillance date.

Iterating for 365 days from 1 January 2022 provided mean daily coefficients and their 95% confidence intervals of 0.94 (0.89, 1.00) and 1.72 (0.63, 2.80) for COVID-19 and influenza, respectively. These represent multiplication factors for translating the observed daily presentations with a severe 28-day outcome and a linked virus notification to a population estimate of virus-attributable outcomes. The coefficients take some time to become stable when viruses are present at low levels in the baseline period.

This study demonstrates a method for estimating comparable, population level, epidemic outcomes in a surveillance context to improve epidemic intelligence. Further optimisation of time series models is required.

Parainfluenza seasonality in Western Australia and the impact of the SARS-CoV-2 pandemic

Ms Cara Minney-smith[1], Dr Chisha Sikazwe[1,2], Dr David Foley[1,3,4], Dr Avram Levy[1,2]
[1]Department of Microbiology, PathWest Laboratory Medicine WA, [2]Infection, and Immunity, Biomedical Sciences, University of Western Australia, [3]Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute, University of Western Australia, [4]School of Medicine, University of Western Australia

During the SARS-CoV-2 pandemic, the seasonality of common respiratory viruses was disrupted, particularly in Western Australia (WA) where travel restrictions were in place for nearly two years. We assessed the impact of these restrictions on HPIV 1-3 seasonality in WA.
HPIV laboratory data from PathWest Laboratory Medicine were obtained between 1 January 2012 and 31 December 2023.
From 2012-2019, HPIV1 displayed biennial seasonality, with seasons occurring in the first half of every even-numbered year. In early 2020, HPIV1 detections increased, continuing the preceding biennial pattern. Detections decreased with border closures in March 2020, however remained persistent and increased again to peak in July 2021, in opposition to the expected biennial seasonality. Detections have remained low, and no distinct season has been observed in 2022 or 2023.
Prior to the pandemic, HPIV2 cases displayed no distinct seasonality. Following border closures in March 2020, HPIV2 detections reduced significantly. Very low-level detections subsisted until August 2022, when numbers increased, contributing to an HPIV2 season peaking in September and continuing until January 2023.
HPIV3 displayed annual seasonality before the pandemic, with seasons occurring in the year's latter half. Detections were low in March 2020, then decreased and remained undetected in a high testing environment for 8 months. In July 2021, a large outbreak commenced, lasting four months, with weekly test percentage positivity peaking at 23.9%, more than double the previous highest peak.
The seasonality of HPIV1, 2 and 3 in WA are distinct from each other, with each virus demonstrating a unique pattern prior to the SARS-CoV-2 pandemic. The pandemic disrupted these seasonal patterns, however the impact on each was varied and contrasting. While these 3 viruses are often grouped together, the innate characteristics of each virus are unique in how they respond to environmental factors influencing seasonality.

Optimising Emergency Department Syndromic Surveillance of Seasonal Influenza in NSW, Australia

Dr Nectarios Rose[1,2], Dr Adam Craig[1,3], A/Prof David Muscutello[1]
[1]University of NSW, [2]Health Protection NSW, [3]The University of Queensland

Emergency department (ED) syndromic surveillance (EDSyS) is commonly used to monitor seasonal influenza and often relies on diagnostic codes to create indicators of influenza activity. The rationale for choosing diagnostic codes is often lacking. Furthermore, while the Moving Epidemic Method (MEM) is commonly used with GP and outpatient presentations to predict the onset and monitor transmissibility of seasonal influenza, its use with EDSyS has rarely been described. We evaluate the performance of indicators based on diagnostic codes with MEM in predicting the start of seasonal influenza in the EDSyS setting.

The Pandemic and Epidemic Assessment of Risk Linked Database (PEARL) database was used to simulate an EDSyS system. PEARL contains linked health outcome records of people presenting to over 80 NSW EDs with an acute respiratory infection. ICD-9, ICD-10 and SNOMED codes were mapped to one of several 'ED syndromes'. Time series of ED presentation rates from 2010 to 2019 were created for each ED syndrome and compared to a time series of percentage positive influenza rates obtained from NSW sentinel laboratories. Cross-correlation and distance metrics we used to rank the similarity of each ED syndrome time series with the laboratory time series. MEM was used to test combinations of ED syndromes and determine which best predicted the start of influenza seasons.

Used with MEM, an EDSyS indicator based on the best-performing combination of diagnostic codes corresponding to unspecified viral illness, influenza like illness, lower respiratory tract infections, pneumonia and upper respiratory tract infections resulted in overall predictions of each influenza season to within a 1-to-2-week period.

MEM can be implemented with EDSyS to predict the onset of seasonal influenza. As unified medical record systems become more widespread, ED presentations based on optimised diagnostic codes could be used to carry out influenza severity assessments, particularly when linked to health outcomes.

Vaccine preventable respiratory infection hospitalisations following emergency department presentation, NSW, 2012-2022.

Dr Fariha Binte Hossain[1], Dr David Muscatello[1], Dr Sanjay Jayasinghe[2], Dr Bette Liu[1,2]
[1]University Of New South Wales, [2]National Centre for Immunisation Research and Surveillance (NCIRS)

Background: Surveillance of vaccine preventable diseases should include monitoring of hospitalisations for severe disease. We analysed emergency department (ED), hospitalisation and death data from New South Wales (NSW), Australia, from 2012 to 2022 to understand trends in respiratory infections.

Methods: Respiratory infection-related ED presentations to NSW public hospitals were linked to hospitalisations, and death registrations. We estimated age-standardized population rates for the ED presentations, the proportion of presentations hospitalised with acute respiratory infection (ARI), and subclassifications of the ARI: all-cause pneumonia, influenza, RSV, COVID-19, and pneumococcal disease based on specific ICD-10 codes. Proportions hospitalised overall and by age group were calculated, as well as 28-day mortality rates post ED presentation and hospitalisation for these conditions.

Results: In the 11 years there were 3,124,648 ED presentations with symptoms consistent with respiratory infection with seasonal variation and a gradual increase in rates until 2020, falling during the COVID-19 lockdowns in 2021 and rebounding in 2022. Children aged 0-4 years had the highest presentation rates. Of those presenting to ED, 515,011 (16.5%) were hospitalised within one day for their ARI; 240,166 (7.7%) for all-cause pneumonia, 34,315 (1.1%) for influenza, 40,394 (1.3%) for RSV disease, 26,101 (0.8%) for COVID-19, and 10013 (0.3%) for pneumococcal disease. The highest proportions hospitalised for any ARI, for pneumonia, influenza, COVID-19 and pneumococcal disease were observed in those aged 65+ years; whilst hospitalisations for RSV were highest in those aged 0-4 years. Mortality within 28 days following ED presentation and hospitalisation was highest for the elderly (age group 65+ years), particularly for COVID-19 (13.5%) .

Conclusion: Surveillance of acute respiratory disease through linked ED, hospital and mortality data can provide information on vaccine-preventable disease burden and ecological insights into the impact of public health interventions.

5D - Digital health and innovation, Mezzanine 2, June 12, 2024, 15:30 - 17:00

299

Rapidly adapting an Australian sentinel surveillance system to monitor the mpox outbreak.

Mr Jason Asselin[1], Dr Michael W Traeger[1,5,12], Dr Htein Linn Aung[2], Dr Allison Carter[2,6,7], Prof Douglas Boyle[10], Dr Thi Nguyen[1], Dr Victoria Polkinghorne[1], Ms Nyssa Watson[1], Prof Sharon Chen[8, 11, 12], Dr Rick Varma[2,9], Dr Nicholas Medland[2], Prof Christopher K Fairley[3,4], Prof Eric PF Chow[3,4,5], Dr Janet M Towns[3,4], Prof Basil Donovan[2], Prof Margaret E Hellard[1,10,11], Prof Rebecca Guy[2], Prof Mark A Stoove[1,10,13]

[1]Burnet Institute, [2]Kirby Institute, UNSW , [3]Melbourne Sexual Health, Alfred Health, [4]Central Clinical School, Faculty of Medicine, Nursing and Health Sciences, Monash University, [5]Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, [6]Australian Human Rights Institute, UNSW , [7]Faculty of Health Sciences, Simon Fraser University, [8]Westmead Hospital, [9]Sydney Sexual Health Centre, [10]School of Public Health and Preventive Medicine, Monash University, [10]General Practice and Primary Care, The Melbourne University, [11]Sydney Medical School, Faculty of Health Sciences, The University of Sydney , [11]Department of Infectious Diseases, The Alfred and Monash University, [12]New South Wales Health Pathology , [12]Department of Population Medicine, Harvard Medical School , [13]Australian Research Centre in Sex, Health and Society, Latrobe University

Context: Mpox was first notified in Australia in May 2022 and declared a Communicable Disease Incident of National Significance in July; most cases occurred among gay and bisexual men (GBM). The Australian Collaboration for Coordinated Enhanced Sentinel Surveillance of Sexually Transmissible Infections and Blood-Borne Viruses (ACCESS) includes a network of clinics specialising in the care of GBM. We describe the adaptation of ACCESS to monitor mpox testing and epidemiology.

Process:ACCESS links de-identified clinical data using GHRANITE. We engaged clinics specialising in the care of GBM and tailored data extraction and processing coding to include mpox data. Pathology reports were searched for mpox and other ulcerative viruses test names (orthopox, herpes, varicella zoster) which were added to extraction filters. Related clinical vocabularies were added to existing pathology report natural language processing parsing. Mpox data were linked to clinical and demographic variables.

Analysis:Between May 2022-December 2023, eight of 50 clinics selected to participate in mpox surveillance reported a positive mpox result, with the 65 mpox diagnoses captured representing 38.7% (65/170) of all cases notified in Australia during the observation period. Of mpox cases in ACCESS: all were men who identified as GBM; mean age was 38.2 years (SD=8.6); 32 (49.2%) were born in Australia; 9 (13.8%) were living with HIV; 42 (64.6%) had ever been prescribed HIV PrEP; and 54 (83.1%) were tested for bacterial STIs in the past year, of which 30 (55.6%) had at least one positive result.

Outcomes:We rapidly adapted an existing surveillance network of sexual health and GP clinics used for monitoring BBV/STIs in Australia and leveraged strong partnerships with clinical services to establish a mpox surveillance mechanism within six months of the first notification in Australia. Similar to global epidemiology, Australian mpox cases occurred among GBM, and predominantly those using PrEP and/or exhibiting indicators of sexual risk.

Novel COVID-19 epidemiology surveillance in Sunshine Coast-Gympie residential aged care facilities

Ms Anne Maree Baldwin[1], Debbie Neucom[1]
[1]Queensland Health

Aim
To assess hospitalisation and death risks in Sunshine Coast-Gympie residential aged care facility (RACF) resident COVID-19 cases

Context
The Sunshine Coast local hospital network area has an older population with 5000+ residential places. While Queensland legislation does not require RACFs to report notifiable conditions, historically the Public Health Unit (PHU) encouraged the practice, to enhance infection control advice opportunities. During the COVID-19 response, rapid antigen test (RAT) availability and case definition inclusion, Queensland's portal for the public to report RATs, and increased resourcing enhanced case surveillance.

Process
The PHU provided data collection templates (including age, sex, vaccination status, oral antiviral treatment, outcomes), Town Halls, and individualised RACF support. Cases were captured in Queensland's notifiable conditions register, via pathology provider transmission, public RAT-reporting, and direct PHU entry (complete since April 2022). Outbreaks were delineated using national guidelines. Unreported potential outbreaks were identified through notifications and published reports review.

Analysis
Cases were classified into Omicron waves 2 to 5 and descriptively analysed. Variables with univariate p-value <0.25 for hospitalisation/death were included in multivariate logistic regression, with likelihood ratio testing and goodness of fit informing model choices.

Outcomes
The 52 RACFs had 186 outbreaks with 2,500 cases (61% female; median age 86 years). Median vaccinations were 3 doses, with median 6 months since vaccination. Antivirals were reported for 32% of cases. Hospitalisation percentages ranged from 4% (Wave 3) to 9% (Wave 5). Death was identified for 4% of cases. Once diagnosed, male sex and later wave were independently associated with hospitalisation, and male sex, older age and fewer vaccinations with death. Crude hospitalisation/death risk was lower than local Omicron wave 1 studies' but higher than WHO estimates. This surveillance may be unique given the likely highly complete case ascertainment with covariates across four COVID-19 waves in a sizeable RACF population of Australia.

How digital transformation can build capacity and improve vaccination uptake

Mrs Sarah Cahill[1], Luke Renehan[1], Mr Anthony Renehan[1]
[1]Vitavo

Imagine a world devoid of crumpled vaccination consent cards in the bottom of school bags. A world where we no longer need to spin the wheel of Rota and rely on a magnifying glass to read the result! A world where a consumer ends up in front of you at the right time, every time, and knows exactly what vaccines they are there for. Not only this, but they've also had access to all pre-immunisation information prior to being there and have been prompted on other non-funded vaccines that may be recommended for them. Imagine that they also receive fully automated and customised reminders and communication throughout their lifetime to alert them to what vaccines they are due and when based on their specific medical profile? Missed vaccinations? No problem - automated overdue reminders will provide alerts!

These are just some of the realities of taking an immunisation program digital - technology which not only supports clinicians and consumers to define and automate eligibility but works to tailor and streamline clinical workflows required to deliver these vaccinations. By automating the traditional manual workload required to deliver vaccination programs, a more efficient model of service delivery quickly becomes a reality. With decreased administrative burdens and streamlined clinical workflows, providers face increased capacity to vaccinate more people in less time and have the ability to expand their service offering. Data from VaxApp providers demonstrates significantly decreased vaccination encounter times and subsequent increases to session capacity of up to or over 50%. Some examples of how VaxApp providers are utilising this newfound capacity include:

-creation or expansion of influenza programs

-targeted campaigns within the broader community for specific vaccines resulting in increased uptake

-ability to run additional clinics concurrently

These extended services have only been made possible through digital transformation of their service.

An Innovative and Automated Approach to Managing Complex Cold Chain Breaches.

Ms Ellie Darcey[1], Ms Tracie Chong[1], Ms Susie Ridderhof[1], Ms Terri-Ann McLarty[1], Dr Anastasia Phillips[1,2], Dr Benjamin Scalley[1]
[1]Metropolitan Communicable Disease Control, North Metropolitan Health Service, [2]National Centre for Immunisation Research and Surveillance Australia

Context: Maintaining cold chain is paramount to ensure vaccines are safe and effective when administered. Metropolitan Communicable Disease Control (MCDC) supports immunisation providers who report a cold chain breach (CCB) and recommends that compromised vaccines are discarded if required. Rarely, CCBs are reported that have been ongoing for an extended period and vaccines involved have already been administered. These situations require assessment of large amounts of temperature and patient data to determine whether vaccines were compromised at time of administration. Assessment can be complex when batch numbers ordered and administered do not match, or when the same batch was received on multiple occasions, so it is not possible to ascertain how long a vaccine was in the refrigerator before administration.

Aim: The MCDC Public Health Intelligence team aimed to develop an automated method to assess viability of vaccines administered during extended CCBs where time exposed to temperature excursions is unclear.

Process: Using the programming software, R, MCDC conducted data analysis and extensive data cleaning for the datasets required to assess each breach. We applied an iterative method to identify the occurrence of temperature excursions outside manufacturer guidelines. Subsequently, a randomised sampling model was developed to assess vaccine viability at the point of administration, taking into consideration the vaccine ordering and usage patterns of the provider and the temperature stability guidelines for each vaccine. Results from the sampling model was used to assess vaccinated patients and identified those who were likely to have received compromised vaccines.

Analysis and Outcome: The approach was conservative and assumptions were based on evidence obtained during site visit and thorough review of ordering information. Assumptions and methods were endorsed by an expert panel. This innovative approach was pivotal in the management of two recent complex CCBs, resulting in more efficient analysis and response.

401

Evaluation of EPIWATCH's artificial intelligence syndromic surveillance disease of pandemic potential.

Mr Jared Edgeworth[1,2], Dr Ashley Quigley[1], Dr Davoud Pourmarzi[2], Dr Raina MacIntyre[1]
[1]Australian national university, [2]Kirby Instititute, University of New South Wales

Pneumonia of unknown origin and Influenza like illness (ILI) may be the first indications of a new emerging infections. Syndromic surveillance for pneumonia of unknown origin may provide early warning of emerging infections with pandemic potential. Because of rapid spread of ILI and Pneumonia of unknown origin traditional surveillance systems that rely on laboratory testing and hospital admissions may not be able to detect the disease soon enough to prevent widespread community transmission

The aim of this study was to evaluate the capability of the syndromic surveillance component of EPIWATCH®, an open-source Artificial Intelligence (AI) system that captures disease signals from across the globe in the form of open-source news reports, government announcements, and public health data collating services. EPIWATCH® searches in 45 languages for diseases and clinical syndromes.

Data for pneumonia of unknown origin and ILI from EPIWATCH® from 17/04/2021- 05/08/2023 were extracted and analyzed. We evaluated timeliness of signals for Pneumonia of unknown origin and ILI, by comparing them with formal detecting methods. A case study of pneumonia in Argentina was used for the evaluation.

During the period selected for evaluation of EPIWATCH, 1769 signals were detected from 33 countries with the most reported countries being Argentina, India, Russia and the United States. A significant portion of signals were languages other than English. Spanish, Russian, and Hindi being the most reported non-English signals. During the extraction period EPIWATCH was able to detect a signal of unknown pneumonia in Argentina three days before official sources announced diagnosis of Legionnaires disease. The evaluation also determined that more work was required to standardize ILI and pneumonia of unknown origin definitions within the system as well as increase the ability of language detection to increase timeliness.

In conclusion open source syndromic surveillance can provide timely early warning signals to supplement traditional surveillance.

Infection X – An Australian research platform for emerging infections of interest

Dr Shidan Tosif[1], A/Prof Daryl Cheng, Ms Jill Nguyen, Ms Alissa McMinn, Prof Nigel Crawford
[1]Murdoch Children Research Institute

Aim
A high proportion of children's hospitalisations are due to infections. Research is needed to address gaps in understanding the immune basis for paediatric susceptibility, clinical disease profiles, and vaccine impacts. Rapid identification and characterisation of emerging infections in children is particularly crucial against infections of interest and future pandemics. Utilising lessons learnt during the COVID19 pandemic, the Infection X platform analyses electronic medical record (EMR) data, demographics, clinical metrics, and outcomes, together with clinically integrated biobanking for future laboratory analysis. We describe components and implementation of the Infection X platform at a tertiary hospital.

Methods
We used a customised EMR database that analysed respiratory admissions to a tertiary paediatric hospital (RCH, Melbourne) over 8 years (2016-2023) to identify trends and future pathogens of interest. In 2023, we recruited children hospitalised with influenza and collected specimens for further analysis.

Results
A total of 18,352 admitted patients were swab positive for a respiratory pathogen. The greatest burden of hospitalisation from respiratory pathogens was from rhinovirus / enterovirus, RSV and influenza respectively. 5.6% of admissions had an ICU stay. During the COVID-19 pandemic, enterovirus caused the most hospitalisations. In 2023, 16 patients were recruited for influenza research from 46 approached. >1200 samples were stored for biobanking awaiting further analysis. The main obstacles to biobanking samples were timely access to consent and IV sampling, salvaged samples and concurrent clinical bio sampling were preferred and more feasible in intensive care settings.

Outcomes
The Infection X platform can rapidly collect data and specimens on current and emerging infections of interest in a hospital setting. Clinically integrated biobanking is time consuming and requires experienced research teams to implement but reduces burden for families and improves sample yield. This approach provides opportunities to rapidly set up studies to understand the pathophysiology and clinical impact of 'Infection X'.

Machine learning for predicting adverse events following immunisation with herpes zoster vaccines

Dr Hongen Lu[1], Tianlan Cai[1], Dr Colleen Lau[1], Alan Leeb[2], Deborah J Mills[3], Nicholas Wood[4], Dr Yoni Nazarathy[5], Dr Luis Furuya-Kanamori1[1]
[1]UQ Centre for Clinical Research, Faculty of Medicine, The University Of Queensland, [2]Illawarra Medical Centr, [3]Dr Deb The Travel Doctor, Travel Medicine Alliance, [4]National Centre for Immunisation Research and Surveillance, [5]School of Mathematics and Physics, The University of Queensland

Introduction: Immunisation against herpes zoster is recommended for adults aged ≥50 years. Many National Immunisation Programs are recommending concomitant administration of herpes zoster vaccines with pneumococcal, seasonal influenza, or COVID-19 vaccines. While it is convenient as the number of visits is reduced, there is scant information about the side effects when giving multiple vaccines. Traditional statistical methods struggle to predict adverse events following immunisation (AEFIs) when multiples vaccines are administered. To address this challenge, we harnessed Machine Learning (ML) techniques capable of learning from data to predict future events. Our study aimed to develop classification models to predict the risk of AEFIs associated with concomitant administration of herpes zoster vaccines and other vaccines.
Methods: Data from SmartVax (an active vaccine safety surveillance system) from June 2021 to May 2022 were used, and all patients who received herpes zoster vaccine were included in the study. ML classification methods (e.g., k-NN, support vector machine, random forest) were used to predict the probability of AEFIs based on patients' demographic characteristics and type of vaccines received on the same day. The best ML model was selected based on performance metrics (i.e., accuracy and AUC).
Results: Data from 10,393 patients (age 50-101) were analysed, and 15.4% reported at least one AEFI. The random forest algorithm achieved the best performance (high accuracy, 87%) and excellent capacity to predict AEFIs (AUC=0.935, f1 score=0.85, and recall=0.977). Age group, vaccine (e.g., Shingrix/Zostavax, influenza and tetanus), and number of concomitant vaccines were important predictors of AEFIs in the random forest model.
Conclusions: We have developed a highly accurate ML classification model, which will be seamlessly integrated into an online risk-benefit analysis tool. Clinicians can use this tool to predict AEFIs when administering herpes zoster vaccines in conjunction with other vaccines. By making evidence-based decisions, they will be able to effectively manage vaccine schedules to minimise the risk of AEFIs. Our innovative approach empowers clinicians with data-driven insights to enhance vaccine safety and improve patient care.

Year One: Online Consent in NSW School Vaccination- Triumphs, Trials, Path Ahead

Lauren Tillman[1], Leigh Mcindoe[1], Stephanie Kean[1], Michelle Dives[1], Dr Vicky Sheppeard[1,2]
[1]South Eastern Sydney Local Health District, Public Health Unit, [2]University of Sydney, School of Public Health

Context: In 2023, NSW Health introduced an online consent system, replacing existing paper-based processes in the NSW School Vaccination Program. South Eastern Sydney Public Health Unit (SESLHD) is responsible for the delivery of the school vaccination program to District schools and developed local resources to support schools in the transition.

Aim: This study evaluated the inaugural year of online consent, focusing on the impact on vaccine coverage, acceptability of online consent, usefulness of resources, and barriers to uptake.

Methods/Process: A mixed methods evaluation conducted within SESLHD. We compared 2022 and 2023 program coverage. An online survey was distributed to coordinating teachers at all 91 high schools in the District at the end of 2023. The survey gathered data on usefulness of resources, barriers encountered and overall views on the online consent process.

Results: Preliminary findings indicated a 4% overall increase in coverage following online consent implementation across all vaccines. However, there were notable inter-school coverage variations, ranging from -14% to +46%. The survey received a 42% response rate, with the transition to online consent perceived positively by most schools, particularly in terms of reduced administrative workload. Challenges included reduced oversight on consent return which hindered their ability to follow up directly with students. In terms of resources, 66% of schools found them very helpful, particularly the school user guides and communication toolkit. In terms of barriers to providing consent, schools highlighted parental literacy in English, computer access, and literacy issues.

Conclusion: Online consent has shown promise to enhance vaccination coverage, receiving positive feedback from schools. However, variations between schools and identified barriers such as English language literacy and computer access, highlight the need for tailored interventions to ensure more inclusive and equitable access. The positive response to resources underscores the importance of clear communication tools and informs future program delivery.

Improving National Immunisation Program vaccine ordering in Victoria through data-driven forecasting

Ms Carmen Lynch[1], Ms Rebecca Gang[1], Ms Jacqui Bertucci[1], Ms Catherine Radkowski[1]
[1]Victorian Department of Health

The National Immunisation Program (NIP) is a joint initiative between the Commonwealth and the jurisdictions to provide free vaccines to eligible individuals for multiple disease groups. The Commonwealth tenders for and funds the supply of all NIP vaccines whereas jurisdictions order from suppliers and forecast the required vaccine quantities for the 18 months ahead.

Forecasting in this context refers to predicting future vaccine quantities required by the state using past and present data. The objective is to always hold a reserve of 2-3 months of each vaccine and to minimise vaccine wastage and shortages where possible. All decisions must be heavily data driven to achieve this objective.

A gap was identified in Victoria's ability to make evidence-based forecasting decisions that could be retrospectively understood and described. It is often necessary for Victoria to discuss forecasting decisions with the Commonwealth as they conduct their own forecasting as a point of guidance. A new method was required for visualising stock levels, annual distribution trends, changes in demand and each vaccine program's nuances.

Since 2021, a forecasting model has been created and refined that brings together the NIP schedule, eligible cohort estimates, expected uptake rates, stock on hand, vaccine distribution, vaccine brand market shares and preferred vaccine pack sizes. The model provides an assessment of whether the forecast is too high, too low or appropriate, and then adjustments can be made factoring in additional knowledge (e.g., availability of vaccine brands).

Particularly during a time where the NIP schedule has undergone many changes, implementation of the model has resulted in more transparent decision-making when ordering vaccines, less stock wastage, fewer shortages, greater visibility of vaccine movement and overall positive feedback from the Commonwealth and suppliers on Victoria's vaccine ordering.

Who engages in digital public health surveillance? Understanding uptake for future planning

Dr Karen Mureya[1], Dr AM Shamsir Ahmed[1], Ms Kate Ward[1], Dr Shannon Melody[1], Dr Julie Graham[1]
[1]Department Of Health, Tasmania

Background
Timely data collection, analysis and reporting is necessary to inform swift public health action and decision making during an outbreak response. Tasmania employed digital technology to enhance COVID-19 surveillance. We used an online self-registration portal for positive rapid antigen tests (RATs) for active case finding. Electronic surveys to collect data on risk history and exposures enabled us to monitor disease trends, and triage individuals who required antiviral treatment, outpatient care or social services. A text message with a survey link was sent to notified cases, who had 16 hours (overnight) to complete the brief questionnaire.

Methods
We analysed probable (RAT diagnosed) and confirmed (PCR diagnosed) COVID-19 cases notified to the Director of Public Health from January 2022 to December 2023 in Tasmania. We described demographics of cases by response category (responder and non-responder) and performed multivariate logistic regression to determine factors associated with likelihood of engagement in digital survey.

Results
There were 315,206 notified cases; 79% (248,525) were probable. Survey response rate was reasonably high overall (63.7%), declined per quarter and was lower for confirmed cases. Factors associated with increased likelihood of survey response included female sex (OR 1.21; 95% CI 1.19-1.23), age 5 – 17 years (OR 1.14; 95% CI 1.09-1.20) and 40 - 64 years (OR 1.09; 95% CI 1.04-1.14), and residence in the North-West region (compared to males, parents of children aged 0 - 4 years and residents of the South respectively). Aboriginal and/or Torres Strait Islanders, older adults (65 years and over) and interstate/overseas cases were less likely to respond.

Conclusion
Understanding who engages in enhanced electronic data collection is essential to inform public health responses and contextualizes reported data.

5E -
Diagnostics & antimicrobial resistance, Mezzanine 3, June 12, 2024, 15:30 - 17:00

118

Demographic and behavioural factors associated with multidrug resistant gonorrhoea in Victoria, 2018-2022

Dr Nathan Scott[1], Dr Claire L Gordon[1,2,3], Dr Rehana Di Rico[1,4], Dr Annaliese van Diemen[1]
[1]North Eastern Public Health Unit (NEPHU), Austin Health, [2]Department of Infectious Diseases, Austin Health, [3]Department of Microbiology and Immunology, University of Melbourne at the Peter Doherty Institute for Infection and Immunity, [4]Department of Rehabilitation, Epworth Monash Rehabilitation Medicine Unit (EMReM)

Background and aim: The incidence of multidrug resistant N. gonorrhoeae (MDR-NG) infection is increasing globally. We utilised state-wide surveillance data in Victoria to investigate epidemiologic factors associated with MDR-NG, and examined proportions of individual drug and multidrug resistance among culture-positive gonorrhoea infections.

Methods: Laboratory and clinician-reported patient demographic and behavioural data for 29,569 unique episodes of gonorrhoea infection in Victoria between 2018 and 2022 were assessed. Gonorrhoea infections with at least one positive culture (n=8,405) were analysed further and categorised as either multidrug resistant (MDR) (n=315) or non-multidrug resistant based on antimicrobial susceptibility testing. Univariable and multivariable logistic regression were used to identify risk factors for MDR. Annual proportions of antimicrobial resistance for individual antibiotics were also obtained.

Results: In the multivariable analysis, MDR was associated with infection in individuals born overseas (adjusted OR 1.41 [95% CI 1.07–1.86]). The proportion of MDR among culture-positive gonorrhoea infections decreased from 3.8% in 2018 to 1.0% in 2020, before increasing to 7.7% in 2022. Proportions of resistance to ceftriaxone and azithromycin fluctuated throughout the study. The combined proportion of ceftriaxone decreased sensitivity and resistance ranged from a low of 0.8% in 2020 to 3.4% in 2022. The proportion of azithromycin resistance ranged from 2.1% in 2020 to 12.9% in 2022. More consistent positive increases in the proportions of ciprofloxacin (25.2%-72.5%), penicillin (20.8%-62.8%), and tetracycline (20.2%-61.2%) resistance were seen between 2018 and 2022.

Conclusions: The proportion of gonorrhoea infections with MDR in Victoria is increasing, highlighting the need for coordinated disease control efforts. The association between overseas country of birth and MDR-NG is possibly reflective of increased international travel and subsequent acquisition of resistant gonorrhoea in this group. More complete risk factor data on gonorrhoea notifications, as well as expanded antimicrobial resistance testing, are required to inform public health interventions to control MDR-NG.

Integration of Molecular Point-of-Care Testing (POCT) for infectious diseases in community settings

Mrs Kyana Kayago[1], Lauren Cooney[1], Dr Louise Causer[1], Kelly Andrewartha[2], Dr Kirsty Smith[1], Dr Susan Mathews[2], Professor Mark Shephard[2], Nina Alternetti[2], Gabby Hewer[2], Dr Tanya Applegate[1], Bianca Borgnolo[1], Hayden Crowley[1], Hau Joe Lew[1], Akriti Sharma[1], Professor Rebecca Guy[1], Ashton Williams[1]
[1]Kirby Institute, UNSW, [2]International Centre for Point-of-Care Testing, Flinders University

Aboriginal and Torres Strait Islander approvals: This is a review of publicly available data and First Nations Molecular Infectious Diseases POCT program data; individual community approval has not been sought. The First Nations POCT program governance includes oversight from the National Aboriginal and Torres Strait Islander Health Protection AHPPC Sub-Committee and First Nations POCT Leaders group.

Context: Integrated molecular POCT programs for multiple infections in primary health care are rare globally. The First Nations Molecular POCT Program is the largest network of decentralised services offering molecular POCT for 7 infectious diseases: 4 respiratory infections [SARS-CoV-2, influenza A, B, and respiratory syncytial virus (RSV)] and 3 sexually transmitted infections - STIs [Chlamydia trachomatis/Neisseria gonorrhoeae (CT/NG), and Trichomonas vaginalis (TV)]) in regional and remote Australian health services. Testing is conducted by trained primary care health professionals.

Process: To demonstrate the feasibility of program integration, we describe the (i) number and proportion of staff trained, (ii) testing uptake by demographics and (iii) quality of testing, at 51 sites conducting respiratory infection and STIs testing from 1 August 2022 to 31 January 2024.

Analysis: 402 health professionals completed POCT training: 33% for STI and respiratory infections, 48% for STIs only and 19% for respiratory only. Staff conducted 13,546 patient tests: 4,172 CT/NG, 2,693 TV and 6,681 respiratory. Most STI tests (62.5%) were performed in patients aged 15-29 years. Respiratory tests were most frequently conducted in those aged >50 years (28.6%) or 0–9 years (21.6%). POCT clients were predominantly Aboriginal and/or Torres Strait Islander (88% STI, 70.6% respiratory), and women (63.7% STI,61.9% respiratory). Overall STI positivity was 17.5% and overall respiratory infection (any) positivity was 26.9%. The error rate was <5%, compromising invalid or no results.

Outcomes: Integrated, targeted molecular POC testing for multiple infectious diseases is feasible in remote primary care with results available in 1-2 hours. This diagnostic model facilitates same day treatment for patients, the early detection of disease outbreaks and the evaluation of infectious disease control strategies. The success of this model allows for further expansion of the test menu through demonstration projects for Streptococcus A and human papillomavirus (HPV).

Community-led molecular point-of-care testing for sexually transmitted infections in remote Australia

Dr Louise Causer[1], Joshua Riessen[2], Dr Amit Saha[1], Kelly Andrewartha[3], Dr Kirsty Smith[1], Sarah Betts[2], Annie Tangey[1,4], Sean O'Connor[5], Mel Fernando[1], Lauren Cooney[1], Susan Matthews[3], Dr Lorraine Anderson[6], Professor Mark Shephard[3], Professor Rebecca Guy[1], on behalf of the TTANGO3 and First Nations Infectious Diseases Point-of-Care Testing Programs
[1]The Kirby Institute, UNSW Sydney, [2]Aboriginal Health Council of South Australia, [3]Flinders University International Centre for Point of Care Testing, [4]Ngaanyatjarra Health Service, [5]Townsville Public Health Unit, Townsville Hospital Health Service, [6]Kimberley Aboriginal Medical Services

Context and Aims: In Australia, molecular point-of-care testing(POCT) for chlamydia(CT), gonorrhoea(NG) and trichomonas(TV) has been programmatically implemented since 2016 in regional and remote Aboriginal and Torres Strait Islander communities. POCT is community-led and delivered through primary care clinics, often located significant distances from centralised laboratories. We evaluated POCT program reach and testing uptake to understand the individual and public health impact.

Process: Using program data from 2020–2023 we described the POCT network, target population, and test positivity by sex, age group and infection type. We estimated the number of infectious days averted using published median difference in time-to-treatment following a POC compared with a laboratory-based test.

Analysis: During the implementation period, 68 clinics offered POCT (10 regional, 4 remote, 54 very remote) across 6 jurisdictions. In total, 13459 CT/NG dual and 10800 TV single patient POC tests were conducted; 59.1% were in women, 63.5% in those 15 –29 years and 95.9% in Aboriginal and/or Torres Strait Islander people. Test positivity for CT was 10.0%, NG was 9.0%, and TV was 8.5%. Among those tested with both CT/NG and TV tests (n= 9393), positivity for any infection was 22.6% (women 22.1%, men 20.9%). Among those 15-19, 20-24, 25-29, and 30+ years, any positivity was 26.3%, 27.3%, 20.2% and 15.9.% respectively; 5.7% were positive for more than one STI, 1.1% were positive for all three (CT, NG and TV). POCT averted 25,570 infectious days for CT/NG and 23,050 days for TV.

Outcome: Young people experience the highest POC test positivity, with almost one in four having at least one infection. Future activities should focus on increasing access and uptake of POCT as part of a comprehensive approach to STI control to ensure all young people benefit from rapid treatment of all three infections, limiting both adverse sequelae and onward community transmission.

Aboriginal and Torres Strait Islander approvals:
This analysis was conducted using publicly available TTANGO3/First Nations Molecular Infectious Diseases POCT data. POCT program governance includes oversight from National Aboriginal and Torres Strait Islander Health Protection AHPPC Sub-Committee and POCT Leaders group. Program data are regularly shared with stakeholders online and in newsletters.

Enhancing public health surveillance through a national STI point-of-care testing network

Robert Monaghan[1], Mr Jonathan King[1], Kelly Andrewartha[2], Kirsty Smith[1], Amit Saha[1], Annie Tangey[1,2], Sean O'Connor[4], Skye McGregor[1], Susan Matthews[2], Mark Shephard[2], Rebecca Guy[1], Louise Causer[1]
[1]Kirby Institute, [2]International Centre for Point of Care Testing, Flinders University, [3]Ngaanyatjarra Health Service, [4]Townsville Public Health Unit, Townsville Hospital Health Service, Queensland Health

Context and Aim: In Australia, chlamydia(CT) and gonorrhoea(NG) diagnosis rates are highest among Aboriginal and Torres Strait Islander people in regional and remote areas. However, Aboriginal and/or Torres Strait Islander status is often unavailable in epidemiological reporting using National Notifiable Diseases Surveillance System (NNDSS) data. Since 2016, community-led molecular point-of-care testing (POCT) for sexually transmitted infections (STI) has been implemented in predominantly regional and remote settings, providing real time, highly complete demographic and spatial data. We explored the potential for POCT data to enhance national surveillance of CT and NG.

Process: Using POCT program data (2022-2023; 59 enrolled clinics), we described the completeness of Aboriginal and/or Torres Strait Islander status. We then evaluated POCT numbers (by status, age, and sex) and test positivity. We compared these POCT data with publicly available data from the NNDSS (2018-2022).

Analysis: Of the 7,660 dual CT/NG POC tests conducted, Aboriginal and/or Torres Strait Islander status was complete for 85%. Of these, 96% were Aboriginal and/or Torres Strait Islander people, 60% were aged15-29-years, and 61% were women. CT positivity was 10.7% and NG positivity was 11.0%. In comparison, of NNDSS data, Aboriginal and Torres Strait Islander status completeness was 52% for chlamydia and 74% for gonorrhoea. In 2022, in remote and very remote areas, POC testing identified an estimated 12% (355/2874) of chlamydia notifications and 8% (325/3858) of gonorrhoea notifications recorded in the NNDSS.

Outcomes: With increasing uptake of molecular CT/NG POCT in regional and remote areas, these data will become increasingly representative of all notifications and offer a more comprehensive epidemiologic picture of STIs in regional and remote communities. This addresses the national priority of improved Aboriginal and Torres Strait Islander status data collection and will inform the development of focused strategies to increase testing as part of a comprehensive approach to STI control in partnership with communities.

348

Integrated serological surveillance for multiple infectious diseases in Vanuatu

Elizabeth Nguyen[1], Mohamad Assoum, Arunasingam Abayasingam[1,2], Eithandee Aung[1], Fernando Santiago[2], Prudence Rymill[4], Mackline Katenga[4], Stephanie Tabe[4], Claire Dyer[1], David Kennedy[1], Md Saiful Islam[5], Anastasia Pantelias[6], Julie Jacobson[6], Gladymar Perez Chacon[1], Dorothy Machalek[1], John Kaldor[1], Susana Vaz Nery[1]
[1]Kirby Institute, University of New South Wales, [2]School of Medical Sciences, University of New South Wales, [3]World Health Organization, [4]Ministry of Health, Government of Vanuatu, [5]School of Population Health, University of New South Wales, [6]Bridges to Development

Vanuatu's population is at risk of vaccine preventable diseases (VPDs) and neglected tropical diseases (NTDs) due to low immunisation coverage as well as poor sanitation. Serological surveys that measure the prevalence of antibodies (seroprevalence) are a strategy for monitoring current or past exposure to infectious pathogens. Integrated serosurveillance using novel multi-bead assays that can detect ~100 different disease-specific antibodies from a single dried blood spot has the potential to establish nationally representative programs.

Between 2021 and 2023, we conducted an integrated serological survey to assess the seroprevalence of IgG antibodies against multiple VPDs, NTDs, and other infectious diseases in 92 villages in Tafea, Sanma, and Shefa provinces (Vanuatu). After obtaining informed consent, approximately 2000 participants aged >1 year of age provided a finger prick blood sample to prepare a dried blood spot sample that was analysed using the Luminex technology. Seroprevalence was defined as the proportion of patients with positive IgG results in dried blood spot specimens.

Here we report the overall estimated unadjusted seroprevalence of measles (28.2%, 95% CI 22.2%-34.7%), rubella (63.6%, 95% CI 56.7%-71.5%), tetanus toxoid (65.6%, 95% CI 59.2%-71.5%), and diphtheria toxoid (40.1, 95% CI 33.9%-46.6%) IgG, as well as the seroprevalence of SARS-CoV-2 spike protein (0.8%, 95% 95% CI 0.1%-2.9%), Chlamydia trachomatis (pgp3-IgG: 24.4%, 95% CI 19.1%-30.3% and CT694-IgG: 12.0% 95% CI 8.2% 16.8%), Brugia malayi (Bm33-IgG: 0.4%, 95% CI 0.0%-2.3%) and Wuchereria bancrofti (Wb123-IgG: 2.5% 95% CI 0.9%-5.3%) antibodies in the first 243 participants.

Our preliminary results provide a promising measure of effective population-level immunity and exposure to multiple infectious diseases, with the added advantage of being cost-effective, scalable, acceptable, and able to target hard-to-reach and high-risk populations. Additional analysis by age groups and comparisons with national immunisation coverage surveys will be conducted.

This study is funded by Bridges to Development/Takeda, WHO Western Pacific Region, grants from ARIA RISE (DFAT), and NHMRC.

The effectiveness of sodC-based PCR for the detection of Neisseria meningitidis

Dr Hassen Mohammed[1,2], Mr Dan Duy Pham-Tran[3], Dr Lex E.X. Leong[3], Dr Mark McMillan[1,2], Prof Adam Finn[4], Prof Helen Marshall[1,2]
[1]Vaccinology and Immunology Research Trials Unit, Women's and Children's Health Network, [2]Robinson Research Institute and Adelaide Medical School, The University of Adelaide, [3]SA Pathology, [4]University of Bristol

Background: The effectiveness of the superoxide dismutase C (sodC) gene in detecting Neisseria meningitidis in pharyngeal swab samples is unclear. While it has been explored as an alternative to the capsule transport gene A (ctrA) for detecting invasive strains, its potential as the sole target for RT-PCR in meningococcal carriage screening remains unexplored. This study aimed to assess the specific effectiveness of sodC in detecting N. meningitidis in pharyngeal swab samples.
Methods: Oropharyngeal swab samples were collected from adolescents enrolled in the "B-Part-of-It" study, a large cluster randomised controlled trial (NCT03089086) conducted in South Australia from 2017 to 2018 to investigate the impact of 4CMenB vaccination on N. meningitidis carriage. The samples were initially screened for the presence of specific meningococcal DNA (porA gene) using PCR and then preserved by freezing at −80 °C. An assay targeting the sodC gene was developed using the locked nucleic acid (LNA) probe-based method. 12 sample plates were tested, each containing 91 samples. The results of the sodC assay were compared with those of the porA assay from the 2017 'B-Part-of-It' study to determine the concordance between the two assays.
Results: Out of 1092 sample tests, 965 (88.4%) were sodC positive, with 100% sensitivity and 13.02% specificity compared to porA. The positive predictive values (PPV) and negative predictive values (NPV) were 12.02% and 100%, respectively. While sodC detected all true positives, only 13% of true negatives were identified as negative with 12% of sodC-positive samples being true positives for meningococci and all sodC negatives being true negatives.
Conclusions: The sodC assay alone is not specific enough as a tool for meningococcal screening without further modifications or additional testing. Other jurisdictions using or considering this assay should be cautious, due to its propensity for a high rate of false positives.
Funding: GSK

Antimicrobial-resistant shigellosis in south-east Queensland, 2022–2023

Dr Bhakti Vasant[1], Dr Mark Stickley, Dr Megan Young, Dr Kate Alexander, Dr Russell Stafford, Mr Robert Bell, Dr Rikki Graham, Ms Asha Kakkanat, Assoc Prof Amy Jennison
[1]Metro South Public Health Unit

Shigellosis risk factors include travel to endemic regions, men who have sex with men (MSM), contact with a known shigellosis case, immunosuppression, and attendance at childcare. Antimicrobials may shorten illness duration and severity. Antimicrobial resistance has been documented globally, including in Australia. Australian state-based guidelines are inconsistent in their recommendations for antibiotic use. Our study aimed to describe the epidemiology, including antimicrobial resistance patterns, of shigellosis in south-east Queensland in 2022 and 2023.

We investigated a retrospective cohort of confirmed cases of shigellosis notified to the Gold Coast, Metro North, and Metro South Public Health Units from 01 January 2022 until 31 December 2023. Routinely collected data from the Queensland Notifiable Conditions System and public health unit records and laboratory phenotypic and genetic resistance data were analysed.

Of 98 confirmed cases of shigellosis, 62 were S. sonnei and 32 were S. flexneri. Males accounted for 67% (66/98) of cases. The median age was 35.5y (range 1–87y). Overseas travel was reported by 57% (52/91) of cases. Thirty nine percent of cases (33/85) were reported to be MSM. Antimicrobial resistance was common with 52% (45/86) of isolates multidrug resistant and 36% (31/86) extensively drug resistant. Sixty-six percent (52/79) of isolates were resistant to amoxycillin, 75% (59/79) were resistant to cotrimoxazole and 54% (41/76) were resistant to ciprofloxacin. Of 49 isolates that were tested,15 were resistant to ceftriaxone. Thirty seven percent (31/83) of isolates carried the ESBL gene.

As most infections resolve on their own without treatment, antibiotics should be reserved for cases at risk of severe disease or higher risk of transmitting infection to others. When antimicrobial treatment is indicated, it should preferably be based on the results of susceptibility testing. However, where required, ceftriaxone appears to be the most suitable empiric choice in south-east Queensland.

Cost-effective global surveillance of drug resistance in Gonorrhoea

Ms Olivia Jessop[1], Dr Sumeet Sandhu[2], Dr Rikki Graham[2], Dr Emma Sweeney[1], A/Prof David Whiley[1,3], A/Prof Amy Jennison[2]
[1]The University of Queensland Centre for Clinical Research, [2]Public Health Microbiology, Queensland Health Forensic and Scientific Services, [3]Pathology Queensland Central Laboratory

Context
Neisseria gonorrhoeae is defined by the CDC as an urgent antimicrobial threat as it has developed antimicrobial resistance (AMR) to all available drugs, with sporadic reports of extensively drug resistant strains globally. The World Health Organisation has identified N. gonorrhoeae as a priority organism for enhanced, quality-assured AMR surveillance, given that detection of resistance and decreased susceptibility in circulating strains is critical to maintain effective antimicrobial stewardship. However, public health surveillance needs to balance cost with the level of data extracted. Amplicon panels offer the ability to perform wide AMR genomic surveillance using fewer resources than whole genome sequencing. Here we developed and assessed a molecular AMR screening workflow for N. gonorrhoeae characterisation, including antimicrobial resistance markers.

Research findings
In collaboration with New Zealand and Queensland government health departments, a multi-plex PCR was developed using primers targeting 15 genes from NG-MAST, Neisseria MLST, and NG-STAR typing schemes, and plasmid-mediated penicillin resistance. An automated pipeline was established to process NextSeq Illumina sequences and implement downstream bioinformatic analysis, specifically looking for N. gonorrhoeae antimicrobial resistance markers. Validation in silico and wet lab verification against local and global N. gonorrhoeae sequences and isolates showed that the method had 100% typeability across each target, able to generate concordant MLST, NG STAR and NG MAST genotypes across a genetically diverse sample set.

Outcomes
This method offers a scalable and cost-effective approach to performing molecular surveillance for N. gonorrhoea, which is otherwise cost prohibitive to many public health laboratories. This will be implemented into Queensland Health's routine molecular surveillance of N. gonorrhoeae isolates. This pipeline will inform on emerging N. gonorrhoeae resistance to major antibiotics in Queensland, and underpin enhanced antimicrobial stewardship.

Exploring Local Health Public Units' Role in Antimicrobial Resistance Control in Victoria

Dr Tushar Goyal[1,2], Dr Annaliese van Dieman[1], Dr Claire L Gordon[1,3,4]
[1]North Eastern Public Health Unit, [2]Eastern Health , [3]Department of Infectious Diseases and Immunology, Austin Health, [4]Department of Microbiology and Immunology, University of Melbourne at the Peter Doherty Institute for Infection and Immunity

Context and aim: Strategies involving multiple stakeholders (e.g. hospitals, primary care providers, laboratories, environmentalists, agricultural scientists, government agencies) are required to achieve the objectives outlined in Australia's National Antimicrobial Resistance (AMR) Strategy and the Victorian Antimicrobial Resistance Strategy. Established in 2020, Victoria's local public health units (LPHUs) are a newcomer to AMR control and the precise role of LPHU's in this area is unclear. A strength of LPHUs is their local knowledge, allowing strategies to be contextualised and adapted to the local setting. This study aimed to identify best practice public health strategies for AMR control and to assess which strategies were suitable for implementation by the North Eastern Public Health Unit (NEPHU).

Methods and analysis: A literature review covering 2001-2023 was conducted using MeSH terms and supplemented by snowball review. Additional insights were obtained from interviews with hospital infectious diseases physicians. Best practice public health strategies for AMR control were identified and considered in the context of NEPHU's operating environment to determine which strategies could feasibly be implemented and were not already being performed by other stakeholders. Review of 30 studies and 2 interviews identified that best practice public health strategies for AMR control required collaboration across diverse health stakeholders from primary care, microbiology, tertiary health services and educational institutions, within an overarching One Health framework.

Translational outcomes: Many of identified strategies were already performed by other organisations or are outside of NEPHU's operating environment. Strategies that NEPHU could implement include surveillance, outbreak management and infection prevention in community settings, promotion of antimicrobial guidelines among clinicians, and amplification and adaptation of sector- and public-facing messaging to local audiences.

Future actions: LPHUs can contribute the effort to control AMR through a range of strategies that leverage existing connections with the healthcare sector, at-risk facilities (i.e. residential care) and the community.

Diagnosing clinician trends in infectious syphilis, Sydney Local Health District, 2016–2023

Ms Elenor Kerr[1], Andrew Ingleton[1], Dr Vendula Blaya Novakova[2], Dr David Templeton[2], Dr Rachel Burdon[2], Dr David Atefi[1,2], Linda Garton[2], Dr Madhara Weerasinghe[2], David Kennedy[1]
[1]Sydney Local Health District Public Health Unit, [2]Department of Sexual Health Medicine, Community Health, Sydney Local Health District

Background: Sydney Local Health District's (SLHD) infectious syphilis rate is among the highest in New South Wales. While syphilis in SLHD is typically associated with male-to-male transmission, there are concerns about increases in females. Due to potential mother-to-child transmission, female syphilis is a public health priority requiring efficient management. However, clinician experience in diagnosing, staging, and managing cases is often limited.
Methods: We analysed infectious syphilis notifications in SLHD residents with calculated onset dates, January 2016–December 2023. We compared male and female notifications by diagnosing clinician overall and between 4-year periods (2016–2019, 2020–2023) and calculated annual sex-specific rates and rate ratios.
Results: Notifications increased 22% between 2016–2019 (n=1,433) and 2020–2023 (n=1,745). Males accounted for 96% of notifications (3,037/3,178). The male rate increased 1.8-fold from 67.5 in 2016 to 117.0 notifications per 100,000 males in 2023, whilst the female rate increased 5.6-fold (1.5 to 8.6 notifications per 100,000 females). The male-to-female rate ratio decreased 3.2-fold from 44.3 to 13.6 over the study period.
Diagnosing clinician was known for 98% of notifications (3,105/3,178). Males were most commonly diagnosed by Sexual Health Clinics (SHCs) (47%, 1,415/3,037). Females were most commonly diagnosed by non-s100 general practitioners (GPs) (40%, 56/141), followed by SHCs (38%, 53/141). Between 2016–2019 and 2020–2023, male diagnoses by non-s100 GPs increased by 83% compared to 7% for SHC diagnoses, and female diagnoses from hospitals and SHCs increased by 500% and 94% respectively, compared to 33% for non-s100 GPs.
Conclusion: Consistent with trends nationally, SLHD's female infectious syphilis rate increased since 2016. Although female notifications remain comparatively low, epidemiological shifts in female syphilis are clear. GPs are important stakeholders in female syphilis diagnosis and management and are increasingly involved in male diagnoses highlighting the importance of GP education and programs facilitating support from experienced sexual health clinicians.

5F -
Influenza and COVID vaccines, Mezzanine 4, June 12, 2024, 15:30 - 17:00

218

Superior immunogenicity of self-amplifying mRNA vs. standard mRNA COVID-19 vaccine

Yoshiaki Oda[1], Yuki Kumagai[2], Manabu Kanai[1], Yasuhiro Iwama[1], Iori Okura[1], Takeshi Minamida[1], Yukihiro Yagi[1], Toru Kurosawa[1], Ms Katherine Young[3], Ye Zhang[4], Judd L Walson[4], Igor Smolenov[4]
[1]Meiji Seika Pharma Co., Ltd, [2]Kitasato University Kitasato Institute Hospital, , [3]CSL Seqirus, [4]Arcturus Therapeutics, Inc.

Initially high immune responses to mRNA SARS-CoV-2 vaccines have a relatively short duration. We previously showed immune responses against ancestral Wuhan-Hu-1 strain and Omicron BA.4/5 variant to a booster dose of a novel self-amplifying mRNA vaccine (ARCT-154) were higher than to a standard mRNA vaccine (BNT162b2) in adults who previously received three mRNA vaccinations1. We now report on the persistence of these responses and safety up to six months post-booster.

Previously vaccinated Japanese adults, last vaccinated with BNT162b2 at least three months earlier, were randomised to receive a booster dose of ARCT-154 (n = 420) or BNT162b2 (n = 408). Neutralising antibodies against ancestral Wuhan-Hu-1 strain and Omicron 4/5 variant were measured at baseline and 1-, 3- and 6-months post-booster. Seropositivity to SARS-CoV-2 nucleocapsid protein was considered indicative of prior COVID-19 infection and seropositive participants excluded from the analyses.

There were 378 and 374 eligible participants in ARCT-154 and BNT162b2 groups at baseline, and 332 and 313 at 6 months. Baseline geometric mean neutralising titres (GMT) against both SARS-CoV-2 strains were similar, increasing 1-month post-booster with ARCT-154 vs BNT162b2 GMT ratios of 1.44 and 1.31 for Wuhan-Hu-1 and Omicron 4/5, respectively. This difference increased at 6 months follow-up, with GMT ratios of 2.21 and 2.26. Greater waning of the BNT162b2 response was evident at 3 months when only 30% (95%CI: 26–35) of BNT162b2 vaccinees had titres equal to or higher than their 1-month values, compared with 56% (95%CI: 50–61) of ARCT-154 vaccinees. No reported discontinuations due to death or adverse events occurred; none of the 10 reported serious adverse events, 5 in each group, were considered associated with study vaccination.

A booster dose of self-amplifying mRNA SARS-CoV-2 vaccine, ARCT-154, elicits a higher magnitude neutralising response with better persistence than standard mRNA COVID-19 vaccine, with an equivalent safety profile.

PICOBOO: second COVID-19 boosters in AZD1222 primed individuals aged 50-<70 years old.

Dr Charlie Mcleod[1,2,3,16], Mr Michael Dymock[1], Prof Katie Flanagan[4,5,6], Prof Magdalena Plebanski[6], Prof Helen Marshall[7,8], Dr Marie Estcourt[9], Dr Ushma Wadia[1,2,16], Dr Christian Tjiam[1], Prof Christopher Blyth[1,2,3], Prof Kanta Subbarao[10,11], Dr Francesca Mordant[11], Dr Suellen Nicholson[12,13], Prof Saul N Faust[14,15], Dr Ruth Thornton[1,16], Ms Anne McKenzie[17], Dr Julie Marsh[1,3], Prof Thomas L Snelling[9], Prof Peter Richmond[1,3,18]

[1]Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute, [2]Infectious Diseases Department, Perth Children's Hospital, [3]School of Medicine, University of Western Australia, [4]Tasmanian Vaccine Trial Centre, Clifford Craig Foundation, Launceston General Hospital, [5]School of Health Sciences, College of Health and Medicine, University of Tasmania, [6]School of Health and Biomedical Sciences, Royal Melbourne Institute of Technology University (RMIT), [7]Women's and Children's Health Network, [8]Robinson Research Institute and Adelaide Medical School, [9]Sydney School of Public Health, Faculty of Medicine and Health, [10]WHO Collaborating Centre for Reference and Research on Influenza, [11]University of Melbourne at the Peter Doherty Institute for Infection and Immunity, [12]Victorian Infectious Diseases Reference Laboratory, [13]Department of Infectious Diseases, University of Melbourne at the Peter Doherty Institute for Infection and Immunity, , [14]National Institute of Health Research Southampton Clinical Research Facility and Biomedical Research Centre, University Hospital Southampton NHS Foundation Trust, [15]Faculty of Medicine and Institute for Life Sciences, University of Southampton, [16]Centre for Child Health Research, University of Western Australia, [17]Consumer Advisory Coordinator, [18]General Paediatrics and Immunology Departments

Background

PICOBOO is a randomised, adaptive trial evaluating the immunogenicity, reactogenicity, and safety of COVID-19 booster strategies. Here we report data for second boosters (fourth doses) among individuals aged 50-<70 years old primed with AZD1222 (50-<70y-AZD1222) until Day (D) 84.

Methods

Immunocompetent adults who received any licensed first booster at least three months prior were eligible to participate. Participants were randomly allocated to BNT162b2, mRNA-1273 or NVX-CoV2373 1:1:1. The log10 concentration of anti-spike IgG until D84 was summarised as the geometric mean concentration (GMC). Reactogenicity and safety outcomes were captured. Additional immunological analyses were performed on a dedicated subset. ACTRN12622000238774.

Findings

Between 29 Mar 2022 and 29 Aug 2023, 743 participants were recruited to the study. Of these, 155 belonged to the 50-<70y-AZD1222 primed stratum. At D28, the median GMCs (95% credible intervals) were 20 736 (17 581, 23 962), 24 122 (20 190, 28 010) and 8 745 (7 384, 10 172) U/mL following boosting with BNT162b2, mRNA-1273 and NVX-CoV2372, respectively. By D84, GMCs fell to 11 360 (8 988, 13 782), 16 155 (12 949, 19 706), and 6 828 (5 381, 8 252) U/mL in each group, respectively. At D28, median neutralisation against Ancestral virus was 161, 214 and 75 IU/mL in each group, respectively. By D84, this fell to 100, 163 and 74 IU/mL in each group, respectively. Limited neutralisation against Omicron subvariants BA.5 and XBB.1.5 was found following boosting with all vaccines. Severe reactogenicity events were few (<4%).

Interpretation

Each COVID-19 vaccine elicited boosted antibody responses to Ancestral strain virus among older AZD1222-primed adults.

Funding

Medical Research Future Fund (2014690) and Snow Foundation.

Safety and Immunogenicity of the Novavax Influenza Vaccine and COVID-Influenza Combination Vaccine

Dr Vivek Shinde[1], Ms Sharon Liu[1], Ms Susan Neal[1], Dr Joyce Plested[1], Dr Timothy Vincent[1], Dr Mingzhu Zhu[1], Ms Shane Cloney-Clark[1], Dr Bridget Riviers[1], Ms Farnaz Mankhou[1], Mr Iksung Cho[1], Dr Seth Toback[1], Dr Louis Fries[1], Mr Wayne Woo[1]
[1]Novavax, Inc.

Background:

We developed a saponin-adjuvanted (Matrix-M™) recombinant quadrivalent hemagglutinin (HA) nanoparticle influenza vaccine (qNIV), and a COVID and influenza combination (CIC) vaccine, comprising recombinant SARS-CoV-2 Spike (rS), qNIV, and Matrix-M adjuvant. Here, we report results of a phase 2 dose-confirmation trial.

Methods:

1579 participants in Australia and New Zealand (1571 treated, including 864 in the CIC group) aged 50–80 years were randomised equally to receive one intramuscular dose of vaccine in 1 of 20 groups: either 1 of 11 different dose/formulations of CIC, 1 of 3 formulations of qNIV, 1 of 4 formulations of standalone rS with Matrix-M, or 1 of 2 influenza vaccine comparators (Fluzone HD® or FLUAD®). Pre- and post-vaccination immunogenicity assessments included anti-Spike IgG, SARS-CoV-2–neutralizing antibody (vaccine-homologous and -heterologous strains), wild-type influenza HAI antibodies (vaccine-homologous strains), and CD4+ T-cell responses. Reactogenicity was assessed for 7 days following vaccination and additional safety outcomes were assessed through Day 21.

Results:

qNIV (60 µg) HAI responses were significantly higher than FLUAD (GMT ratio 1.44–1.56) and Fluzone HD (GMT ratio 1.44–1.89) against vaccine-homologous A strains. CIC showed evidence of rS and HA antigen interference but achieved anti-Spike IgG and influenza HAI antibody responses that were comparable to both the ancestral rS vaccine (NVX-CoV2373) and FLUAD/Fluzone HD, respectively. All CIC evoked local and systemic solicited adverse events at rates and severities comparable to FLUAD and Fluzone HD. Severe adverse events were infrequent in all groups, and none were assessed as vaccine related.

Conclusions:

qNIV produced improved wild-type HAI antibody responses as compared to FLUAD and Fluzone HD against influenza A strains, notably against H3N2. CIC achieved both anti-Spike IgG responses comparable to the authorized ancestral NVX-CoV2373 rS vaccine and HAI responses comparable to licensed enhanced influenza comparators. CIC and qNIV had safety profiles comparable to Fluzone HD and FLUAD.

Value of Influenza Cell-Based Vaccine in Children: A Dynamic Model in US

Prof. Stephen Pelton[1], Dr. Joaquin Mould-Quevedo[2], Mr. Van Nguyen[3]
[1]Chobanian and Avedisian School of Medicine, Boston University, [2]Global Medical Affairs, CSL Seqirus, [3]Global Health Economics and Epidemiology, VHN Consulting Inc

Background: Cell-based quadrivalent influenza vaccines (QIVc) can increase effectiveness against seasonal influenza by avoiding mismatch from egg adaption of vaccine viruses. This study evaluates the population-level cost-effectiveness and impacts on health outcomes of QIVc versus an egg-based vaccine (QIVe) in children aged 6 months to 17 years in the US.

Research design and methods: A dynamic age-structured susceptible-exposed-infected-recovered model was used to simulate influenza transmission in low and high incidence seasons for two scenarios: 1. QIVe for 6 months-17 year-olds, QIVc for 18-64 year-olds, and adjuvanted QIV (aQIV) for ≥ 65 year-olds, and 2. QIVc for 6 months-64 year-olds, and aQIV for ≥ 65 year-olds. Probabilistic sensitivity analysis was performed to account for uncertainty in parameter estimates. Cost-effectiveness was evaluated as incremental cost-effectiveness ratios (ICERs).

Results: Extension of QIVc to children resulted in 3-4% reductions in cases (1,656,271), hospitalizations (16,688), and deaths (2,126) at a population level in a high incidence season, and 65% reductions (cases: 2,856,384; hospitalizations: 31667; deaths: 4,163) in a low incidence season. Use of QIVc would be cost-saving, with ICERs of -$16,427/QALY and -$8,100/QALY from a payer perspective and -$22,669/QALY and -$15,015/QALY from a societal perspective, for low and high incidence seasons respectively. Cost savings were estimated at approximately $468 million and $1.366 billion for high and low incidence seasons, respectively.

Conclusion: Use of QIVc instead of QIVe in children > 6 months of age in the US would reduce the disease burden and be cost-saving from both a payer and societal perspective.

The impact of obesity on influenza vaccine immunogenicity: a systematic review

Mrs Michelle Clarke[1,2], Dr Mark McMillan[1,2], Associate Professor Lynne Giles[3], Ms Kathryn Riley[1,2], Dr Suja Mathew[1,2], Dr Prabha Andraweera[1,2], Professor Peter Richmond[4,5], Professor Helen Marshall[1,2]
[1]Women's And Children's Health Network, [2]Adelaide Medical School & The Robinson Research Institute, The University of Adelaide, [3]School of Public Health and The Robinson Research Institute, The University of Adelaide, [4]Division of Paediatrics, University of Western Australia, [5]Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute

Background/Aims:
In Australia, 31.7% of adults and 8.3% of children aged 5-17 years were considered obese in 2022. Obesity is associated with an increased risk of severe influenza. Annual influenza vaccination is recommended for individuals with obesity; however, it is unclear whether obesity impacts influenza vaccine immunogenicity. This systematic review aimed to synthesize the current evidence on influenza vaccine immunogenicity for immunocompetent populations with and without obesity.

Methods:
This review considered studies that reported vaccine immunogenicity outcomes (Geometric Mean Titre (GMT), % seroprotected (SP) and/or % seroconverted (SC)), for obese vs non obese participants following influenza vaccination. PubMed, Embase and Scopus were searched to identify potential studies. The review protocol was registered in Prospero and studies were imported and extracted in Covidence. Full text review, data extraction and critical appraisal were completed by two reviewers. The final search was completed on 01Sep2023.

Results:
A total of 2078 studies were imported and after removal of duplicates, 825 studies were screened, 130 underwent full text review. Ten studies reported outcomes for seroprotection/seroconversion approximately 1 month following either monovalent H1N1 (n=1), trivalent (n=7) or quadrivalent (n=3) influenza vaccine for populations including children (n=5), adults (n=8) and pregnant women (n=2). Sample sizes varied from 44 - 1132 study participants.
For H1N1 vaccine responses, the majority of studies found no evidence for difference between the percentage of obese vs non-obese participants who achieved seroprotection or seroconversion. However, for three studies the percentage seroprotected was higher for the obese than the non-obese groups, and two studies found that the percentage achieving seroconversion was higher for the obese compared to non-obese groups.

Conclusions:
Obesity does not appear to be associated with impaired influenza vaccine immunity at one month post vaccination, and conversely, may be associated with heightened antibody responses, likely due to a proinflammatory immune response

Coadministration of BNT162b2 COVID-19 Vaccine With Influenza Vaccine in Adults

Dr Karen Quan[1], Dr James A Baber[1], Dr Louise Murdoch[2], Agnes WY Ho[3], Ying Zhang[4], Xia Xu[3], Claire Lu[4], Annaliesa S Anderson[4], Kena A Swanson[4], Dr Nicholas Kitchin[5]
[1]Vaccine Clinical Research & Development, Pfizer Australia Pty Ltd, [2]Emeritus Research, [3]Vaccine Research & Development, Pfizer Inc, [4]Vaccine Research & Development, Pfizer Inc, [5]Vaccine Research & Development, Pfizer Ltd

Background
COVID-19 and influenza have seasonal patterns, predominating in winter in temperate climates. Annual influenza vaccination is recommended to prevent influenza illness, and coadministration with COVID-19 vaccine can streamline vaccine delivery. In this Phase 3 observer-blind study in adults, the safety and immunogenicity of coadministration of a fourth dose (booster) of BNT162b2 vaccine and quadrivalent seasonal inactivated influenza vaccine (SIIV) was compared with either vaccine administered alone.

Methods
1134 healthy adults aged 18-64 years were randomized 1:1 to receive BNT162b2+SIIV (Day 1) then placebo (Month 1), or placebo+SIIV (Day 1) then BNT162b2 (Month 1), in Australia and New Zealand. Blood draws occurred at 3 visits 1 month apart. For the primary immunogenicity objective, a 1.5-fold equivalence margin was used to demonstrate noninferiority of immune responses with coadministration of BNT162b2+SIIV compared to separate administration of SIIV followed by BNT162b2 1 month later. Safety assessments included reactogenicity and adverse events.

Results
1128 participants (564 per group) received vaccination at a median age of 39 years. Local reactions and systemic events were mostly mild or moderate in the coadministration group. No vaccine related serious adverse events were reported.

The primary immunogenicity objectives were met. Model-adjusted geometric mean ratios (GMRs) were 0.83 (95% CI 0.77, 0.89) for full-length S-binding IgG levels, and ranged from 0.89 to 1.00 for the four strain-specific hemagglutination inhibition assay (HAI) titers (H1N1 A/Victoria, H3N2 A/Darwin, B/Austria, B/Phuket) at 1 month after vaccination, all achieving the prespecified non-inferiority criterion (lower bound 95% CI>0.67).

Conclusion
The primary objectives of the study were achieved demonstrating noninferiority of the immune responses when BNT162b2 was coadministered with SIIV compared to those elicited by either vaccine alone, and that coadministration of BNT162b2 with SIIV had an acceptable safety profile. These study results support the coadministration of BNT162b2 and SIIV.

Funding Source
Pfizer Inc, BioNTech

The Relative Effectiveness of NVX-CoV2373 and BNT162b2 COVID-19 Vaccines in South Korea

Dr Eunseon Gwak[2], Dr Seung-Ah Choe[2], Ms Erdenetuya Bolormaa[2], Dr Chengbin Wang[1], Dr Matthew Rousculp[1], Dr Muruga Vadivale[1], Dr Young June Choe[1]
[1]Novavax, [2]Korea University

Background:
Novavax COVID-19 vaccine (NVX-CoV2373) was first available on February 21, 2022, in South Korea. The performance of NVX-CoV2373 in comparison with the monovalent BNT162b2 mRNA COVID-19 vaccine (Wuhan strain) has not been well evaluated.

Methods:
A retrospective cohort study was constructed of NVX-CoV2373 and BNT162b2 mRNA vaccine recipients aged ≥12 years, and they were matched by propensity score calculated based on age, sex, income, disability status, residential area, doses of COVID-19 vaccination, comorbidity (defined as the Charlson comorbidity index score ≥3) and the calendar month of vaccination during February to December 2022. The study participants were identified from the Korea Disease Control and Prevention Agency-COVID-19-National Health Insurance Service (K-COV-N) cohort database, with available vaccination status and health outcomes (SARS-CoV-2 infection, and severe COVID-19 infection [admission to intensive care unit and death within 30 days after infection]). We calculated adjusted hazard ratio of each health outcome within 30 days after vaccination using the matched sample of vaccination episodes.

Results:
A total of 759,605 and 2,696,806 doses of NVX-CoV2373 and BNT162b2 mRNA vaccines were administered during the study period, and 618,849 NVX-CoV2373 recipients were matched to 683,170 BNT162b2 mRNA vaccine recipients. There were 45,271 SARS-CoV-2 infections (3.5%) and 145 severe SARS-CoV-2 infections (0.01%) identified among them. SARS-CoV-2 infections were observed in 3.1% (n=19,190) of NVX-CoV2373 recipients and 3.8% (n=26,081) of BNT162b2 recipients. Severe infection occurred in 0.009% (n=57) of NVX-CoV2372 recipients and 0.013% (n=88) of BNT162b2 recipients. In comparison with receipt of BNT162b2 vaccine, the adjusted hazard ratio of receiving NVX-CoV2373 was 0.92 (95% confidence interval [CI]: 0.90, 0.94) for all SARS-CoV-2 infection, and 0.78 (95% CI: 0.56, 1.10) for severe SARS-CoV-2 infection.

Conclusions:
The results of this retrospective study indicate that NVX-CoV2373 vaccine is comparable to the monovalent BNT162b2 mRNA vaccine in preventing SARS-CoV-2 infection, including severe infections.

Superior effectiveness of cell- versus egg-based influenza vaccines over three consecutive seasons

Ms Alicia Stein[1], Ms Caroline Mills[4], Mr Ian McGovern[2], Ms Kimberly McDermott[4], Mr Alex Dean[4], Ms Alina Bogdanov[4], Dr Sheena Sullivan[5], Ms Edith Rosenberg[6], Ms Mendel Haag[3]
[1]CSL Seqirus, [2]CSL Seqirus, [3]CSL Seqirus, [4]Veradigm, [5]Peter Dougherty, [6]CSL Seqirus

Background: Influenza vaccine viruses produced in fertilized hen's eggs can acquire egg-adaptive mutations that can result in antigenic mismatch to circulating viruses and may contribute to reduced vaccine effectiveness. The objective of this study was to estimate the relative vaccine effectiveness (rVE) of QIVc versus QIVe in preventing test-confirmed influenza among individuals aged 4-64 years in the outpatient care setting, during the 2017-18 to 2019-20 seasons in the USA.
Methods: A retrospective test-negative design was applied among individuals aged 4-64 years who were vaccinated with either QIVc or QIVe and who had an influenza test obtained in routine outpatient care within +/- 7 days of a documented acute respiratory or febrile illness. Exposure, outcome, and covariate data were obtained from electronic health records linked to pharmacy and medical claims. Season-specific rVE was estimated by comparing the odds of testing positive for influenza among QIVc recipients with the odds among QIVe recipients. A doubly robust analysis combined inverse probability of treatment weighting (IPTW) with multivariable regression. Sensitivity analyses included additional adjustment for the propensity to be tested, limiting to the peak influenza epidemic period, and matching on the test-week.
Results: The study included 31,824, 33,388 and 34,398 tested patients in the 2017-18, 2018-19 and 2019-20 influenza seasons, respectively, of whom approximately 10% received QIVc and 90% received QIVe. QIVc demonstrated superior effectiveness compared to QIVe in prevention of test-confirmed influenza in the outpatient care setting, with estimated rVEs (95% CI) of 14.8% (7.0 – 22.0) in 2017-18, 12.5% (4.7 – 19.6) in 2018-19 and 10.0% (2.7 – 16.7) in 2019-20. Results of sensitivity analyses were generally consistent with the main analyses.
Conclusions: This study demonstrates consistently superior effectiveness of QIVc compared with QIVe in preventing outpatient test-confirmed influenza over three seasons characterized by different circulating viruses and degrees of egg adaptation.

MF59®-Adjuvanted influenza vaccine in high-risk older adults during the 2019-2020 U.S. Season

Mahrukh Imran[1], Carrie W Mills[2], Kimberly W McDermott[2], Alex Dean[2], Alina Bogdanov[2], Ian McGovern[3], Ms Lisa Edgar[4], Mendel D. M. Haag[5]
[1]CSL Seqirus, [2]Veradigm, [3]CSL Seqirus, [4]CSL Seqirus, [5]CSL Seqirus

BACKGROUND: Individuals ≥65 years and those with certain medical conditions are at increased risk of influenza complications. Vaccination with non-adjuvanted egg-based quadrivalent influenza vaccines (QIVe) has shown to have lower effectiveness among individuals ≥65 years, likely due to immunosenescence. The MF59®-adjuvanted trivalent influenza vaccine (aTIV) was developed to provide adults ≥65 years with enhanced protection and evaluate the relative vaccine effectiveness (rVE) of aTIV vs. QIVe among high-risk older adults in the 2019-2020 season.

METHODS: This retrospective cohort study was conducted during the 2019-2020 US influenza season. The primary objective was to estimate rVE of aTIV vs. QIVe for prevention of any influenza-related medical encounters (IRME), outpatient IRME, and influenza- or pneumonia-related hospitalizations in adults ≥65 years with ≥1 CDC high-risk condition. A secondary objective evaluated specific CDC high-risk conditions. Exposure, outcome, and covariates were obtained from electronic health records linked to claims data. A doubly robust analysis combined inverse probability of treatment weighting (IPTW) with multivariate adjustment by age, sex, race, ethnicity, region, vaccination week, frailty, healthcare resource utilization and presence of high-risk condition(s).

RESULTS: 1,115,725 (58.5%) individuals received aTIV and 792,802 (41.5%) received QIVe. Overall, among those with ≥1 high-risk condition, aTIV was more effective than QIVe in preventing any IRME (23.6% (95% CI: 20.9 to 26.1)), outpatient IRME (23.3% (20.4 to 26.1)), and influenza- or pneumonia-related hospitalizations (19.0% (16.3 to 21.6)) The benefit of aTIV over QIVe was also observed for the individual high-risk conditions except for morbid obesity (BMI≥40, 4.8% of overall population) for which comparability was observed.

CONCLUSIONS: This study demonstrates benefit of aTIV compared with QIVe in prevention of IRMEs, outpatient IRMEs, and influenza- or pneumonia-related hospitalizations among individuals ≥65 years of age with CDC high-risk conditions.

Safety of a self-amplifying mRNA COVID-19 vaccine, ARCT-154

Dr Nhan Thi Ho[2], Dr Xuan-Hu'ng Nguyen[2], Dr Van Thu Nguyen[3], Dr Ly-Thi-Le Tran[4], Ms Katherine Young[1], Dr Steven G Hughes[5], Dr Igor Smolenov[5], Dr Pad Chivukula[5]
[1]CSL Seqirus, [2]Vinmec-VinUni Institute of Immunology, Vinmec Healthcare System, [3]CSL Sequris Inc., [4]Hi-tech Center, Vinmec-VinUni Institute of Immunology, [5]Arcturus Therapeutics Inc.

Improved COVID-19 vaccines are needed to counter the emergence of new SARS-CoV-2 variants, which are less susceptible to the neutralizing immunity induced by mRNA vaccines coding for previous variants of the SARS-CoV-2 virus. A large, combined phase 1/2/3a/3b/3c clinical trial in Vietnam, evaluated the safety, immunogenicity, and efficacy of ARCT-154, a novel sa-mRNA vaccine, compared with placebo or adenovirus-vectored COVID-19 vaccine (ChAdOx1-S/nCoV-19), administered as a two-dose primary series.

The phase 1/2/3a/3b study enrolled 17,108 adults over 18 years of age in the study; randomised equally to receive two doses 28 days apart of ARCT-154 or placebo. The Phase 3c cohort of 2,366 adults received a 2-dose primary series with ARCT-154 or ChAdOx1-S/nCoV-19. Reactogenicity data and unsolicited adverse events (AEs) were collected within 7 and 28 days after each vaccination, respectively. Serious and medically-attended AEs were collected during the entire study period. Particular attention was paid to symptoms of potential myocarditis or pericarditis, which have been associated with mRNA vaccines.

Serious and medically-attended AEs were reported at similar rates for ARCT-154, placebo, and ChAdOx1-S/nCoV-19 across the different phases, with relatively few considered causally related to the study treatments. No myocarditis or pericarditis cases were reported. The frequencies of solicited local and systemic AEs after ARCT-154 in the pooled phase 1/2/3a/3b studies were higher than after placebo. Frequency of solicited AEs after ARCT-154 and ChAdOx1-S/nCoV-19 was similar after the first dose and decreased in both groups after the second dose. Local AEs were mainly transient mild-moderate injection site pain or tenderness; the most frequent systemic AEs were mild-moderate fatigue and headache. In all groups, rates appeared to decrease with the second dose.

ARCT-154 was well tolerated when given as a two-dose primary vaccination series in adult subjects, with reactogenicity comparable to licensed ChAdOx1-S/nCoV-19. No safety concerns were raised by the available data.

66

Epidemiology of Buruli Ulcer in Victoria, Australia, 2017-2022

Dr Bhavi Ravindran[1,2], Ms Daneeta Hennessy[3], Dr Rosa Sa-Aga Banuve[2], Professor Tony Stewart[2], Professor Jodie McVernon[1], Ms Kylie Carville[1]
[1]Victorian Infectious Diseases Reference Laboratory, the Peter Doherty Institute for Infection and Immunity, [2]National Centre for Epidemiology and Public Health, Australian National University, [3]Communicable Disease and Epidemiology and Surveillance, Victorian Department of Health

Background
Buruli Ulcer (BU), caused by Mycobacterium ulcerans, is a neglected tropical disease that can cause a severe skin ulcer. BU remains endemic in sub-Saharan Africa and Melbourne, Australia. Using surveillance data, this study highlights the current epidemiology of BU within Victoria and identifies factors that influence disease severity.

Methods
All confirmed cases of BU from 2017-2022 in Victoria notified to the Department of Health were included. Age, sex, residence, WHO lesion severity (grade I least severe, grade III most severe), travel to endemic areas, and time of diagnosis and notification were collected. Predictors of diseases severity were assessed using logistic regression and variables with a p value <0.25 included in multivariate analysis.

Results
1751 cases of BU were notified (4.48 cases/100,000 population/year), with males slightly over-represented (968, 55%). Half of all notification were in the 16-60 year age group and 40% in individuals aged over 60 (8.19 cases/100,000 population/year). Just over half of the cases resided in established endemic areas (951, 56%), but an increasing proportion of cases were in new areas from 2020 to 2022 (7% to 19%). The majority of cases were category I (1301, 83%) with a small minority as grade III (95, 6%).

Multivariate analysis demonstrated risk factors for severe BU included being male (OR 1.52, p = 0.005), older age (OR 1.01, p = 0.018), residence in a new (OR 1.71, p = 0.033) or non-endemic area (OR 1.47, p = 0.015), and a longer diagnosis delay (OR 1.02, p = 0.001). Presentation with a characteristic ulcer (OR 0.58, p <0.001) was protective.

Conclusion
The expansion of BU endemic areas throughout Victoria challenges the notion of BU as a geographically localised disease. It calls for targeted action, particularly for cases and clinicians in new endemic areas and populations at risk of severe disease.

Household water, sanitation and hygiene facilities and child morbidity in coastal Bangladesh

Mr Shuvagato Mondal[1,2], Dr Kinley Wangdi[1,3], Dr Matthew Kelly[1], Professor Darren Gray[3], Dr Haribondhu Sarma[1]
[1]National Center for Epidemiology and Population Health (NCEPH), Australian National University, [2]Department of Fisheries and Marine Science, Noakhali Science and Technology University, [3]Population Health Department, QIMR Berghofer Medical Research Institute

The access to adequate water, sanitation and hygiene (WASH) facilities is crucial for promoting child health and reducing the prevalence of common childhood diseases among under-five children. The coastal region of Bangladesh is a vulnerable zone in terms of access to WASH facilities which increases the burden of infectious diseases among children. The present study aimed to investigate the impacts of lack of access to WASH facilities on the prevalence of fever, acute respiratory infections (ARI) or cough and diarrhea among under-five children in the coastal regions of Bangladesh. We conducted a cross-sectional study using a face-to-face questionnaire survey with married women having at least one under-five child from a total of 471 randomly selected households across three coastal districts of Bangladesh. We performed multivariable logistic regression model and estimated the adjusted odds ratio (AOR) to identify the contributing risk factors for the prevalence of fever, ARI/cough and diarrhea. Children from households having basic access to water, sanitation and hygiene facilities had 67% (AOR=0.33, 95% CI: 0.22–0.49), 42% (AOR=0.58, 95% CI: 0.38–0.89) and 34% (AOR=0.66, 95% CI: 0.45–0.97) lower risk of suffering from fever compared to those from households having limited to no services of WASH facilities. Lack of access to safe drinking water was identified as a significant risk factor for the prevalence of ARI/cough among children. Children from the households with basic water, sanitation and hygiene facilities had 69% (AOR=0.31, 95% CI: 0.19–0.52), 73% (AOR=0.27, 95% CI: 0.15–0.49) and 77% (AOR=0.23, 95% CI: 0.14–0.38) lower chance for the incidence of diarrhea respectively compared to those households with limited to no facilities. Our findings underscore the urgent need of ensuring adequate access to WASH facilities in mitigating the burden of childhood morbidity in the coastal region of Bangladesh.

Queensland ABLV vaccinations and relationships with human activity, flying-fox ecology and climate

Ms Amanda Davis[1,2,3,4]
[1]Griffith University, [2]Bat Conservation and Rescue Queensland, [3]DAMA Australia, [4]Australasian Bat Society

The number of Australian Bat Lyssavirus (ABLV) vaccinations in Queensland has been increasing, based on 5 year totals. Total ABLV vaccinations administered by Queensland Health were 10% higher during the years 2018 to 2022 than 2009 to 2013. The majority of vaccinations are provided to members of the public who have received a bite or a scratch from a flying-fox. Increases in vaccinations lead to increased overall vaccine costs, may delay medical staff delivering other healthcare services, and increase the utilisation of centralised risk management resources.

A recent research study applied statistical analysis methods to identify the strength of the relationships between the monthly number of ABLV vaccinations in each of Queensland's Hospital and Health Services (HHSs), and factors identified in the academic literature as having have an impact on the number of human-bat interactions, which can lead to bat bites. Potential factors included changes in land use, human population density, flying-fox populations, roost locations, availability of flying-fox habitat, temperature, fire scar area, and the months when flying-fox populations include recently-weaned juveniles or females with dependent young.

The 'standout' finding from negative binomial regression modelling was the strong statistical relationship between monthly ABLV vaccinations and human population density in Queensland's southeastern HHSs. Although six of Queensland's HHSs account for 75% of ABLV vaccinations, three distinct groupings of HHSs emerged, based on similarity and strength of correlated factors.

Since population density in Queensland is predicted to increase, particularly in southeastern HHS areas, it may be beneficial to consider approaches which can cost-effectively reduce the potential for (unvaccinated) human-bat interactions which lead to bites and scratches, as alternatives to the likely increased cost of administering ABLV vaccines.

Reference:
Davis, A.J. (2023). Can flying-fox habitat restoration and protection be a tool in public health management in Queensland? [Unpublished manuscript]. Griffith University.

Q fever infections associated with pet food manufacturing

Dr Alexandra Uren[1], Dr James Harris[1], Dr Vicki Slinko[2], Ms Fiona Vosti[2], Dr Megan Young[1]
[1]Metro North Public Health Unit, [2]Gold Coast Public Health Unit

Background: A cluster of Q fever cases notified to health authorities in South-East Queensland in 2023 were identified as being linked to pet food manufacturing facilities. This study aimed to identify the recent extent of the issue and further explore the risk of infection associated with pet food manufacturing.
Methods: The Queensland Government Notifiable Conditions System was used to identify Q fever cases linked to pet food manufacturing in the Metro North and Gold Coast Hospital and Health Service areas of South-East Queensland between 2020 and 2023. Data on each case from routine public health follow up was collected and descriptively analysed.
Results: Twelve confirmed Q fever infections (17% of total cases) were linked to four pet food manufacturing facilities over the study period. Eleven cases reported direct or environmental exposure to raw meat and animal products. None were previously vaccinated for Q fever.
Conclusion: These cases demonstrate the increased risk of Q fever infection as part of the pet food manufacturing process, highlighting an underappreciated preventable occupational risk, which can be mitigated with the use of pre-screening and vaccination of workers. Workplace risk assessments should be used to identify at-risk workers in all professions at pet food manufacturing facilities.

Safety and immunogenicity of Q fever vaccine in children aged 10-15 years

Dr Alexa Dierig[1], Ms Fatima Gondalwala[1], Mrs Rosemary Joyce[1], Dr Lucy Deng[1,2], Ms Belinda Smith[1], Ms Chelsea Nguyen[3], Prof John Stenos[3], Prof Stephen Graves[3], Prof Nicholas Wood[1,2]
[1]National Centre for Immunisation Research and Surveillance, The Children's Hospital at Westmead, [2]University of Sydney, The Children's Hospital at Westmead Clinical School, [3]The Australian Rickettsial Reference Laboratory, Geelong University Hospital

Q fever is a zoonotic disease caused by Coxiella burnetii, a bacterium found in a wide range of wild and domestic species. It is associated with significant morbidity and mortality in both adults and children. Only one Q fever vaccine, Q-Vax, is licensed in Australia available for persons >15 years of age. Children <15 years at risk of contracting Q fever are therefore unable to be vaccinated. Our pilot study aimed to investigate the safety and immunogenicity of Q-Vax in children aged 10-15 years.
A prospective, non-randomised, two-staged, pilot study, recruiting children aged 10-15 years was undertaken in rural NSW. All children underwent pre-vaccination screening according to national Q fever vaccination guidelines. Stage 1 children received 20% (0.1ml) of Q-vax subcutaneously, and the remaining 80% (0.4ml) 48-96 hours later if no serious adverse events occurred. Stage 2 children received the full dose (0.5ml) in a single setting. Solicited and unsolicited adverse events were monitored over 7 days. Follow-up visits to assess safety and to measure Coxiella burnetii phase 2 and 1 antibodies by immunofluorescence assay occurred at 28-42 days, 6-7 and 12-13 months.
Twenty children, 10 in each stage, were vaccinated. No serious adverse events occurred. Local injection site reactions were the most common: pain in 19/20 (95%) and redness in 13/20 (65%). Headaches, drowsiness and muscle pain were seen in 7/20 (35%). Immunogenicity data at 28-42 days showed total antibodies in phase 2 detected in 14/20 (70%), and in phase 1 in 4/20 (20%). Results from the 6-month follow-up will be available in April 2024.
Q-Vax was considered safe in our small cohort of children. An immunological response four weeks after vaccination was seen in the majority of children. Larger studies are needed to confirm safety and immunogenicity before age expansion of Q-Vax to protect children <15 years old.

Surveillance and genomic characterisation of V. cholerae in South-East Queensland River waterways

Dr Murari Bhandari[1,2], Dr. Irani U Rathnayake[1], Mr. Lawrence Ariotti[1], Mr. Brett Heron[1], Adj. Prof Flavia Huygens[2], Dr. Rikki Graham[1], Ass. Prof Amy V Jennison[1]
[1]Queensland Health, [2]Centre for Immunology and Infection Control

Cholera is a major public health problem in developing and underdeveloped countries, however, it remains of concern to countries like Australia as international travel related or locally acquired cholera or diarrheal disease associated cases are still reported. Cholera is mainly caused by cholera toxin producing toxigenic O1 and O139 serogroup Vibrio cholerae. While most toxigenic V. cholerae cases in Australia are thought to be caused by internationally acquired infections, Australia does have its own indigenous toxigenic and non-toxigenic O1 and non-O1, non-O139 V. cholerae strains. In Australia studies in the 1970's and in 2012 reported that the environment including south-east Queensland riverways were a reservoir for toxigenic V. cholerae strains linked to local cases, but further surveillance on environmental reservoirs had not been reported in the last 10 years. We performed a study of sites previously related to outbreaks and surveillance to detect the presence of V. cholerae using PCR in conjunction with MALDI-TOF and whole genome sequencing. In this study, we were able to detect non-O1, non-O139 V. cholerae in all ten sites visited with all sites containing toxigenic strains. Among 133 non-O1, non-O139 V. cholerae isolates, 22 were whole genome sequenced and compared with previously sequenced Australian O1 and non-O1, non-O139 V. cholerae strains. Genetic similarity among V. cholerae strains from different sites, and the prevalence of the ctxB gene indicates the survival ability and transferability of toxin genes within serogroups in the environment. The majority of V. cholerae strains have acquired pathogenicity islands, however, lack seventh pandemic islands. None of the samples tested grew O1 or O139 strains that are responsible for epidemic disease. Since non-O1, non-O139 V. cholerae can be pathogenic, continuous surveillance is required to assist in rapid identification of sources of any outbreaks and to assist public health authorities in implementing control measures.

Operationalising One Health in Australia

Dr Adriana Milazzo[1], Dr Alana Hansen[1], Dr Elizabeth Hoon[1], Dr Priyanka Multani[1], Dr Jingwen Liu[1], Dr Anne-Lise Chaber[1]
[1]The University Of Adelaide

Context and aim
Since the onset of the SARS-CoV-2 pandemic there has been growing interest in emerging infectious diseases, particularly those of zoonotic origin. Prevention and preparedness for future similar pandemics calls for a transdisciplinary approach to disease surveillance, and collaboration between animal health, human health and environment sectors as embodied in the One Health paradigm. In Australia, it is anticipated that this approach will be part of the new national Centre for Disease Control.

Methods & analysis/research findings
We held a stakeholder workshop with representatives from human health, animal health and environment sectors to explore how One Health can be operationalised in Australia, using the state of South Australia as a case study. Stakeholders were recruited via cluster sampling of 25 relevant organisations identified through professional networks and snowballing. We used the Quadripartite's "One Health Joint Plan of Action (OH JPA)" Theory of Change to underpin the workshop discussions around cross-sectoral communication, collaboration, coordination and capacity building which were recorded, transcribed and analysed thematically.

Outcomes
Our findings highlight that for these stakeholders priorities for successful operationalisation of One Health include: equitable governance model across sectors, tailored mechanisms and processes to strengthen inter-sectoral collaboration, adequate resourcing, strong political will, better One Health education opportunities, and investments in modern data systems to aid in improved data access and disease surveillance.

Future actions
The findings will be combined with other parts of this program of work (scoping review, survey and targeted stakeholder interviews) to inform policy makers, service providers and community about the current state of play in One Health operationalisation in Australia. Future actions should adopt a stepwise approach to adapt the OH JPA, focusing on expanding stakeholder engagement and enhancing multi-sectoral coordination. This aims to optimize resource use and prioritize key activities for implementing One Health at the national level.

Who is exposed to Hendra virus in northern NSW? An epidemiological review

Ms Keeley Allen[1], Ms Genevieve O'Neill[2], Mr Robin Auld[2], Dr Joanne Taylor[1], Professor David Durrheim[1]
[1]Hunter New England Population Health Unit, Hunter New England Local Health District, NSW Health, [2]North Coast Population and Public Health Directorate, NSW Health

Background
Hendra virus is an important zoonotic pathogen in Australia with significant consequences for human and animal health. Understanding the characteristics of previous equine Hendra virus contacts can assist in targeting public health messaging to protect communities. We describe the epidemiology of all human contacts of confirmed Hendra virus cases in NSW.

Methods
Human contacts of all confirmed NSW equine Hendra virus cases were identified from the NSW Notifiable Conditions Information Management System (NCIMS). Human contact information was extracted from NCIMS, including contact interview, risk assessment of the Expert Advisory Group, and outcomes of public health follow-up. Descriptive statistics and frequency distributions were calculated for sociodemographic characteristics, relationship to the horse, activities with the horse that potentially exposed the contact, and public health outcomes.

Results
A total of 125 contacts were identified from 27 confirmed equine Hendra virus cases in NSW. Contact events occurred between 2006 and 2023, with peaks in the winter months of 2011, 2013, and 2017. The median age of human contacts was 46.5 years (range: <1 year-78 years). Human contacts most often reported occupational relationships to horses such as veterinarians or stable hands, or ownership, or family members of owners, of domestic horses. Most cases were assessed as low, negligible, or nil risk of Hendra virus infection. Higher risk activities reported by contacts most often occurred without adequate PPE use during veterinarian procedures or at the point of and immediately following the horse's death. Eleven contacts (8.8% of all contacts) were assessed as high or high-moderate risk and six (4.8%) received monoclonal antibodies treatment. No human contacts in NSW developed Hendra virus infection.

Conclusions
The findings of this study highlight opportunities to target meaningful infection prevention and control advice and public health messaging, empowering people to protect themselves against Hendra virus infection.

Protecting the community against Q Fever: A community engagement and media campaign

Dr Shereen Labib[1], Mr Gerard Callinan[1], Dr Garang Dut[1], Ms Lamees Alafeshat[1], Ms Amelia Evision[1], Ms Rachel Frescura[1], Ms Winnie Maina[1], Dr Alex Tai[1], Ms Annelies Titulaer[1], A/Prof. Alyce Wilson[1,2,3,4]
[1]Gippsland Region Public Health Unit, [2]Burnet Institute, [3]Melbourne School of Population and Global Health, University of Melbourne , [4]School of Public Health and Preventive Medicine, Monash University

Background

Gippsland is a rural region in southeastern Victoria with a population of over 300,00 people spread across six municipalities. Dairy farming and agriculture are key industries. In 2023 Gippsland had the highest proportion of Q fever cases in Victoria, with 34.4% of total cases while representing only 4.6% of the Victorian population. The Gippsland Region Public Health Unit (GRPHU) launched a community engagement and media campaign to raise awareness, improve vaccination uptake and reduce further cases of Q fever.

Process

Stakeholders and potential partners were sought based on involvement in Q fever research and clinical management, including health providers, industry and the community. Engagement activities included health promotion stalls at various agriculture shows and women in farming events, as well meetings with the dairy farming peak body, WorkSafe, research institutions, primary health network and GP clinics. The media component included radio interviews and a promotional video, shared via health services' webpages and social media, articles in local papers, and the local farmers' newsletter. Fact sheets and posters were produced and circulated to stakeholders and shared during events. Community members were asked about their understanding of Q fever and prevention measures including vaccination at local events.

Analysis

Local testing and vaccination data was limited. Whilst community members were aware of Q fever, poor understanding of disease severity and low vaccination rates were found. Vaccination barriers included access, cost, and time. Farmers were unaware of local vaccination services and misconceptions about cost prevented uptake.

Outcomes

Greater investment in screening and vaccination services to reduce cost and increase access is essential. Ongoing engagement with GPs and the dairy farming industry is needed to bolster Q fever awareness and promote increased vaccination uptake to reduce the disproportionate burden of Q fever in Gippsland.

6B -
Indigenous health, Great Hall 3 - Break out, June 13, 2024, 11:00 - 12:30

234

Improving Childhood Vaccination Coverage for Aboriginal Families: Vaccine Access and Assessment Tool

Dr Bianca Middleton[1], Ms Kristy Crooks, Professor Margie Danchin, Dr Jessica Kaufman
[1]Menzies School Of Health Research

CONTEXT: Following the COVID-19 pandemic, routine childhood vaccine coverage in Australia has dropped in many communities and regions, especially among Aboriginal and Torres Strait Islander children. The reasons for this include reduced vaccine confidence and trust, and missed or delayed vaccination due to practical challenges like rural and remote health workforce shortages.

The Vaccine Barriers Assessment Tool (VBAT) was developed by the Murdoch Children's Research Institute to measure vaccine access and acceptance, the two main barriers to vaccination for children <5 years old in Australia. The VBAT was validated through a rigorous process that included Australian parents with different cultural and socioeconomic backgrounds. However, it did not specifically target Aboriginal and Torres Strait Islander parents. Development of a culturally appropriate Vaccine Access and Acceptance Tool (VAAT) for Aboriginal families is a priority.

AIM: To explore the appropriateness and acceptance of a measurement tool to assess vaccine access and acceptance among Aboriginal families in the Northern Territory and in the Hunter New England region of NSW, and to work with Aboriginal parents and caregivers to modify and adapt the existing tool to suit their needs and preferences.

METHODS: We will conduct key informant interviews with health providers to identify perceived vaccine access and acceptance barriers faced by Aboriginal families and explore the applicability of a measurement tool in their settings. We will then conduct family focus groups with Aboriginal parents/ caregivers to adapt the VAAT to reflect their experiences and suit their needs and preferences.

EXPECTED OUTCOMES: Development of a culturally appropriate Vaccine Access and Assessment Tool for Aboriginal families in the NT and NSW. The VAAT will be available to monitor drivers of under-vaccination for use and validation for Aboriginal children in different communities across Australia, and to support investment in targeted and cost-effective strategies to improve childhood vaccination coverage.

Research with Aboriginal and Torres Strait Islander Communities: all participating Aboriginal Community Controlled Health Services and Aboriginal parents and caregivers have given permission for this data to be presented at CDIC, Brisbane.

Embedding an Aboriginal Health Team into public health

Miss Naomi Nelson[1], Ms Dannielle Nelson[1], Mrs Debbie Thomas[1], Mrs Paula Johnstone[1], Dr Anstasia Phillips[1,2,3], Dr Benjamin Scalley[1], Ms Joanna Fagan[1]
[1]Boorloo (Perth) Public Health Unit, North Metropolitan Health Service, [2]National Centre for Immunisation Research and Surveillance , [3]Telethon Kids Institute

Background:
Aboriginal people have higher rates of many infectious diseases compared to non-Aboriginal people in Perth. Aboriginal children are at higher risk of acquiring a vaccine preventable disease and are 2.3 times more likely than non-Aboriginal children to present to hospital for these diseases. Among sexually transmitted diseases, 20.08% of the total Infectious Syphilis notifications reported in Perth metropolitan region in 2023 were Aboriginal people. To address these disparities, culturally safe approaches are required in consultation with community, and it is essential that initiatives are developed and led by Aboriginal people.

Program:
Boorloo (Perth) Public Health Unit (PHU) has embraced Aboriginal leadership and developed a strong and effective team, the Boorloo PHU Aboriginal Health Team (AHT). The Boorloo PHU AHT currently comprises 8 full time equivalent Aboriginal Health Liaison Officers, Project Officer and medical cadet, all led by the Aboriginal Health Team Co Ordinator, with support from the wider team.

Outcomes:
Since its inception in 2020, The AHT has implemented and embedded 3 immunisation programs including Moorditj (Strong) Start (a pre-call program to enable timely immunisation for the best start to a baby's life), Moorditj Kids (follow-up of overdue children and home visiting vaccination service), and Moorditj Teens (a program focusing on improving adolescent vaccination rates).
The team assists with follow up and contact tracing of notifiable diseases in Aboriginal people. The team effectively engages key stakeholders and facilitates engagement with community, providing a culturally sensitive approach and appropriate communication to achieve optimal health outcomes. The AHT conducts street outreach and home visits to improve engagement with health services and access to treatment.
Conclusion:
Actively engaging the Aboriginal community in decisions about their health care and offering alternative service delivery models in a culturally safe program is a key in improving local health services, and increasing Aboriginal peoples trust in, and access to, care.

Boost the Booster: improving COVID-19 booster vaccinations in Aboriginal Elders

Miss Tiana Parashko[1,2], Ms Sharon Brown[1], Dr Vicky Sheppeard[1], Ms Leigh Mcindoe[1], Ms Sandra Chaverot[1], Ms Anna Crawford[1], Ms Anne Allen[1], Ms Tracey Papa[1]
[1]Public Health Unit, Population and Community Health, South Eastern Sydney Local Health District, [2]Equity and Prevention Service, Population and Community Health, South Eastern Sydney Local Health District

Background:
The 2021 national COVID-19 vaccination roll out identified Aboriginal and Torres Strait Islander people as a priority population. As of 2023 approximately 83% of adults living in NSW 30 years and older had received a TGA approved COVID-19 booster (third) dose compared to 64.7% of Aboriginal Australians. Boost the Booster aims to yarn with local Aboriginal Elders to identify the local Aboriginal community's attitudes and perceived barriers to accessing COVID-19 booster vaccinations.

Methods:
The project adopted a mixed methods study design and will be broken up into three parts: South Eastern Sydney Local Health District (SESLHD) Aboriginal Health Worker Network (AHWN) scoping; community group yarning sessions; and designing and testing devised strategies. The AHWN play a critical role in providing insight into conversations had with clients about COVID-19 vaccinations. Yarning sessions in March 2024, accompanied by a REDCap questionnaire with Aboriginal Elders will further delve into attitudes and perceived barriers and enablers to accessing vaccinations. Devised and tested strategies to improve booster vaccinations will be co-designed with community during the yarning sessions and through the REDCap questionnaire.

Results:
In May 2023 the AHWN identified barriers for clients receiving boosters, including being unsure of the benefits, and already having COVID-19 and not believing a booster is needed. Strategies to overcome barriers to booster vaccination will be developed using the findings from thematic analysis of the qualitative data at the group yarning sessions in March 2024 and quantitative data analysis from the REDCap questionnaire.

Conclusion:
We anticipate that translating our findings into practice through co-design of tailored strength-based strategies with Aboriginal communities in SESLHD will lead to increased uptake of COVID-19 boosters amongst Elders.

Community permissions:
Yarning sessions will commence in March 2024 led by Aboriginal researchers. Both the internal SESLHD Aboriginal Advisory Group and an external Aboriginal Reference Group have been consulted in the study design. Participant information and consent forms for yarning session participants will identify the potential for de-identified findings to be published.

406

Supporting Tuberculosis Medication Adherence in Remote Aboriginal and Torres Strait Islander Communities

Ms Harmonie Wong[2], Dr. Jessica Leonard[1], Mr Damien Shen[2], Ms Delvene Vivian[2]
[1]Aboriginal Health Council of South Australia, [2]SA Health - Department for Health and Wellbeing

Background:
Tuberculosis (TB) has been an emerging issue in remote Aboriginal and/or Torres Strait Islander communities in Australia, with an increased number of active TB cases identified in Aboriginal people in South Australia since 2022. Strategies that address social determinants of health and health system factors can improve TB management. Adherence refers to taking medications as prescribed to successfully treat and prevent transmission of TB.

Objectives:
This literature review aims to identify mechanisms to support medication adherence in rural and remote Aboriginal and/or Torres Strait Islander communities and propose a culturally appropriate and informed framework to support this response.

Methodology:
The search included published and grey literature in English language, identified using online electronic databases and handsearching. Relevant studies addressed tuberculosis and/or medication adherence in Aboriginal and/or Torres Strait Islander peoples both in Australia and Aboriginal peoples globally.

Results:
A conceptual model to support treatment adherence includes both patient-specific and health system factors. Patient-centred TB care may include Indigenous Health Workers, community leaders, traditional healers, and family members. This multi-disciplinary care can improve rapport and trust and reduce stigma, however, requires sustainable local staffing and training. Care that addresses social and economic components of wellbeing, including nutritional support and housing, can improve medication adherence. Use of appropriate local language and concepts can support health literacy. This is particularly important given the complexity of treatment regimens and to reinforce the benefits of latent TB treatment to currently asymptomatic individuals.

Discussion/Conclusion:
A holistic, multifaceted, tailored approach that recognises Aboriginal and/or Torres Strait Islander leadership, addresses the social determinants of health, creates a sustainable and accessible health service, acknowledges cultural safety, and promotes strong relationships through multidisciplinary collaboration and communication can improve TB medication adherence in Aboriginal and/or Torres Strait Islander communities. Community education and engagement as well as decolonising research methodologies are also crucial to TB management.

Evaluation of Indigenous status completeness in vaccine preventable disease notifications in Australia

Ms Eva Molnar[1,2], Ms Kaitlyn Vette[1], Dr Caitlin Swift[1], Dr Joanne Jackson[1], Ms Katrina Clark[1], Dr Aditi Dey[1,3], Associate Professor Stephen Lambert[1], Professor Kristine Macartney[1,3], Ms Anna-Jane Glynn-Robinson[2], Associate Professor Frank Beard[1,4]
[1]National Centre for Immunisation Research and Surveillance, [2]National Centre for Epidemiology and Population Health, The Australian National University , [3]Speciality of Child and Adolescent Health, Sydney Medical School, The University of Sydney, [4]School of Public Health, The University of Sydney

Introduction:
Accurate Aboriginal and Torres Strait Islander status (hereafter, respectfully Indigenous status) for vaccine preventable diseases (VPDs) in NNDSS is important to evaluate the effectiveness of immunisation programs addressing Indigenous VPD disparities. We evaluated Indigenous status completeness (percentage of notifications with known Indigenous status), and influencing factors, for selected VPDs in NNDSS (2010–2019).

Methods:
Mixed-method approach including: review of published and grey literature; analysis by VPD, notification year, jurisdiction, age group and remoteness; online survey; interviews with key informants.

Key results:
National level Indigenous status completeness for VPDs with CDNA target of 95% was above target for Haemophilus influenzae type b, measles, invasive meningococcal disease and invasive pneumococcal disease (<5 and ≥50yrs) and ≥91% for hepatitis A, newly acquired hepatitis B and pertussis (<5yrs). For VPDs with 80% target, completeness was ≥90% for diphtheria, mumps, rubella and tetanus, 80% for IPD (≥5-<50yrs), and below target for unspecified hepatitis B (54%), laboratory-confirmed influenza (47%), pertussis (≥5yrs; 60%); and rotavirus (71%). Large jurisdictional variations were observed for rotavirus (7%-99%), unspecified hepatitis B (33%-99%), pertussis ≥5 years (47%-95%) and laboratory-confirmed influenza (6%-99%). Completeness was ≥90% for all VPDs in Northern Territory (NT), and ≥89% in Western Australia (WA). Indigenous status completeness at national level increased with increasing remoteness of residence area.
Key barriers to Indigenous status completeness include limited public health authority capacity to follow-up missing data and absence of Indigenous status field on most pathology request forms.
Key reasons for high completeness in NT and WA are resource intensive follow-up of all notifications and manual cross-checking other databases where Indigenous status missing.

Conclusion:
Indigenous status completeness varied by condition and jurisdiction. To optimise Indigenous status completeness, a mix of strategies is required, including ensuring comprehensive capture of status at source and effective transfer between primary care, hospital, laboratory and public health settings.

Learning from Immunisation Services at Victoria's Aboriginal Community Controlled Health Organisations.

Dr Jenny Royle[1,2], Ms Renee Owen[3], Ms Amy Creighton[2, 4], Prof James Ward[2, 5]
[1]University of New South Wales (UNSW), [2]Multicentre NHMRC CRE, Immunisation in understudied and special risk population groups. University of New South Wales (UNSW), [3]Aboriginal Health Unit, Barwon Health, [4]Poche Centre for Indigenous Health, University of Queensland (UQ), [5]South Australian Health and Medical Research Institute (SAHMRI)

Background: Timely immunisations minimise the period individuals are susceptible to vaccine preventable diseases. Many Aboriginal and Torres Strait Islander people access Aboriginal Community Controlled Health Organisations (ACCHOs) for culturally safe Primary Health Care, including immunisations. The aim of this study is to describe immunisation practices at ACCHOs in order to understand culturally safe approaches to immunising Aboriginal and Torres Strait Islander peoples.

Methods: Project development involved extensive consultation with staff at Victoria's ACCHOs, Health Care Providers and researchers in Aboriginal Health and Immunisation services. The project utilised strengths-based qualitative research by semi-structured interviews with staff at Victoria's ACCHOs. Themes were derived by inductive content analysis.

Approval: The project, "Identification of culturally sensitive approaches to improve immunisation coverage and timeliness of Aboriginal and Torres Strait Islander children and their families", was approved by HREC UNSW (HC14140), the Victorian Aboriginal Community Controlled Health Organisation (VACCHO), the individual participating ACCHOs and each staff member interviewed.

Results: 18 of 20 (90%) ACCHOs in Victoria providing immunisations participated. 78 interviews were conducted between 2015-2019 involving 93 staff. 32 (34%) staff identified as Aboriginal and/or Torres Strait Islander.
Themes describing the ACCHO immunisation work were:

1. Staff knowledgeable about Community and Culture
2. Staff knowledgeable about client's experiences in other health services
3. Trust (in the ACCHO)
4. Holistic (approach)
5. Importance of Aboriginal staff
6. Community and Cultural education of new staff
7. Immunisation processes
8. Other

Conclusion: The staff at Victoria's ACCHOs integrate immunisations in a culturally safe and holistic model for the children, families and individuals attending their services. Knowledge and understanding of the themes describing culturally safe ACCHO healthcare is invaluable to other health organisations (eg GP clinics, council/shire services, hospitals and pharmacies) who offer immunisations to Aboriginal and Torres Strait Islander peoples.

Strategies to address COVID-19 vaccine hesitancy in First Nations Peoples

Miss Adeline Tinessia[1], Miss Katrina Clark[2], Miss Madeleine Randell[1], Professor Julie Leask[1], Dr Catherine King[1]
[1]University Of Sydney, [2]Hunter New England Public Health Unit

Background: High vaccine uptake is crucial for managing COVID-19 by reducing severe illness, hospitalisation, and death. Vaccine hesitancy can significantly affect vaccination rates. First Nations peoples face disproportionate COVID-19 risks due to social, economic, and healthcare disparities. Limiting the effect of COVID-19 on First Nations peoples requires understanding the strategies to address vaccine hesitancy and increase vaccine uptake among First Nations peoples. This systematic review examined strategies to address COVID-19 vaccine hesitancy among First Nations peoples globally.

Methods: A systematic review was conducted. Searches were undertaken in OVID MEDLINE, OVID EMBASE, OVID PsycINFO, CINAHL and Informit. Searches were date-limited from 2020. Items included in this review provided primary data that discussed strategies used to address COVID-19 vaccine hesitancy in First Nations.

Results: The search yielded 1,828 records. Title and abstract screening were conducted on 997 records, and full-text review was conducted on 79 records. A total of 17 reviews were included in the review, including mixed-methods studies, observational studies, qualitative studies, pre-post studies and a case study. We identified several key strategies across four countries - Australia, the USA, Canada, and Guatemala. These included understanding communities' needs, collaborating with communities, tailored messaging, addressing underlying systemic traumas and social health gaps, and early logistics planning.

Conclusion: The inclusion of First Nations-centred strategies to reduce COVID-19 vaccine hesitancy is essential to delivering an equitable pandemic response. Implementation of these strategies in the continued effort to vaccinate against COVID-19 is integral to ensure that First Nations people are not disproportionately affected by the disease.

Exploring health service and health professional factors influencing Indigenous vaccination uptake

Ms Alison Walton-Blane[1,2,6], Ms Chloe Beckwith[2], Ms Vivienne Nguyen[2], Ms Rachel Graville[2], Mr Fong Hei Lau[2], Ms Mima Bull[3], Ms Deanne Eades[4], Ms Jenna Greaves[5], Aunty Vanessa Hart, Miss Ananda Buckley[1], Dr Eliza Razak[1], Mrs Tilsa Guima Chinen[1], Associate Professor Anne-Marie Eades[1]
[1]University Of Technology Sydney, [2]Curtin University, [3]South West Aboriginal Medical Service, [4]South West Aboriginal Medical Service, [5]South Coastal Babbingur Mia, [6]University of Notre Dame

Background: Immunisation is essential for preventing the spread of communicable disease. Yet, there is a significantly higher rates of vaccine preventable disease in Indigenous people, which is linked to low vaccination uptake. Health professional, service and accessibility factors are known to influence vaccination uptake, however no previous research has synthesised how primary health-care service and health-care professional factors can influence rates of Indigenous vaccination uptake.
Aim: The aim of this scoping review was to synthesise and determine the health service and health professional factors that influence general vaccine uptake in Australia and New Zealand Indigenous populations.
Methods: The scoping review methodology underpinned by the Arksey and O'Malley (2005) framework was used. Journal articles were systematically searched from six online health databases (Web of Science, ProQuest, Medline, Embase, CINAHL and Cochrane). Hand searching was completed using cite forward searching and searching reference lists. Studies were included if they were published between January 2013 to October 2023 and examined health service and health professional factors that influence general vaccine uptake in Indigenous communities from Australia and New Zealand. Thematic analysis was performed on the final 16 articles to identify patterns in data and create themes.
Results: Three key themes were identified 1) health care professional behaviours and attitudes, 2) cultural safety and awareness, and 3) accessibility. Each main theme had relevant sub-themes and produced a total of 19 barriers and 16 enablers to Indigenous vaccination that were related to health service or health professionals.
Conclusion: Findings from this study have identified key health service and health professional factors that influence vaccine uptake. Specifically quality HCP recommendations, knowledge of vaccination issues and recommendations amongst HCP and Indigenous communities, effective education and culturally safe service approaches are identified enablers that may improve the low vaccination coverage in Australia and New Zealand's Indigenous populations.

Improving Immunisation Rates of Aboriginal Children at Perth Children's Hospital

Ms Maria Xavier[1], Ms Anne Bourke[1], Prof Asha Bowen[1], Dr Anita Campbell[1], Ms Bryden Campbell[1], Dr Carla Drake-Brockman[1], Ms Mel Robinson[2], Dr Ushma Wadia[1], Ms Judy Mathews[1]
[1]Stan Perron Immunisation Centre, Infectious Diseases Department, Perth Children's Hospital, [2]Child and Adolescent Health Service

The Immunisation Service at Perth Children's Hospital (PCH) appointed a Registered Immunisation Nurse position in July 2023 with the goal of improving vaccination uptake by Aboriginal families. This project was externally funded by the Communicable Disease Control Directorate (CDCD), Western Australia (WA) and is based at the Stan Perron Immunisation Centre (SPIC). This is a nurse-led walk-in clinic, open on weekdays, to provide immunisation services for all patients, their families, and visitors to PCH.

The project commenced in July 2023 and involves a dedicated Immunisation Nurse conducting daily immunisation reviews for all Aboriginal children attending PCH outpatient appointments, identified through an electronic database. From these reviews, children who are due or overdue scheduled vaccines on the WA immunisation program including additional vaccines recommended for Aboriginal children are identified. The Immunisation Nurse has a yarn with the identified families, offers opportunistic education, and facilitates access to recommended vaccines through SPIC. This position also provides a first point of contact for all internal enquiries pertaining to immunisations for Aboriginal children and immunisation support for the Aboriginal Health service, Koorliny Moort at PCH.

In the 12 months preceding the establishment of this role at PCH, Aboriginal and Torres Strait Islander patients comprised on average of 5% (11/219, ± 2.94 standard deviation) of total SPIC attendances. In the first 6 months after commencement of the position, attendance by Aboriginal children and families at SPIC markedly increased to an average of 26% (70/273, ± 10.5 SD). Nearly 10% of all SPIC attendances resulted in a parent being opportunistically vaccinated. The Immunisation Service's findings indicate that establishing a dedicated position working to support families towards timely vaccination has demonstrated the capacity to improve culturally appropriate access to vaccinations and improve immunisation coverage across the Aboriginal patient cohort at PCH.

Progress towards elimination of trachoma as a public health problem in Australia

Ms Carleigh Cowling[1], Ms Alison Jaworski[1], Professor Susana Vaz Nery[1], Professor John Kaldor[1], Mr Noorul Absar[1], Mr Sergio Sandler[1]
[1]Kirby Institute

Context and aim
Trachoma is the world's leading infectious cause of preventable blindness. Australia is the only high-income country with endemic trachoma, found in remote communities in the Northern Territory, South Australia and Western Australia. In 2022 trachoma prevalence fell below 5% in each formerly endemic state/territory. Australia must maintain overall trachoma and trichiasis prevalence below endemicity levels for two years, as well as demonstrate appropriate health promotion and environmental health systems, before applying for World Heath Organization (WHO) validation of elimination as a public health problem.

Methods
WHO grading criteria was used to diagnose trachoma in Aboriginal children aged 5–9 years in at-risk communities. Trichiasis surveillance data is combined from public health surveillance, visiting optometry services, and Medicare Benefit Schedule information. Information about activities to promote facial cleanliness and improve environmental health are based on service workplans and activity reports.

Research findings
88 communities were considered at-risk of trachoma in 2023, 67 of which were screened. Overall trachoma prevalence was 2.5% in the Northern Territory, 1.8% in Western Australia and 0.0% in South Australia. Hyper-endemic trachoma (>20% prevalence) is an ongoing concern in a small number of communities. Trichiasis prevalence in screened persons aged 15+ years was 0.07%. Culturally tailored health promotion activities target children, parents and service providers, however evidence remains descriptive. Standardising measures of environmental improvements is an ongoing challenge.

Outcomes and future actions
As Australia moves towards the elimination of trachoma as a public health problem, efforts are needed to redesign post-elimination surveillance to early identify potential recrudescence, sustainably address known environmental risk-factors, and maintain trichiasis surgery pathways. Enhancing community-led and cross-sectorial action is essential to achieving and sustaining elimination progress.

6C -
Mpox, TB, vaccination, and more, Mezzanine 1, June 13, 2024, 11:00 - 12:30

123

An evaluation of mpox vaccine delivery models in North Eastern Melbourne

Dr Claire Gordon[1,2,3], Ms Hibaq Ahmed[1], Mr Thomas Hounslow[1], Ms Nicole Chatterton[1], Dr Annaliese van Diemen[1]
[1]North Eastern Public Health Unit, Austin Health, [2]Department if Infectious Diseases and Immunology, Austin Health, [3]Department of Microbiology and Immunology, University of Melbourne at the Peter Doherty Institute for Infection and Immunity

Context and aim:
In response to the global outbreak of mpox, the Victorian Department of Health commissioned the North Eastern Public Health Unit (NEPHU) to administer a mpox immunisation program. Established in 2020, NEPHU serves a metropolitan population of 1.8 million people in a broad geographical area. NEPHU's mpox immunisation program aimed to provide equitable access to free and anonymous mpox vaccination in clinics located across NEPHU's catchment.

Process:
NEPHU partnered with four community health organisations (CHOs; Your Community Health, Dianella Plenty Valley Health, EACH and cohealth) to deliver mpox vaccination at >30 fixed site and outreach locations across the catchment. The delivery model changed during the program: Pre-January 2023, clinics were dual COVID-19 and mpox vaccine clinics; January 2023-April 2023, clinics were standalone mpox vaccine clinics; April 2023-June 2023, three CHOs incorporated mpox vaccination into routine health services. Outreach clinics were held at a sex-on-premise venue (SOPV) and a pride event. Mpox vaccination was promoted by trusted community voices and sources through partnerships and relationships with gay, bisexual, and other men who have sex with men (GBMSM+) and sex worker advocacy organisations, and targeted social media. The program was evaluated by vaccine metrics, regular meetings and an end-of-program survey completed by CHOs.

Analysis:
Community engagement was critical to success. The highest number of doses administered was at a pride event, a SOPV and a fixed site in the inner north with a large GBMSM+ community. People requiring anonymity exclusively attended inner metropolitan clinics. People in outer metropolitan areas strongly preferred mpox vaccination integrated into routine health services.

Outcomes:
Future health campaigns by NEPHU targeting GBMSM+ in North Eastern Melbourne should prioritise community engagement, outreach to pride events and SOPVs, centrally-located activities that allow anonymity and integration of activities into routine services in outer areas.

No increased risk of bronchopulmonary dysplasia following hepatitis B vaccination in preterms

Ms Hannah Morgan[1,2,3], Professor Marcel Nold[4,5,6], Mr Gonzalo Sepulveda Kattan[1,2], Dr Diana Vlasenko[1,2], Associate Professor Atul Malhotra[4,5,6], Professor James Boyd[7], Associate Professor Hazel Clothier[1,2,3], Professor Jim Buttery[1,2,3,8]
[1]Epi-Informatics, Centre for Health Analytics, Melbourne Childrens Campus, [2]Health Informatics Group & Surveillance of Adverse Events Following Vaccination In the Community, Murdoch Childrens Research Institute, [3]Department of Paediatrics, University of Melbourne, [4]Department of Paediatrics, Monash University, [5]Monash Newborn, Monash Children's Hospital, [6]The Ritchie Centre, Hudson Institute of Medical Research, [7]Department of Public Health, La Trobe University, [8]Infectious Diseases Unit, Department of General Medicine, Royal Children's Hospital

The routine recommendation in Australia is for all infants to receive hepatitis B immunization at birth. Recent immune profiling of preterm infants found that T-helper lymphocyte type 2 (Th2) immune polarization from birth was associated with an increased risk of bronchopulmonary dysplasia (BPD), a chronic lung disease of prematurity. An association was also noted between Th2 polarization and birth dose hepatitis B vaccination (HBVV). We conducted a population data linkage study using the Victorian Vaccine Safety Health Link, which links multiple state-wide immunization and health outcome datasets, to assess whether birth dose HBVV in preterm infants increased their risk of BPD.

The study included the Victorian Perinatal Data Collection and Victorian Admitted Episodes Dataset. We conducted a retrospective cohort study of all preterm infants born alive at <29 weeks gestation from 2017 to 2020. We investigated the relationship between birth dose HBVV exposure and BPD diagnosis at 36 weeks postmenstrual age. Possible confounders were identified using the directed acyclic graph and included in a robust Poisson regression model.

Among 818 preterm infants (<29 weeks) meeting the inclusion criteria, 306 received birth dose HBVV while 512 did not. Of those who received HBVV, 155 (50.7%) developed BPD, whereas 317 unvaccinated infants (61.9%) developed BPD. After accounting for confounders, the relative risk was 0.83 (95%CI:0.68,1.00), suggesting no increased risk of BPD in preterm infants who received birth dose HBVV.

Birth dose HBVV in preterm infants did not increase the risk of BPD. Our findings support existing World Health Organization recommendations to immunize all infants against hepatitis B within 24 hours of birth, including preterm infants.

Mpox intradermal vaccination blended learning course: an evaluation

Ms Madeline Hall[1,2], Dr Megan Young[1,2,3], Kate Stone[1]
[1]Queensland Health, [2]University of Queensland, [3]Griffith University

Context: In 2022, the intradermal route was recommended as an administration method for mpox vaccine in Australia. A blended learning course was developed to train vaccine service providers who lacked experience in intradermal injections, consisting of an online theoretical component and an in-person practical component.
Aim: This evaluation aimed to assess the course's impact on the knowledge, attitudes, and skills of healthcare worker participants in intradermal mpox vaccination and identify any potential course improvements in anticipation of similar course delivery in the future.
Process: Anonymous participant feedback from the online component of the course, and responses from a non-identified electronic questionnaire emailed to those completing the practical course component were descriptively summarised.
Analysis: 43 participants completed the online component, with 86% rating it at 5/5.
29 participants also completed the practical component, with 52% (n=15) completing the questionnaire. Most participants (n=8) administered vaccines at least weekly. Only four respondents had previously performed an intradermal injection. Prior to the course, over half of respondents felt they had little (n=5) or no (n=3) knowledge about intradermal injections.
The majority of respondents found the practical component important for their learning, with nine respondents indicating they would be self-doubting about their ability to successfully deliver an intradermal mpox vaccination without the practical component of the course.
The main suggestions for improvements to the course were to include more images / videos and further practical experience opportunities.
Outcomes: The blended learning intradermal mpox vaccination course was well received by participants. Feedback demonstrated enhancement of knowledge and confidence in intradermal mpox vaccine administration. The majority of participants had also utilised the skills gained during the course in practice. The blended learning design of the course was felt to be particularly valuable. Suggestions for improvement will be incorporated when designing future courses.

Injection site abscess post BCG vaccine – the diagnostic and treatment dilemma

Ms Lynne Addlem[1], Ms Mel Addison[1,2], Associate Professor Shidan Tosif[1,2]
[1]Royal Children's Hospital, [2]Surveillance of Adverse Events following vaccination in the Community (SAEFVIC); Murdoch Children's Research Institute (MCRI)

Context

The Bacillus Calmette-Guérin (BCG) vaccine is not routinely given in Australia. BCG is commonly provided to child travelers visiting family and friends in high risk countries where tuberculosis is endemic. Consequently, healthcare professionals (HCPs) may be unfamiliar with the expected normal healing process. Like all vaccines, BCG may result in possible adverse events following immunisation (AEFI). Common reactions include a papule that typically develops into an ulcer, usually <1cm, ultimately leaving a scar. Rarely, a persisting ulcer or abscess >2 cm at the site may occur. This may raise concern for families, prompting management usually from general practitioners (GPs). The diagnosis and management of a BCG abscess varies, and the absence of specific diagnostic criteria or recommended treatment regimens often leads to unnecessary interventions, such as antibiotics, topical creams, needle aspiration, or surgical excision. Patients with an AEFI post BCG who are reported to SAEFVIC (Surveillance of Adverse Events Following Vaccination in the Community) are offered a consultation in a specialist immunisation clinic.

Process

Data was extracted from the SAEFVIC database over a 10-year period, January 2014 - January 2024. Reports of BCG abscess were analysed, focusing on the time to onset, severity, treatment and outcome of specialist consultation.

Results

234 reports of AEFI following BCG vaccination were identified, from this 99 were reports of BCG abscess. Of the 99 reports, 46 patients attended the RCH specialist immunisation clinic with a BCG abscess diagnosed. Electronic medical records (EMR) for the 46 children who attended the clinic will be analysed with recommendations, treatments and outcomes assessed.

Outcomes

46 patients with BCG abscess were seen at the RCH immunisation clinic over a 10-year period. It is crucial to establish clear diagnostic criteria and treatment protocols to ensure community providers offer accurate advice or recognise when to refer for a specialist opinion.

Perceived Safety, Usability, and Acceptability of Microarray Patches for Vaccination

Mr Matthew Berger[1,2,3], Dr Cristyn Davies[1,3], Josh Harmer-Ross[4], Dr Erin Mathieu[5], Prof Ramon Shaban[2,3,6,7], Dr Shopna Bag[2,5], Prof S Rachel Skinner[1,3,8]
[1]Specialty of Child and Adolescent Health, Children's Hospital Westmead Clinical School, Faculty of Medicine and Health, The University of Sydney, [2]Centre for Population Health, Western Sydney Local Health District, [3]Sydney Infectious Diseases Institute, The University of Sydney, [4]Nepean Clinical School, Faculty of Medicine and Health, The University of Sydney, [5]Sydney School of Public Health, Faculty of Medicine and Health, The University of Sydney, [6]Susan Wakil School of Nursing and Midwifery, Faculty of Medicine and Health, The University of Sydney, [7]New South Wales Biocontainment Centre, Western Sydney Local Health District and New South Wales Health, [8]Kids Research, Children's Hospital Westmead, Sydney Children's Hospitals Network

Introduction: Vaccination is a fundamental tenet of public and population health. Vaccine uptake can be aided by using microarray patches (MAPs) due to reduced pain, no needles, enhanced thermostability, and potential for self and lay administration. We aimed to explore clinicians' and the general public's (18+ years) perceptions of using MAPs for vaccination.
Methods: This was a sub-study of a project to validate a scale measuring the safety, usability, and acceptability of MAPs for vaccination. Semi-structured interviews were conducted during the scale development. Participants were given the instructions for use and watched a short MAP administration video before the interview. Interviews were transcribed verbatim, coded, and analysed using inductive and deductive thematic analysis.
Results: We recruited 27 participants with a mean age of 45 years (SD: 12.7), 56% (n=15) clinicians and 44% (n=12) general public. Three themes emerged: (1) safety, (2) ease of use, and (3) acceptability and priority populations. Participants reported that MAPs, including self-administration, could be used safely in a clinic. Clinicians had concerns regarding patient self-administration at home due to adverse events (i.e., anaphylaxis). Clinicians demonstrated interest in incorporating MAPs in their clinical practice. Most participants reported that MAPs would be easy to use due to "straightforward" instructions. Participants from both groups were confident that MAPs could deliver a correct dose but suggested the inclusion of a visual indicator. MAPs were also perceived as being highly beneficial for low-resource settings due to their enhanced thermostability and ease of use. All participants reported that MAPs would be advantageous for children and needle-phobic individuals.
Conclusion: Clinicians and the general public perceived MAPs as safe, usable, and acceptable for vaccination. All participants considered MAPs a highly acceptable alternative to vaccination with needle and syringe. MAPs may have considerable benefits for reaching priority populations and low-resource settings.

Evolution of vaccine-preventable disease serosurveillance in Australia

Miss Shayal Prasad[1], Dr Helen Quinn[1,2], Dr Archana Koirala[1,2,3]
[1]National Centre For Immunisation Research And Surveillance (NCIRS), [2]Faculty of Medicine and Health, University of Sydney's Hospital Westmead Clinical School, [3]Department of Infectious Diseases, Nepean Hospital

Context and aim

Serosurveillance provides estimates of antibody levels against vaccine preventable diseases (VPDs). It measures population immunity due to past infection or vaccination and is a key component of disease surveillance in conjunction with notification, hospitalisation and immunisation coverage data for informing immunisation policy. We aim to describe the evolution of sampling methods procured by NCIRS to conduct seroprevalence studies ('serosurveys') over 20 years.

Process

Previous serosurveys published by NCIRS between 1996-2023 were reviewed. Journal articles were sourced from the NCIRS library database. Key information from articles was extracted and summarised into a tabulated format by VPD type. Data collected included study population, sample size calculation, number of participants, methods, and results.

Analysis and outcomes

Between 1996-2019 a sequential routine serosurvey approach was undertaken to investigate numerous VPDs of interest. This method followed a 5 yearly cycle of ethical review, specimen collection, specimen testing, analysis and publication. Each serosurvey involved collecting a bank of 7,000–13,000 residual serum specimens from diagnostic laboratories throughout Australia. Although this approach is useful to assess population seroprevalences and was a valuable tool for evaluating vaccination program effectiveness, modelling diseases and identifying risk groups, it was laborious and delay occurred between collection, testing and analysis. Most recently, from 2020-2023, populations including blood donors, children undergoing anaesthetic procedures and community sampling has occurred for pathogen specific serosurveys such as SARS-CoV-2 and Japanese Encephalitis Virus. This has enabled more timely analysis of the data to inform rapid vaccine policy and public health responses to these novel viruses in the Australian context.

SMS reminder on vaccination following IPD notification: A post- pandemic vaccine fatigue.

Eranga Maligaspe Koralage, Catherine Slaney, Dr Priya Janagaraj[1]
[1]Darling Downs Public Health Unit

Introduction
Pneumococcal disease is a leading cause of serious illness and death among Australian children under 2 years of age and persons over 85 years of age. The introduction of pneumococcal vaccines has significantly reduced the incidence over recent years. At present, individuals who are medically at risk will be eligible for additional funded pneumococcal vaccines, Prevenar 13 and Pneumovax 23. This eligibility criteria is also extended once a person is diagnosed with invasive pneumococcal disease. In 2022, following the success from a pilot project that saw an increase in pneumococcal vaccination coverage with active follow up with clinicians, the Darling Downs Public Health Unit introduced a reminder text message to patients and letter to clinician to advise on the eligibility criteria for pneumococcal vaccine post invasive pneumococcal disease (IPD)

Methods
A clinical audit was conducted to understand the impact of the current practice in improving pneumococcal vaccine coverage post IPD notification. A comparison was undertaken between the uptake of pneumococcal vaccines in 2019 vs 2023 whereby no active follow up of patients or GP was occurring in 2019. Data was analysed using Microsoft Excel and SPSS.

Results
There were 25 cases of IPD in 2019 vs 30 cases in 2023. In reviewing the vaccination uptake,47% of cases received at least 1 dose of vaccine in 2019 vs 30% of cases in 2023 receiving at least 1 dose of pneumococcal vaccine post illness. A t-test was done to compare the results and the reduction in vaccine uptake was statistically significant at $p<0.001$. Cases receiving the additional doses of vaccine as part of the follow up were predominantly children.

Outcomes
The reduction in vaccine uptake post IPD in 2023 is likely to be multifactorial despite additional interventions which had proven success pre -pandemic in a different region. Vaccine fatigue is an important factor to consider, and strategies and measures need to be considered to improve coverage.

JYNNEOS series completion: baseline coverage by dose-1 route, and SMS intervention, Sydney.

Ms Sandra Chaverot[1], Dr Philip Read[1], Dr Vicky Sheppeard[1], Dr Anthea Katelaris[1]
[1]Population and Community Health, South Eastern Sydney Local Health District

Background
2-doses of JYNNEOS vaccine are required for optimal mpox protection.

There were concerns intradermal vaccination might deter people from vaccination, from increased scarring risk or identifiable vaccination marks.

We assessed whether dose-1 administration route (subcutaneous/intradermal) was associated with series completion in South Eastern Sydney Local Health District (SESLHD) residents.

We also trialled an SMS reminder intervention for people with 1 dose recorded in the Australian Immunisation Registry (AIR).

Methods
We included SESLHD residents ≥18 years with ≥1 JYNNEOS vaccine dose in AIR. We compared whether series completion was associated with dose-1 administration route, vaccination service, month, and demographic factors.

In November 2023, 1024 residents vaccinated at a SESLHD facility with only 1 dose recorded in AIR were sent an SMS about the need to receive 2 doses, with a link to vaccination clinic information. Two-dose coverage was assessed 2 months later via AIR.

Results
By July 2023, 9109 people had received ≥1 JYNNEOS vaccine. 6914 (75.9%) had received 2 doses.

There was no difference in series completion by dose 1 route (subcutaneous 2988/3952 (75.6%), intradermal 3926/5157 (76.1%), OR 0.97 (95% CI 0.88-1.07)).

For both administration routes, series completion was higher for people vaccinated in 2022 than in 2023. There were small differences between age groups, gender, and vaccination service.

Two months after the SMS reminder only 18 (1.7%) people had a second dose recorded.

Conclusions
JYNNEOS 2-dose series completion did not differ by the route of administration of dose 1, providing reassurance that intradermal vaccination did not deter series completion.

A single SMS reminder did not prompt receipt of dose 2. This may be because people had departed Australia or had already received a second dose not recorded in AIR. Risk perception or experiences following dose 1 may have contributed, or SMS may not be an effective reminder intervention.

A single SMS to improve childhood immunisation: A before-and-after quality improvement study

Ms Victoria Marriott[1,2], Dr Amalie Dyda[2,3], Ms Christobel Mak[1], Mr Ian Hunter[1], Ms Sharon Jurd[1], Dr Fiona May[1]
[1]Gold Coast Public Health Unit, Queensland Health, [2]National Centre for Epidemiology and Population Health (NCEPH), The Australian National University, [3]School of Public Health, University of Queensland

The Australian immunisation target of 95% for children aged five years or younger aims to achieve herd immunity and reduce the impact of vaccine preventable diseases (VPD). The Gold Coast region in the state of Queensland consistently fails to meet this target and remains one of Australia's poorest performing regions for childhood immunisation coverage.

Internationally, SMS reminders have been successful in improving childhood immunisation rates. On 30 December 2022 , the Gold Coast Public Health Unit began sending a single SMS reminder to new parents at four weeks post-birth to indicate their child was due and would benefit from timely immunisation from six weeks.

This before-and-after study examines the effect of the SMS reminder on the timeliness and uptake of National Immunisation Program (NIP) immunisations for children born at the Gold Coast University Hospital (GCUH) between 1 January 2018 and 30 June 2023.

After linking GCUH birth records with Australian Immunisation Register (AIR) data, individuals were grouped based on SMS exposure. A total of 28,972 participants were identified for inclusion in this study (26,365 pre-SMS, 2,607 post-SMS). Univariate logistic regression analyses were conducted to investigate the association between the SMS and immunisation uptake and timeliness. A multivariate regression analysis identified the impact of demographic factors such as sex, First Nations status and area of residence on the SMS outcome measures across both before and after cohorts.

The results of this study will assist in shaping future immunisation program recommendations, thereby advancing the broader objective of protecting the community against VPDs.

Clinical characteristics of people living with HIV co-infected with tuberculosis and histoplasmosis

Dr Maria Eugenia Castellanos Reynosa[1], Dr Maria Eugenia Caal[2], Danicela Mercado[3], Narda Medina[2], Juan Carlos Perez[2], Theophilus I. Emeto[1], Eduardo Arathoon[2,3]
[1]Public Health and Tropical Medicine, College of Public Health, Medical and Veterinary Sciences, James Cook University, [2] Asociación de Salud Integral, [3]Clínica Familiar Luis Ángel García, Hospital General San Juan de Dios

6C - Mpox, TB, vaccination, and more, Mezzanine 1, June 13, 2024, 11:00 - 12:30

Context and aim. Tuberculosis (TB) and histoplasmosis are two of the most frequent opportunistic infections affecting people living with human immunodeficiency virus (HIV), particularly in Latin America. However, little is known about the impact of concurrent TB and histoplasmosis in this population. In this study, we aimed to comprehensively describe the epidemiological, clinical, and laboratory features, treatment, and outcomes of people living with HIV (PLHIV) diagnosed with concurrent TB and histoplasmosis.

Methods and analysis. We conducted a retrospective case series of all patients who were laboratory-diagnosed with concurrent histoplasmosis and TB between 2017 and 2021 in a large HIV referral centre in Guatemala City, Guatemala. We collected baseline clinical, laboratory, and epidemiological data and 6-month mortality status.

Research findings. Twenty-one patients met the inclusion criteria. Most patients were male (86%) and were newly diagnosed with HIV (62%). All patients had advanced HIV disease (AHD). They presented with a median CD4 count of 20 cells/µl (IQR 8-47). Eleven patients (52%) had extrapulmonary TB and disseminated histoplasmosis. The most common symptoms reported by the patients were fever (86%), weight loss (71%), cough (62%), and diarrhea (62%). Twelve patients died within six months of baseline evaluation, for a mortality rate of 57.1%.

Future actions. PLHIV with concurrent TB and histoplasmosis infections are characterised by AHD, predominantly presenting with disseminated forms of these infections and with unspecific symptoms and signs. This evidence calls for early HIV and opportunistic infection screening and access to recommended treatments. Among people with AHD and co-infected with TB and histoplasmosis, therapy against all pathogens should be closely monitored in terms of levels, resistance, drug interactions, and adherence to ensure the clinical success of these patients.

Using hepatitis B notifications to improve linkage to care

Ms Sandra Chaverot[1], Ms Rebecca Hickey[2], Professor Gail Matthews[2,3], Professor Gregory Dore[2,3], Dr Vicky Sheppeard[1]
[1]Population and Community Health, South Eastern Sydney Local Health District, [2]Infectious Diseases Department, St Vincent's Hospital, [3]Kirby Institute, University of New South Wales

6D - Blood-borne viruses, Mezzanine 2, June 13, 2024, 11:00 - 12:30

Chronic hepatitis B is a significant public health challenge, with the burden of disease mainly among overseas-born individuals in metropolitan areas. Treatment and care uptake in the South Eastern Sydney Local Health District (SESLHD) fall below national targets. The NSW Hepatitis B Strategy 2023-2026 emphasizes linking individuals to care, especially through primary care.
A pilot project with St Vincent's Hospital (April 2022 - April 2023) aimed to improve hepatitis B patient management by proactively following up newly notified cases. A Memorandum of Understanding formalised the collaboration between the South Eastern Sydney Public Health Unit (SES PHU) and St Vincent's Hospital.

Each month we extracted newly notified cases' information from the Notifiable Conditions Information Management System (NCIMS). Cases aged under 18 years or outside the hospital catchment area were excluded. The refined list was shared securely with St Vincent's Hospital liver clinic who made contact with the diagnosing doctor to obtain additional information about the cases, ascertain current hepatitis B management, and offer specialist support if needed.

Between April 2022 and April 2023, 65 newly notified hepatitis B cases meeting the inclusion criteria were identified with a median age of 39 and a 1:1 male to female ratio. Follow-up was successful for 31 cases (48%). China was the most common reported country of birth. Nineteen cases (61%) were being managed according to Australasian Society for HIV, Viral Hepatitis, and Sexual Health Medicine (ASHM) guidelines. Twelve cases were eligible for treatment; Nine general practitioners (64%) requested specialist support.

The pilot demonstrated the feasibility of using hepatitis B notifications for proactively ensuring these patients are managed according to best practice. Efforts should focus on refining strategies for engaging clinicians and enhancing adherence to treatment guidelines to improve outcomes for individuals with chronic hepatitis B, aligning with the goals of the Hepatitis B Strategy.

Understanding Communities: Factors associated with high Hepatitis B incidence

Mr Aaron Osborne[1,2], Dr Clarissa Moreira[1], Dr Desmond Gul[1], Dr Amy Parry[2], Dr Hazel Clothier[2,4,5], Dr Annaliese van Diemen[1]
[1]North Eastern Public Health Unit, [2]National Centre for Epidemiology and Population Health, Australian National University, [3]Victorian Department of Health, [4]SAEFVIC, Infection and Immunity, Murdoch Children's Research Institute, [5]Centre for Health Analytics, Melbourne Children's Centre

6D - Blood-borne viruses, Mezzanine 2, June 13, 2024, 11:00 - 12:30

Background
Chronic hepatitis B (HBV) is one of the major causes of morbidity and mortality worldwide, causing an estimated 800,000 deaths globally. While Australia is considered a low-prevalence country, it is estimated that only 63% of people living with HBV in Victoria were diagnosed. Identifying and understanding geographical areas of high hepatitis B incidence can provide opportunities to enhance testing and prevention efforts.

Methods
Notifications of laboratory-confirmed hepatitis B infection in North Eastern Public Health Unit (NEPHU) catchment from 2013 to 2022 were extracted from the Victorian Public Health Events Surveillance System (PHESS). Hepatitis B incidence rates were calculated for Australian Bureau of Statistics statistical area level 2 (SA2- approximately 10,000 persons) and aggregated into quartiles based on based on hepatitis B incidence. Using 2021 ABS population denominators and sociodemographic data for SA2, we described spatial demographics across incidence levels and calculated descriptive statistics.

Results
From 1 January 2012 to 30 December 2022, the mean incidence of hepatitis B across 136 SA2s was 138 per 100,000 population (range 0-810 per 100,000 population). Areas with the highest incidence (top quartile) of hepatitis B had higher proportions of overseas-born population (47%) compared with the SA2's in the lowest incidence (bottom quartile) (22%), $p < 0.001$. The proportion of SA2 population from a high-prevalence hepatitis B country increased as hepatitis B incidence increased. Areas with the highest incidence (top quartile) of hepatitis B had higher levels of relative socio-economic disadvantage (15%) compared with the SA2's in the lowest incidence (bottom quartile) (3%), $p < 0.015$.

Discussion
Our spatial analysis identified areas of high HBV incidence and community-level clustering masked in whole of local government area studies. This brings new understanding to community-level factors associated with high HBV incidence can help identify communities most at risk of hepatitis B.

HIV-1 cluster dynamics after public health-associated PrEP intervention in NSW, Australia

Mr Billal Obeng[1], Mr Ansari Shaik[1], Professor Philip Cunningham, Julie Yeung, Professor Dominic Dwyer, Tharshini Sivaruban, Frederick Lee, Stephen Nigro, Dr Philip Keen[1], Jane Costello, Karen Price, Scientia Professor Andrew Grulich[1], Scientia Professor Anthony Kelleher[1], Dr Francesca Di Giallonardo[1]
[1]Kirby Institute, Unsw Sydney

6D - Blood-borne viruses, Mezzanine 2, June 13, 2024, 11:00 - 12:30

Australia's successful, rapid roll-out of PrEP from 2016 was followed by steep declines in new HIV diagnoses. Routinely reported surveillance data shows that declines are uneven across the population, with a greater decline observed in inner-Sydney. We estimated transmission clusters using protease and reverse transcriptase sequences from newly diagnosed individuals in New South Wales, Australia between 2011- 2021 and assessed the impact of PrEP on these clusters.
A total of 3,366 diagnoses were made between 2011-2021. We selected a total of 2,174 sequences that represented the earliest sequences with available metadata. We inferred a maximum-likelihood tree in IQTree and defined transmission clusters using ClusterPicker setting a distance threshold of 3.0%. We estimated the reproductive number (Re) for large clusters (>10 sequences) with the Birth-Death Skyline model in BEAST2 to determine changes in cluster growth dynamics over time.
Overall, 1,080 sequences (49.7%) were singletons, and 1,094 sequences (50.3%) were found in 170 sequence pairs and 150 clusters. The latter included 143 sequences in 11 large clusters. Individuals in large clusters were predominantly MSM (95.1%) with subtype B (92.3%) and C (7.7%) infections and were diagnosed during early-stage infection (diagnosis within 12 months of infection; 73.4%). The 5-year average proportion of early-stage infections in any cluster increased to 69% in 2017-2021 from 66% in 2011-2016. Re remained >1 for large clusters past 2016, except for one where Re declined after 2016 to epidemiological threshold (Re=1). Notably, we identified two rapid growing clusters that emerged after 2016.
These results suggest the prevention impact of PrEP is unevenly distributed and may be greater among sub-populations with higher awareness of prevention measures, among whom frequent testing facilitates earlier diagnosis and linkage to care. Further analysis is needed to effectively evaluate these outcomes due to the impact of COVID-19 lockdowns on HIV testing and sequencing.

Enhancing hepatitis C testing and treatment in hospitals: a meta-analysis.

Dr Rebecca Mathews[1], Ms Claudia Shen[1], Dr Michael Traeger[1,2], Dr Helen O'Brien[3], Dr Christine Roder[4,5], Professor Margaret Hellard[1,2,6,7], Professor Joseph Doyle[1,2,6]
[1]Burnet Institute, [2]School of Public Health and Preventive Medicine, Monash University., [3]Office of the Chief Health Officer, Community and Public Health Division, Victorian Department of Health., [4]Barwon Public Health Unit, Barwon Health., [5]Centre for Innovation in Infectious Disease and Immunology Research, Deakin University., [6]Department of Infectious Disease, Alfred Health & Monash University., [7]Doherty Institute and School of Population and Global Health, University of Melbourne.

6D - Blood-borne viruses, Mezzanine 2, June 13, 2024, 11:00 - 12:30

Hospitals are integral to hepatitis C elimination. They reach marginalised populations with prevalent undiagnosed or untreated hepatitis C and otherwise limited healthcare engagement. Yet, no systematic reviews exclusively assess hospital-based interventions to enhance hepatitis C testing and treatment.

We systematically reviewed studies of interventions aimed at increasing hepatitis C testing, linkage to care or direct-acting antiviral (DAA) initiation in adults receiving hospital care. Included studies were published from 2014, when DAAs became available outside of clinical trials, and reported data for intervention and comparator arms on the following outcomes: antibody testing, RNA testing, linkage to care, or DAA initiation. Random-effects meta-analyses calculated pooled odds ratios [pORs] of the association between intervention and outcome with subgroup analyses by intervention type.

7872 abstracts were screened, and 23 studies included. In twelve studies (total number of participants [n]=265,579) reporting antibody testing, test uptake was higher in intervention than control arms in all studies (pOR=5.83, CI=[2.49-13.61], I2=99.9%). Subgroup analyses showed impact on antibody test uptake was greatest for automated opt-out testing (five studies: pOR=16.13, CI=[3.35-77.66]), followed by clinician education (two studies: pOR=5.41 , CI=[2.49-11.74]) and universal screening (two studies: pOR=3.39, CI=[1.84-2.64]) interventions. In five studies assessing RNA testing (n=4,987) the pooled OR was 10.65 (CI=[1.70-66.50], I2=97.9%), with reflex testing interventions having the greatest impact on RNA testing (four studies: pOR=25.04, CI=[3.63-172.79]). In seven studies assessing linkage to care (n=4,949), the pooled OR was 1.75 (CI=[1.10-2.79], I2=79.9%); patient-directed interventions (including patient navigation and financial incentives) had the greatest impact on linkage to care (four studies: pOR=2.73, CI=[1.85-4.03]). In the four studies assessing DAA initiation (n=1,344) there was no significant difference between intervention and control arms in pooled analyses.

Interventions that automate testing best enhance hepatitis C testing in hospitals, while those supporting or motivating engagement in treatment maximise linkage to care following diagnosis.

Trends in HIV testing among people newly diagnosed with HIV

Mr Jonathan King[1], A/Prof Timothy Dobbins[2], Dr Phillip Keen[1], Dr Vincent J. Cornelisse[1,3,4], Prof. Mark Stoové[5,6,7], Dr Steven J. Nigro[7], Ms Nasra Higgins[8], Prof Limin Mao[9], Dr Htein Linn Aung[1], Prof Kathy Petoumenos[1], Dr Skye McGregor[1]
[1]Kirby Institute, UNSW Sydney, [2]School of Population Health, UNSW Sydney, [3]Central Clinical School, Monash University, [4]Disease Elimination Program, Burnet Institute, [5]School of Public Health and Preventive Medicine, Monash University, [6]Australian Research Centre in Sex, Health and Society, [7]Epidemiology and Data Systems Branch, Health Protection NSW, [8]Communicable Disease Epidemiology and Surveillance, Health Protection Branch, Victorian Department of Health, [9]9 Centre for Social Research in Health, UNSW Sydney

6D - Blood-borne viruses, Mezzanine 2, June 13, 2024, 11:00 - 12:30

Introduction:
Few published studies have characterised reasons for HIV testing among those newly diagnosed with HIV, including comparing asymptomatic screening with symptomatic testing. Understanding trends in testing and stage of HIV at diagnosis will inform refinement of HIV testing guidelines and facilitate earlier HIV diagnoses.

Methods:
Using Australian national notification records of people diagnosed with HIV between 1 January 2017 and 31 December 2022 we described reasons for testing leading to an HIV diagnosis. We also combined non-mutually exclusive reasons for testing with clinical status at diagnosis to derive HIV testing categories and described trends in these categories over time. Categories included testing while symptomatic, asymptomatic HIV screening, seroconversion, and other test reason. Additionally, we stratified these categories by stage of HIV at diagnosis (late-stage HIV defined as a CD4 count <350 cells/µL at time of diagnosis).

Results:
Among 4,232 HIV notification records included in the study, 4,134 had at least one reason for testing recorded. Of these, STI screening was the most common reason for testing (38%), followed by presenting with symptoms indicative of HIV (31%) or reported risk behaviour (13%). People aged 50 years or older (24%), people reporting an exposure of heterosexual sex (21%), people born in Sub-Saharan Africa (19%), and Women (17%) had lower proportions of asymptomatic HIV screening. More late-stage HIV diagnoses resulted from testing while symptomatic (58%) compared with asymptomatic screening (25%).

Conclusions:
Older people and heterosexuals may not routinely access HIV focused healthcare but instead encounter HIV testing opportunities in other contexts. By normalising HIV testing and offering low-cost HIV screening in a range of settings, it may be possible to facilitate earlier HIV diagnoses, improved health outcomes, and reduced onward transmission. These findings support the recent update to Australian HIV testing guidelines to encourage broader HIV screening and encourage implementation of similar guidelines elsewhere.

256

Breaking Down Barriers: Leveraging Notifications Data to Advance HCV Elimination in Australia

Ms Nicole Matthews[1], Gabrielle Lindeman[1], Paul Armstrong[1], Dr Jacqui Richmond[1], Freya Saich[1], Troy Combo[1], Dr Tafireyi Marukutira[1,5], Jack Wallace[1], Prefessor Gregory Dore[2], Professor Carla Treloar[6], A/Prof Jane Davies[3,4], Prefessor Joseph S Doyle[1], Dr Alisa Pedrana[1,5], Professor Margaret Hellard[1,5], Professor Mark Stoove[1,5]
[1]Disease Elimination, Burnet Institute, [2]Kirby Institute, [3]Menzies school of Health Research, Charles Darwin University, [4]Infectious Diseases Department, Royal Darwin Hospital, [5]Department of Epidemiology & Prevention Medicine, Monash University, [6]Centre for Social Research in Health, University of New South Wales

6D - Blood-borne viruses, Mezzanine 2, June 13, 2024, 11:00 - 12:30

Australia's progress to eliminating hepatitis C (HCV) by 2030 has stalled, with HCV care cascade indicators continuing to show low rates of treatment initiation following a diagnosis of chronic infection via an HCV-RNA test. HCV notifications data (held by health authorities) could provide sustainable opportunities to engage people living with HCV in treatment and care. Funded through an NHMRC Partnership Grant, Connect C aims to increase access to HCV treatment by using HCV notifications data more effectively.

Methods, analysis/research findings
Connect C consulted with state and territory health authorities to map operational and laboratory practices, notifications systems, resources, strategic and policy priorities, and local legislative and regulatory environments for follow up using notifications systems.

Consultations identified significant national and jurisdiction-specific barriers to effective and sustainable use of HCV notifications data for follow up. Barriers included specific legislation, data access, operational, and resourcing issues. The most significant barrier reported was the predominance of HCV antibody test notifications, with limited reporting or visibility of subsequent RNA test results (including negative results) to identify and prioritise people with current infection.

Translational outcomes
To optimise use of notifications data for HCV elimination, it is crucial to implement changes that allow prioritisation of follow up to people most likely to be currently infected. Key to this is ensuring availability and system visibility of HCV RNA results and making changes to laboratory practice to ensure reflexive testing, in alignment with international counterparts and WHO recommendations.

Future actions
Through partnerships with jurisdictions, Connect C is committed to advocating and supporting practice, legislation and guideline changes to facilitate more effective use of notifications data to support HCV elimination. Partnering and co-designing with community organisations and other stakeholders, Connect C will address ethical and privacy issues to enhance the community acceptability of system changes.

Hepatitis B Clinical Auditing Needs Assessment: Results from a National Scoping Project

Miss Skye O'Halloran[1], Adrienne Mondel[1], Sami Stewart[1], Neeloy Alam[1]
[1]ASHM Health

6D - Blood-borne viruses, Mezzanine 2, June 13, 2024, 11:00 - 12:30

ASHM conducted a needs assessment, assessing the feasibility of implementing a national case-finding and clinical audit initiative focusing on hepatitis B (HBV) in primary care within Australia. The needs assessment identified ways in which a proposed HBV clinical auditing and/or case-finding project could support clinicians in increasing diagnosis, monitoring, and management of chronic hepatitis B (CHB) in primary care settings. Enablers and barriers to the needs assessment methodologies were identified.

The mixed-methods assessment included a review of internal projects, a desk review of past and current HBV (and other relevant conditions) initiatives in primary care and stakeholder consultations in the form of semi-structured interviews and surveys.

We found limited information about previous projects in the desk review. Stakeholder consultations provided an opportunity to fill in the gaps and provide more information about previous and current projects. Enablers identified were; diversity in stakeholders, use of semi-structured interview methodology, and opportunity for additional consultation once feedback was consolidated. The barriers identified were the time and resources required to consolidate feedback from a large number of participants, participation from stakeholders already engaged with ASHM's work and/or the sector, and limited time to conduct interviews.

There is a need for diverse sector consultation when developing a HBV project to be implemented within primary care settings. However, time and resourcing are important considerations to ensure that the methods and information gathered from consultations are maximised. The sector would also benefit from more opportunities to present and write up findings on similar projects to support future work.

A Southeast Queensland evaluation of ATLAS Indigenous STI & BBV surveillance system

Ms Antoinette White[1,2], Dr Emma Field[1], Dr Danielle Butler[1,2]
[1]National Centre for Epidemiology and Population Health, Australian National University, [2]Institute for Urban Indigenous Health

6D - Blood-borne viruses, Mezzanine 2, June 13, 2024, 11:00 - 12:30

The ATLAS Indigenous Primary Care Health Surveillance and Research Network (ATLAS) is a national sentinel surveillance system of Aboriginal primary healthcare services. The network is currently made up of 40 Aboriginal Community Controlled Health Services (ACCHS) collecting deidentified primary care data relating to sexually transmissible infections (STIs) and blood-borne viruses (BBVs) testing and management. An early evaluation occurred in 2019. We used the CDC Updated Guidelines for Evaluating Public Health Surveillance Systems and assessed the attributes of acceptability, simplicity, flexibility, timeliness, stability, and data quality, from the perspective of the Institute for Urban Indigenous Health (IUIH), an ATLAS network clinical hub member.

The evaluation included yarns, surveys, and workshops with members from the ATLAS project team and the IUIH clinical hub, IUIH Continuous Quality Improvement (CQI) sessions, analysis of an ATLAS/IUIH subset dataset (Hepatitis C), and document review. The evaluation found that ATLAS has expanded its operations since 2019 to include near real-time dashboards for authorized users, timely feedback and support mechanisms, a research network, a behavioural surveillance survey, and is developing additional measures for addressing vaccine preventable diseases. A strength of ATLAS is the creation of the dashboard allowing users to access, interrogate and display their data to meet individual users' priorities and needs in a timely manner. A further strength is its responsiveness to feedback from users via surveys, workshops, and dashboard feedback widgets.

The establishment and growth of ATLAS throughout Australia is providing a formidable tool to reduce the burden of disease in the Aboriginal and Torres Strait Islander community. Promoting greater awareness of the dashboard and encouraging higher participation rates from ACCHS in ATLAS will enhance the system's ability to meet its objectives of providing Aboriginal and Torres Strait Islander STI and BBV testing, treatment, and management data for and on behalf of the community.

Approval for publication of the research findings has been given by the ATLAS Clinical Hub Reference Group in its capacity as Indigenous governance expertise and oversight of data arising from the network and IUIH as the data custodian on behalf of the sovereign owners.

B Referred: Increasing awareness of hepatitis B care pathways among clinicians.

Ms Isabelle Purcell[1]
[1]Ashm

6D - Blood-borne viruses, Mezzanine 2, June 13, 2024, 11:00 - 12:30

Context and aim:
An estimated 0.78% of the Australian population are living with chronic hepatitis B (CHB), however 78% of people are not engaged in recommended care[1]. Most people living with CHB can be cared for in the community by hepatitis B s100 community prescribers. This is often not well known by clinicians with only 8.3% of people receiving hepatitis B treatment having all their care managed by a general practitioner in 2021[1].

The aim of the B Referred project was to improve access to care in the community setting for people living with hepatitis B.

Process:
ASHM developed a series of online resources and a national awareness-raising media campaign.

The resources were designed for clinicians who are not experienced in hepatitis B to be used at the point of care to support referrals within primary care.

The 'Hep B Care, Its Primary Care too' campaign, highlighting primary care management options was launched with a media release and several social media posts and included media kits.

Outcomes:
Improved awareness and access to resources has been a key outcome of this project. Through the national webinars, a total of 361 clinicians were reached live. The online resources have been viewed over 980 times with 17 s100 providers reporting B Referred tools being used to facilitate referrals. The associated community resource was viewed 247 times in a four-month period.

The campaign page was viewed 291 times in the first 4 months, with 55 s100 providers reporting using the media kit to share the campaign.

Analysis:
B Referred is an innovative approach to sharing information with clinicians to maximise care options for hepatitis B to improve engagement in care and associated health outcomes.

1. MacLachlan JH, Romero N, Purcell I, Cowie BC. Viral Hepatitis Mapping Project: Hepatitis B. National Report 2021 (published 2023)

Viral hepatitis notifications: an assessment of place-based management in Victoria

A Prof Amanda Wade[1,3], Dr Phongsakone Inthavong[1], Dr Emma Beavon[2], Ms Shweta Bohora[2], Ms Tiffany Pe[1], Dr Naomi Clarke[1], Dr Jacqui Richmond[1], Dr Mohammad Akhtar Hussain[1,4], Ms Annelies Titulaer[2], Prof Joseph Doyle[3], Dr Alex Tai[2], Prof Eugene Athan[1,5], Dr Alyce Wilson[2,3]
[1]Barwon South West Public Health Unit, [2]Gippsland Regional Public Health Unit, Latrobe Regional Health, [3]Disease Elimination Program, Burnet Institute, [4]Institute for Mental and Physical Health and Clinical Translation (IMPACT), School of Medicine, Deakin University, [5]Centre for Innovation in Infectious Disease and Immunology Research (CIIDIR), Institute for Mental and Physical Health and Clinical Translation (IMPACT) and School of Medicine, Deakin University

6D - Blood-borne viruses, Mezzanine 2, June 13, 2024, 11:00 - 12:30

Australia needs to increase linkage to viral hepatitis care to achieve elimination targets. This study assessed the impact of enhanced local public health unit (LPHU) management of hepatitis B virus (HBV) and hepatitis C virus (HCV) notifications on complete diagnosis of HCV, linkage to care and treatment, compared to standard of care (SOC) in Barwon South-West (BSW) and Gippsland regions.

This study compared notification outcomes from March – August 2022, SOC; with September 2022 – February 2023, enhanced management at LPHUs. Available epidemiological data were compared by enhanced surveillance forms (ESF) completion. HCV outcomes included complete diagnosis (RNA test), treatment commencement, and for HBV, viral load measurement and referral to care. Prison notifications were excluded.

In BSW, 130/161 (81%) notifications were included (90 HCV, 40 HBV). ESF completion was significantly higher with enhanced management compared to SOC (54/61 (89%); 8/69(12%); p<0.001) as was First Nations status completion (51/61 (84%); 15/69 (22%); p<0.001). There was no significant difference between LPHU and SOC in HCV complete diagnosis (35/41 (85%); 38/49(78%); p>0.05), HCV treatment commencement (14/18 (78%); 20/25 (80%); p>0.05), HBV viral load measurement (18/19 (95%); 14/16 (88%); p>0.05), or referral to HBV care (18/20 (90%); 11/16 (69%); p>0.05).

In Gippsland, 63/77 (82%) notifications were included (57 HCV, six HBV). HCV data is presented. ESF completion was significantly higher for enhanced management compared to SOC (25/29 (86%); 3/28 (11%); p<0.001), as was First Nations status completion (25/29 (86%); 1/28 (4%); p<0.001). The proportion with complete diagnosis was significantly higher with enhanced management compared to SOC (25/29 (86%);13/27 (46%); p=0.002), but not for treatment commencement (5/6 (63%); 3/5 (38%); p>0.05).

The proportion of notifications with complete diagnosis and commencing treatment in BSW and Gippsland differed. Tailoring the care cascade to respond to need, informed by local data, is key to achieving viral hepatitis elimination.

47

Impact of the Coral Princess on COVID-19 transmission in regional Western Australia.

Dr Ashley Quigley[1], Dr Mohana Kunasekaran[1], Ms Haley Stone[1], Mr Damian Honeyman[1], Ms Adriana Notaras[1], Associate Professor Samsung Lim[2], Professor C Raina MacIntyre[1]
[1]The Kirby Institute, UNSW, [2]School of Engineering, UNSW

6E - Public health policy and decision making, Mezzanine 3, June 13, 2024, 11:00 - 12:30

In October 2022, after the re-opening of the cruise ship industry in Australia, the Coral Princess with known COVID-19 cases on board, travelled to the north-west coast of Western Australia (WA) intending to disembark passengers in a series of remote towns in WA. After docking at Broome, a small town with a population of 14,660, the ship changed plans and only docked at Fremantle due to concerns raised. The impact on small towns, with high Aboriginal populations, limited health infrastructure and low vaccination rates is of concern. Due to higher rates of other health issues and limited access to health services in remote regions, the Aboriginal population has a higher risk of contracting and developing severe COVID-19.

Using an optimized hot spot analysis technique, we aimed to understand the Coral Princess' contribution to the spread pattern of COVID-19 in regional WA around the towns of Broome, Goldfields, Pilbara, Kimberley, and the greater Geraldton area and constructed a space-time cube of data points from August 8 to November 27, 2022. We applied an emerging hot spot analysis to two periods, before and after the ship docking at the WA coast. New weekly hospitalizations, ICU admissions and deaths, and positivity rates were plotted. A 45% increase in COVID-19 reported cases were seen in the Kimberley Western Australia County Health services (WACHS) region at two-weeks post docking, which comprises both Broome and Fremantle. Pilbara, a regional community with a high Aboriginal population, showed a 34.8% increase in COVID-19 cases in the four-weeks post docking.

Enhanced geospatial mapping for community transmission of COVID-19 in WA with a high Aboriginal population offers a unique opportunity to understand and address the specific dynamics of disease spread within these vulnerable small towns and communities and allows for the visualization and analysis of spatial patterns of infection, enabling health authorities to identify hotspots and prioritize resources accordingly. Cruise ships with COVID-19 outbreaks should reconsider allowing passengers to disembark in small or remote towns, which are vulnerable due to reduced healthcare access. During cruise ship outbreaks, passengers disembarking to visit such locations should be tested for COVID-19.

MandEval: A Multidisciplinary project exploring Australian and global COVID-19 vaccine mandates.

Associate Professor Katie Attwell[1,2], Dr Jessica Kaufman[3,4], Dr Mesfin Genie[5], Professor Jeremy Ward[6], Associate Professor Annette Regan[7,8], Associate Professor Marco Rizzi[9], Dr Huong Le[2], Dr Jane Williams[10,11], Dr Chris Blyth[2,12,13,14]
[1]School of Social Science, University Of Western Australia, [2]Wesfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute, [3]Vaccine Uptake Group, Murdoch Children's Research Institute, [4]Department of Paediatrics, The University of Melbourne, [5]University of Newcastle, Newcastle Business School, [6]French National Institute of Health and Medical Research, [7]University of San Francisco, [8]Curtin University School of Population and Public Health, [9]UWA Law School, University of Western Australia, [10]Australian Centre for Health Engagement, Evidence and Values, University of Wollongong, [11]School of Public Health, University of Sydney, [12]Perth Children's Hospital, [13]School of Medicine, University of Western Australia, [14]PathWest Laboratory Medicine, WA

6E - Public health policy and decision making, Mezzanine 3, June 13, 2024, 11:00 - 12:30

Context and aim: In response to the COVID-19 pandemic, governments implemented mandates for COVID-19 vaccines with limited understanding of their potential impacts on vaccine uptake and the broader social and political climate. Drawing from medicine, epidemiology, economics, public policy, political science, psychology, ethics, and law, MandEval aims to examine the impact of vaccine mandates and their implications for health policy and societal norms in Australia, Italy, France, and California. This mixed methods project, funded by the MRFF, commenced in late 2023 and runs until 2027.

Methods and analysis/research findings: The MandEval project employs diverse methodologies across separate but interrelated streams of work. Stream 1 uses individual-level population-based administrative linked data and time-series data analyses to quantify the impact of mandates on vaccine uptake. Stream 2 employs discrete choice experiments and quantitative surveys to understand public values and preferences for vaccine mandates. In Stream 3, qualitative methodologies will be used to explore the experiences and views of groups affected by mandates, including immunisation providers. Stream 4 will involve key informant interviews to examine policymakers' decisions and public statements. Stream 5 will comprise a comprehensive analysis of legal contestation.

Translational outcomes: In collaboration with government partners, MandEval aims to integrate research findings into policy discussions, ensuring that the project's insights are leveraged for public benefit. This first presentation at CDIC conference marks a step towards socialising the project's visibility and design, ensuring additional stakeholders and researchers can be aware of the project.

Future actions: The project's findings will be submitted and presented at national and international fora, with the aim of informing pandemic preparedness and vaccination policy. Drawing from international experiences and data-driven insights, the researchers will also seek to consolidate the project's findings into future pandemic planning , ensuring that the lessons learned will inform responses to future emergent health crises.

342

The essential role of social science in the future Australian CDC

Ms Emma Campbell[1], Catherine King[1], Nicole Batten[1], Jane Frawley[2], Katie Atwell[3], Margie Danchin[4, 5], Kerrie Wiley[1]

[1]Sydney School of Public Health, The University Of Sydney, [2]School of Public Health, University of Technology Sydney, Australia 2007, [3]School of Social Sciences, International Relations, Asian Studies & Politics, University of Western Australia, Australia 6009, [4]Murdoch Children's Research Institute, Australia 3052, [5]Department of Paediatrics, The University of Melbourne

6E - Public health policy and decision making, Mezzanine 3, June 13, 2024, 11:00 - 12:30

Context and aim: The COVID-19 pandemic demonstrated the need for social science expertise to inform public health responses. The World Health Organization has now explicitly called for the inclusion of behavioural and social sciences in pandemic preparedness and response. The newly established Australian Centre for Disease Control (ACDC) is tasked with strengthening national responses to disease threats. This study investigated international models of structural and functional inclusion of social science in public health decision-making, to recommend suitable models for the Australian context.

Methods: An initial scoping review of existing published literature on CDC models revealed knowledge gaps on how social science expertise was embedded within public health decision-making. We sought to address this gap by examining grey literature from OECD countries to assess the approaches of including social science within their CDC-type organisation. This also identified participants for semi-structured key informant interviews, consisting of government officials and academics who have experience with social science within CDC-type organisations. Interview data were coded and thematically analysed into country case studies.

Findings: We identified a six step "data to decision" process in which social science data moved through CDC-type structures to reach key decision-makers. Of OECD countries that actively used social science, three general organisational models were identified; Embedded, Hub-and-spoke and Hybrid. Overall thematic results found interdisciplinarity, combining subject-matter and methodological expertise, and formalising structures are essential for sustained and effective use of social science in public health.

Learning Objectives and Outcomes: Findings promoted two key recommendations for the ACDC. Firstly, the necessity of a formalised direct pathway that assess and translates social science data for policy through a hybrid model, utilising current expertise within the Australian public health research landscape. Secondly, a group housed within the ACDC that focuses on translating and coordinating social science data for use by public health decision-makers.

430

The design and development of the Australian CDC Data Strategy and NPHSS

Miss Ally Robbins-Hill[1], Ms Stephanie Panchision[1]
[1]Department Of Health and Aged Care - Australian CDC Establishment Taskforce

6E - Public health policy and decision making, Mezzanine 3, June 13, 2024, 11:00 - 12:30

The establishment of an Australian CDC was an election commitment by the Australian Government and was driven by driven by recent public health emergencies including:

- COVID-19 pandemic
- Japanese encephalitis virus outbreak
- Emergence of mpox
- 2019-20 bushfires and other natural disasters impacting human health.

Establishing an Australian CDC will improve the way we prepare for and respond to emergencies in the future. It will be an authority on public health that Australians can trust and will provide transparent and consistent evidence-based advice to meet community needs.

There is a need to ensure timely access to relevant data, supported by enabling governance, systems and processes for robust public health intelligence, planning and response capabilities. Recent events have demonstrated the constraints on informed public health action and response that can result from complex and inconsistent data collection, sharing and use. Opportunities for data uplift – including improved accessibility, national consistency, and enhanced data sharing between the Commonwealth and states and territories – have been recognised as foundational to improved public health action. Central to achieving this is the improvement in the collection and use of data. As such, key pieces of work are underway, including the scoping of a new National Public Health Surveillance System (NPHSS), and the development of a Data Strategy.

This session will outline the development of the NPHSS and the Data Strategy by providing a summary of the consultation methods used, describe the current decisions and functions in scope of the Australian CDC relating to data and data practices, describe key work being undertaken to support the development of the Data Strategy, and provide an overview of the next steps for both pieces of work.

At the end of the session, participants should have an understanding of how the NPHSS is being developed, and how the system will be enabled by the Data Strategy.

Functional Dialogues: a novel method for real-time research co-creation and knowledge transfer.

Associate Professor Katie Attwell[1], Senior Lecturer Tauel Harper, Senior Research Officer Samantha J Carlson, Dr Jordan Tchilingirian, Mr Darren Westphal, Professor Christopher C Blyth
[1]University Of Western Australia

6E - Public health policy and decision making, Mezzanine 3, June 13, 2024, 11:00 - 12:30

Context: Functional Dialogues (FDs) were a novel research co-creation approach taken by an interdisciplinary team to share vaccination social science research findings from the WA "Coronavax" project in real-time with government during the COVID-19 vaccination program. The team developed the method to address the need for near-immediate research translation during the crisis.
Aims and objectives: This presentation reviews FDs as a method for bridging the evidence-policy gap in pandemic vaccination. We outline the conduct of FDs and critically assess the strengths and weaknesses, seeking to provide a model for future research translation practices in time-limited program and policymaking scenarios.
Methods:
FDs followed a semi-structured discussion framework, giving time for research dissemination and in-depth conversations whilst exploring stakeholders' attitudes, beliefs, experiences, roles, and observations. Each FD and research team debrief was audio-recorded, transcribed, and coded by hand. To identify which government participants should be invited, the researchers liaised with government partners.
Findings: Between 25th January 2021 and 2nd June 2022, the Coronavax FD research team conducted 14 FDs: 50% with Western Australian and 50% with Commonwealth stakeholders. The systems and processes that the FDs established proved to be invaluable to the timeliness, impact, and flow of our project, providing clear moments of policy relevance but also challenges in measuring impact.
Translational Outcomes: FDs increased understanding of the policy environment for researchers, provided timely feedback for policy makers and ensured that the attempt at co-creation and knowledge transfer impacted positively on the Coronavax project's outcomes.
Future Actions: Our experience echoes previous research findings that the systems, processes and relationships of research co-creation and knowledge transfer are the most productive aspects of this method. However, additional approaches to capture evidence of knowledge transfer are still required; further research can also investigate utilising FDs to engage research and policy outside of a pandemic environment.

WILLINGNESS TO PAY FOR HIV VACCINES IN VIETNAM: A CONTINGENT VALUATION APPROACH

Mrs Tram Nguyen Thi Huyen[1,2], Asst. Prof. Somying Pumtong[3], Asst. Prof. Sermsiri Sangroongruangsri[3], Assoc. Prof Luerat Anuratpanich[3]
[1]School of Medicine, Vietnam National University Ho Chi Minh City, [2]Social, Economic and Administrative Pharmacy (SEAP) Graduate Program, Faculty of Pharmacy, Mahidol University, [3]Social and Administrative Pharmacy Division, Department of Pharmacy, Faculty of Pharmacy, Mahidol University

6E - Public health policy and decision making, Mezzanine 3, June 13, 2024, 11:00 - 12:30

Background: With millions affected by HIV globally, the need for an effective vaccine is paramount. This study investigates individuals' willingness to pay (WTP) for prospective HIV vaccines.
Methods: A cross-sectional study involving 1,675 face-to-face interviews was conducted in December 2022 in Southern Vietnam. Using a two-part questionnaire, residents' WTP was determined through the contingent valuation method (CVM). Two bidding games (CVM1 starting bid at lowest value and CVM2 starting bid at maximum value) under three vaccine scenarios (high-, medium-, and low-efficacy) assessed WTP for self-vaccination and child vaccination (if applicable).
Results: Among the 1,655 respondents with valid answers, 553 were willing to pay for their children's vaccination. The average WTP declined with decreasing vaccine efficacy (high to low scenario) and decreasing bid price (CVM2 to CVM1). Significant differences in WTP were observed across scenarios. Education level, marital status, occupation, and income influenced adult and child vaccination WTP.
Conclusion: This study determined factors influencing WTP for future HIV vaccines, aiding policymakers in crafting funding programs and budgeting plans for their introduction in Vietnam.

Glucocorticoid dosing and implications for vaccination: Evolution of global definitions

Dr Xia Wang[1], Ms Cyra Patel[1,2], Prof. Michelle Giles[3,4], A/Prof Penelope Burns[5,6], Prof Kristine Macartney[1,7], Dr Phoebe Williams[1,8,9]
[1]National Centre for Immunisation Research and Surveillance, [2]National Centre for Epidemiology and Population Health, Australian National University, [3]Department of Obstetrics and Gynaecology, Monash University, [4]Department of Infectious Diseases, Peter Doherty Institute for Infection and Immunity, University of Melbourne, [5]Academic Department of General Practice, Australian National University, [6]School of Medicine, Department of General Practice, Western Sydney University, [7]Discipline of Child and Adolescent Health, Sydney Medical School, University of Sydney, [8]School of Public Health, Faculty of Medicine, University of Sydney, [9]Department of Immunology and Infectious Diseases, Sydney Children's Hospital Network

6E - Public health policy and decision making, Mezzanine 3, June 13, 2024, 11:00 - 12:30

The SARS-CoV-2 pandemic highlighted significant evidence gaps for clinicians and policy-makers to identify disease risk factors and prioritise individuals mostly at risk of significant illness due to vaccine-preventable diseases (VPDs). People prescribed glucocorticoids experience immune inhibition and consequently have increased infection risk, requiring special consideration for vaccination. However, internationally agreed glucocorticoids 'high-dose' definitions in most immunisation guidelines (i.e. prednisone >20 mg/day, or >2 mg/kg in children) are based on expert opinion, without clear rationale. With the widespread use of glucocorticoids and the urgent need for evidence-based vaccination guidance during this pandemic, we conducted a literature review aiming to summarise the existing evidence on the impact of glucocorticoid dosing on vaccine responses and safety.

Full-text searches were performed in PubMed until 14 February 2024. Grey literature including immunisation guidelines was searched from websites of global public health agencies, immunisation authorities and professional organisations.

Our review revealed the supporting evidence for the widespread adoption of "high-dose" glucocorticoid definitions (i.e.>20 mg/day) is scant. The evidence between glucocorticoid prescribing and vaccine effectiveness was extrapolated from immunogenicity studies. Reduced antibody titres and seropositivity were frequently observed in people on 'high-dose' glucocorticoids, whereas the impact of low- to medium-dose glucocorticoids (ranging from 7 to 20 mg/day) remains inconclusive. Reactogenicity may occur more frequently with glucocorticoid therapy, but the risk of live vaccine-strain infections is rare. Notably, participants often received concomitant immunosuppressive medications, alongside potential immunomodulation impacts due to their underlying conditions. Immunisation providers should consider each patient's risk-benefit profile when curating immunisation schedules for VPDs, rather than based on a strict dosing threshold solely. Further research is warranted to determine the clinical impact of glucocorticoids on the risk of VPDs and clarify the duration of glucocorticoid-induced immunosuppression. Another research direction is a shift towards developing specialised vaccines to enhance immune responses in immunosuppressed individuals.

426

A Self-Determined Approach to COVID-19 Preventative Health Initiatives in Gippsland 2023

Ms Andi Walters[1], Ms Michelle Stankovic[1], Ms Annelies Titulear[1]
[1]Gippsland Region Public Health Unit

6E - Public health policy and decision making, Mezzanine 3, June 13, 2024, 11:00 - 12:30

Background

The Gippsland Region Public Health Unit (GRPHU) sought to embed self-determination principles within place-based initiatives relevant to the Aboriginal community through an eight-month project (April 2023 - December 2023) funded by the Victorian Department of Health. This comprehensive effort focused on increasing COVID-19 vaccination rates, promote COVID-19 protective behaviours, and continue strengthening relationships between the GRPHU, Aboriginal Community Controlled Health Organisations (ACCHO), and the Aboriginal Community in Gippsland.

Process

GRPHU leveraged local insights and knowledge to determine appropriate stakeholders working with local Aboriginal Community and sought advice about the project design. Self-determination principles were embedded within the project scope for flexibility. Enabling participating stakeholders to make choices about activities that would be meaningful for local community.

Analysis

The project resulted in successful stakeholder engagement and participation. Seven of the eight stakeholders first consulted participated in the project, designing and implementing a range of COVID-19-related activities tailored to local Aboriginal communities. These activities included but not limited to local events, medical equipment, health promotion resources and innovative COVID-19 vaccination clinic models. Flexibility within the project scope was identified as an essential and effective way of fostering connections with ACCHOs and the Aboriginal community. Innovative ideas for activities outside “only COVID-19” focused, provided the opportunity to exchange broader health knowledge for a whole of community approach. Relationships with all participating stakeholders further strengthened with face-to-face meetings continuing after project completion.

Outcomes

Self-determination principles need to be embedded from the outset in preventative health initiatives. Activities need to be flexible to adjust to community needs. Reducing project reporting burden and incorporating story telling is important. Cultural safety is everyone’s business and a continuous journey. Whilst a project may end, the work must be sustainable and ongoing. By working together, applying principles of self-determination and closing the gap, our project illustrates a successful model of engaging Aboriginal and Torres Strait Islander organisations in place based, community-led preventative health actions for COVID-19.

Informing the development of modelling guidance for the World Health Organization

Prof Julie Leask[1,2], Ms Maria Christou-Ergos[1,2], Dr Ikram Abdi[1,2], Dr Philipp Lambach[3], Ms So Yoon Sim[3]
[1]School of Public Health, University Of Sydney, [2]Sydney Infectious Diseases Institute, [3]World Health Organization

6E - Public health policy and decision making, Mezzanine 3, June 13, 2024, 11:00 - 12:30

Background
In recent years, mathematical transmission models have been increasingly used to support immunisation program decisions. Efforts by different stakeholders highlight an increasing need for facilitating informed use of modelled evidence. WHO established a working group in 2023 to develop guidance to assist vaccination decision makers to use modelled evidence. In this study, we sought to better understand the needs of end users of the guidance to inform the guidance's delivery and content.
Methods
We conducted qualitative in-depth interviews with vaccination decision-makers and modellers from all WHO regions and across low-, middle- and high-income countries. Interviews explored: (i) How modelling is understood and used by decision-makers, if at all; (ii) the challenges faced by end-users in using modelled evidence; (iii) the types of guidance would be most useful to enhance the use of modelled evidence.
Results
Analysis from 14 in-depth interviews indicated that people with modelling expertise used it firsthand, often in an advisory capacity, and in a systematic way. Less experienced users often in policy advisory roles were less confident in their understanding of modelling and some did not use it at all. Decision-makers with little or no modelling experience cited a need for more information to help them understand the value of modelling in their context and many were supportive of its potential. All participants saw capacity strengthening and localised translation to instil confidence in the application of modelled evidence. Those with less experience expressing a need for ongoing interactive engagement with knowledge brokers and training in addition to any written guidance.
Conclusion
Insights from this study are being integrated into the development of the guidance. By considering the diverse challenges and needs of both experienced and inexperienced users of modelling, the guidance will more effectively deliver information to support immunisation strategy, policy, and program decision-makers globally.

Long-term (4-year) vaccine effectiveness and impact of 4CMenB against gonorrhoea

Prof Helen Marshall[1,2], Dr Bing Wang[1,2], Dr Lynne Giles[3], Dr Prabha Andraweera[1,2], Dr Mark McMillan[1,2], Ms Sara Almond[4], Ms Rebecca Beazley[4], Mr Noel Lally[4], Dr Jana Sisnowski[4], Dr Charlotte Bell[4], Dr Louise Flood[4], Professor James Ward[5]
[1]Adelaide Medical School and Robinson Research Institute, The University Of Adelaide, [2]Women's and Children's Health Network , [3]School of Public Health, The University of Adelaide, [4]Communicable Disease Control, SA Health, [5]Poche Centre for Indigenous Health, University of Queensland

6F - School programs & immunisation for adolescents, Mezzanine 4, June 13, 2024, 11:00 - 12:30

Background:
A four-component serogroup B meningococcal (4CMenB) vaccine program was introduced in adolescents and young adults in February 2019 in South Australia (SA). The Joint Committee on Vaccination and Immunisation, UK, recently recommended 4CMenB for prevention against gonorrhoea in those who are at highest risk of gonorrhoea. This study aimed to evaluate the long-term vaccine effectiveness (VE) and vaccine impact (VI) on gonorrhoea 4 years after implementation of the program in SA.
Methods:
Gonorrhoea and chlamydia notification data were provided by the Communicable Disease Control Branch, SA Health. VE was estimated as the reduction in the odds of gonorrhoea using the screening and case-control methods. Vaccine impact was estimated as incidence rate ratios (IRR) using a negative binomial regression model.
Results:
At four years after implementation of the program, estimated two-dose VE against gonorrhoea in adolescents and young adults was 44.3% (95%CI 35.1–52.2%) using age-matched individuals with chlamydia notification as controls. Lower VE estimates were demonstrated in those >48 months post-vaccination (26.2% (95%CI 0–47.0%)) compared to those within 6–48 months of vaccination (VE=46.0% (95%CI 33.3–54.2%)). A higher VE estimate was identified in females (48.7% (95%CI 36.9-58.2%)) compared to males (38.0% (95%CI 22.0-50.7%)). There was no reduction in effectiveness for gonorrhoea cases co-infected with chlamydia (VE=43.4% (95%CI 27.1-56.2%)). Applying the screening method, VE=59.7% (95%CI 53.3-65.2%). The adjusted gonorrhoea IRR was 0.635 (95%CI 0.421-0.957; p=0.03) with a 36.5% reduction in gonorrhoea in 15-17 year olds.
Conclusions:
4CMenB demonstrates moderate effectiveness within 4 years of vaccination, with some waning of protection after 4 years. Sex at birth may be an important factor influencing vaccine effectiveness and is an important consideration for policy makers as women carry the highest burden of disease from gonococcal infection. Consideration of a booster dose and timing of dose in young people to address waning protection warrants further evaluation.

Exploring factors associated with low vaccination uptake among South Eastern Sydney schools

Dr Alexandra Young[1], Ms Leigh McIndoe[2], Dr Cassandra Vujovich-Dunn[1], Dr Cristyn Davies[3,4], Dr Vicky Sheppeard[2,5], Ms Stephanie Kean[2], Ms Michelle Dives[2], Professor Rebecca Guy[1]
[1]Kirby Institute, UNSW Sydney, [2]South Eastern Sydney Local Health District Public Health Unit, [3]Specialty of Child and Adolescent Health, Faculty of Medicine and Health, University of Sydney, [4]Sydney Infectious Diseases Institute, University of Sydney, [5]School of Public Health, University of Sydney

6F - School programs & immunisation for adolescents, Mezzanine 4, June 13, 2024, 11:00 - 12:30

Background: NSW Health partners with schools to deliver a school vaccination program, offering free vaccinations to students in Year 7 (HPV and dTpa) and Year 10 (meningococcal ACWY). Despite these efforts, large disparities in immunisation coverage persist among South Eastern Sydney Local Health District (SESLHD) schools. This study aimed to explore factors influencing vaccination coverage in the District.

Methods: Using a qualitative design, key immunisation staff from SESLHD, school coordinators from a diverse range of schools, and parents of Year 7 students who had not received two vaccinations at school were purposively sampled and invited to participate in interviews or a focus group. The focus group and school coordinator interviews explored barriers and facilitators of vaccination uptake and program delivery. Parent interviews explored attitudes to vaccination and the school program, and concerns and barriers.

Results: We recruited five immunisation staff, 12 school coordinators, and 11 parents. We identified six key themes: (1) perceived high levels of student anxiety around vaccination, (2) varied preferences for GP vaccinations or GP visits due to school absences, (3) the pivotal role of effective communication and an engaged school coordinator in securing parent and student support, (4) concerns about HPV linked to misinformation and limited knowledge, (5) varied reactions to online consent, and (6) the importance of the health-education partnership.

Outcomes: We found the SESLHD school vaccination program could be improved through enhanced education on vaccines and information on the school vaccination program, including communication about school catch-ups. Addressing privacy concerns, and informing students about vaccination day processes to alleviate anxiety are vital. Future opportunities involve SESLHD staff collaborating with schools to educate and promote the school vaccination program, emphasising the important role vaccination plays for future wellbeing. This project is an excellent example of using research evidence to guide and inform public health practice.

Pertagen is a safe and effective stand-alone Pertussis vaccine

Mrs Heidi Hutton[1], Dr Ushma Wadia[1,2], Dr Anita Van den Biggelaar[1,2,3], Dr Leonard Goh[1], Dr Librada Fortuna[3], Ms Vilasinee Yuwaree[3], Dr Souad Mansouri[3,4], Pharma.D. Pham Hong Tai[3], Professor Peter Richmond[1,2]

[1]Telethon Kids Institute, Perth Children's Hospital, [2]School of Medicine, University of Western Australia, [3]BioNet Asia, [4]Technovalia Eastern Innovation Business Centre

6F - School programs & immunisation for adolescents, Mezzanine 4, June 13, 2024, 11:00 - 12:30

CONTEXT and AIM: Pertussis remains a contagious disease of major concern in Australia. Booster vaccination is recommended in adolescents, adults, and in each pregnancy due to waning immunity after 3 to 5 years. Since pertussis-only vaccines are not available in Australia, each pertussis booster vaccination is co-administered with doses of tetanus and diphtheria vaccines, despite the latter being unnecessary.

METHODS and RESEARCH FINDINGS: This phase 2/3 randomised observer-blind controlled clinical trial aimed to demonstrate the non-inferior immunogenicity based on seroconversion rates (4-fold increase from baseline) of Pertagen®, a stand-alone pertussis vaccine compared with Boostrix®, a Diphtheria, Tetanus, Acellular-pertussis vaccine in 102 healthy young adults aged 18-30 years. PT-IgG, FHA-IgG and PT neutralizing antibody titers were assessed 28 days and 1 year after vaccination. All solicited adverse reactions were reported through to Day 7 and unsolicited adverse events were reported through to Day 28. Serious adverse events were reported through to the end of the study. Participants were randomised in a 2:1 ratio to receive Pertagen® or Boostrix® (single-dose) based on stratification for those primed with either whole cell or acellular pertussis-based vaccine in infancy. Safety and immunogenicity data up to 1 year were collected for 102 participants (mean age 20.6 years, 67.7% female, 84.3% Caucasian). At 1-month post-vaccination, Pertagen® was shown to be non-inferior to Boostrix™ with higher pertussis immune response on both PT and FHA IgG seroresponse rates, anti-PT and anti-FHA GMC and PT neutralising GMT. Analysis into persisting PT-IgG, FHA-IgG, and PT neutralizing antibodies at 1-year post-vaccination for Pertagen® recipients as compared to Boostrix® recipients is currently ongoing and should be available by June 2024. Pertagen® was well tolerated and no vaccine-related serious adverse events were reported during the study.

INTERPRETATION: Pertagen®, a stand-alone pertussis vaccine, is well tolerated and immunogenic and may be a much needed alternative to Tdap or Tdap-IPV vaccines for pertussis immunisation where Td or Td-IPV vaccination is not needed.

Meningococcal B immunisation practice - recommending a non-funded vaccine.

Ms Sonja Elia[1,2,3]
[1]Royal Children's Hospital, Melbourne, [2]Murdoch Children's Hospital, [3]The University of Melbourne
6F - School programs & immunisation for adolescents, Mezzanine 4, June 13, 2024, 11:00 - 12:30

Context
The meningococcal B vaccine Bexsero® was introduced in Australia in 2014 to prevent invasive meningococcal disease, targeting serogroup B. Since then, some funding has become available in certain states and for special risk groups but it is more broadly a recommended non-funded vaccine. Research has shown that recommending a vaccine without providing funding is likely to result in low vaccine coverage.

Process
The Royal Children's Hospital (RCH) Immunisation Drop-in centre provides opportunistic immunisations for all people attending a tertiary hospital. This includes National Immunisation Program (NIP) as well as vaccines that are not funded on the schedule. Data has been collected on the uptake of meningococcal B vaccine in infants <2 years of age using the Electronic Medical Record (EMR) from 1/1/2017 to 31/10/2023.

Analysis
From 1st January 2017 to 31st October 2023, 5,782 clients received the meningococcal B vaccine (20% of all patients). 3,425/5,782 (60%) were doses given to infants <2 years of age. The overall number of patients <2 years of age that presented to the Drop-in centre during the study period, was 16,291. Therefore only 3,425/16,291 (21%) were vaccinated with the meningococcal B vaccine. This includes Aboriginal and Torres Strait Islander patients and those in special risk categories. More experienced nurses were more likely to recommend and administer meningococcal B vaccine.

Outcomes
The RCH Immunisation Drop-in centre has provided meningococcal B vaccine since it was introduced. However, recommending a non-funded vaccine is challenging and has likely resulted in low uptake at RCH. Strategies to improve discussions have been implemented with the development of a brochure on "vaccines available for private purchase". The RCH Immunisation service will continue to monitor and improve meningococcal B immunisation.

Vaccinating adolescents with intellectual disability at school: Engaging in supported decision-making

Christiane Klinner[1], Alexandra Young[1], Iva Strnadová, Jenny O'Neill[3,4], Christy Newman[5], Horas Wong, Cristyn Davies[7,8], Cassandra Vujovich-Dunn[1], Rachel Skinner[7], Margie Danchin Danchin[9], Rebecca Guy[1], Dr Allison Carter[1,10,11]
[1]Kirby Institute, [2]School of Education, UNSW Sydney, [3]The Royal Children's Hospital Melbourne, [4]The University of Melbourne, [5]Centre for Social Research in Health, UNSW Sydney, [6]School of Nursing and Midwifery, University of Sydney, [7]Specialty of Child and Adolescent Health, Faculty of Medicine and Health, University of Sydney, [8]Sydney Infectious Diseases Institute, University of Sydney, [9]Murdoch Children's Research Institute, [10]Australian Human Rights Institute, UNSW Sydney, [11]Faculty of Health Sciences, Simon Fraser University

6F - School programs & immunisation for adolescents, Mezzanine 4, June 13, 2024, 11:00 - 12:30

Background: Throughout Australia, vaccination rates are significantly lower in special(ist) schools compared to mainstream settings. While the limited studies in this population identify student anxiety as a major barrier to successful vaccination, this has not been fully explored. This study aimed to explore the vaccination experiences and needs of students with intellectual disability and/or autism at special schools in NSW from the perspective of all stakeholders involved in the program.

Methods: As part of the Vax4Health project, semi-structured interviews and focus groups were conducted with 50 participants comprising students with disability, parents, education and health staff involved in the NSW school vaccination program. Interviews explored stakeholder perspectives of the vaccination journey, including opportunities and challenges relating to student collaboration and consent, anxiety and restraint.

Findings: Students with disability were rarely engaged in the vaccination decision-making process. Reasons included difficulties dealing with students' anxiety and assumptions around students' decision-making (in-)capacity. Vaccination practices that discouraged engagement were common and included surprising students with the needle, physically restraining them against their will, and protracted vaccination processes that prioritised administering the vaccine over ensuring students felt safe and comfortable. This led to elevated student anxiety, unsafe situations involving escalating behaviour, traumatised students, and vaccine rejection. Such practices were contrasted with approaches that fostered student engagement and sense of control. They included building trust and rapport through active engagement with students' interests, abilities and preferences, and focusing on students immediate needs before attempting to vaccinate. This led to more satisfying vaccination experiences for all involved. Despite nurses' empathy, flexibility, and clinical experience, many lacked disability-specific training and a clinical protocol for reasonable adjustments.

Conclusion: Individualised engagement strategies that enable students to participate in the vaccination process and disability-specific training for immunisation nurses are required to reduce vaccination anxiety and improve vaccination experiences and uptake.

Combining virtual and physical messaging: HPV campaign with Aboriginal adolescents in Boorloo

Miss Dannielle Nelson[1], Ms Katiska Davies[1], Ms Teya Duggleby, Ms Summer Porter, Dr Anastasia Phillips, Ms Naomi Nelson
[1]MCDC - Aboriginal Health Team, [2]Aboriginal Health Council of WA (AHCWA)
6F - School programs & immunisation for adolescents, Mezzanine 4, June 13, 2024, 11:00 - 12:30

Context: Human papillomavirus (HPV) infection causes cervical and other cancers. HPV vaccination coverage is substantially lower among Aboriginal adolescents and coverage is declining in metropolitan Perth. The gap in coverage between Aboriginal and non-Aboriginal adolescents is increasing.
Aim: Metropolitan Communicable Disease Control (MCDC), in partnership with the Aboriginal Health Council of WA (AHCWA), aimed to develop a culturally specific project to improve awareness and knowledge around HPV and HPV vaccination among Aboriginal adolescents in Boorloo, including how to access vaccination through culturally safe providers.
Process: The Stay Safe, Stay Moorditj (SSSM) project was co-designed with Aboriginal adolescents. The project included the development and distribution of promotional bags to Aboriginal adolescents in Boorloo, through events, Aboriginal organisations and programs. This was complemented by a social media campaign delivered via TikTok, Instagram and Facebook, featuring young Aboriginal people. Artwork for the project was commissioned through an art competition with Aboriginal youth, with four designs selected from local artists. These designs were featured on promotional items and throughout the social media campaign.
Analysis and outcomes: Promotional bags were well received at events and by Aboriginal organisations and youth programs. The social media campaign had good levels of engagement and received positive feedback. The involvement of Aboriginal young people in developing the TikTok videos promoted a sense of ownership of the campaign. They reported feeling empowered in building health literacy through their ability to share important health information with their peers and community.
Conclusion: Social media may provide a channel for empowerment and the expression of culture in health promotion campaigns. The delivery of promotional material such as bags encourages partnerships between organisations and engagement with the community. Local Aboriginal-led co-design is essential for health promotion among Aboriginal communities. Organisational partnerships are important in bringing together diverse skills and resources for effective health promotion.
Community consultation: AHCWA, and the Aboriginal Principal Project Officer (WA Department of Health), and Aboriginal Staff of MCDC support sharing the outcomes of the SSSM project. This project was developed with local young Aboriginal people in Boorloo.

Identifying the gaps - insights into adolescent and young adult vaccination coverage

Dr Alexandra Hendry[1], Mr Brynley Hull[1], A/Prof Frank Beard[1,2]
[1]National Centre For Immunisation Research & Surveillance, [2]The University of Sydney

6F - School programs & immunisation for adolescents, Mezzanine 4, June 13, 2024, 11:00 - 12:30

Background

Three vaccines are provided to adolescents under the National Immunisation Program, primarily through state/territory-run school-based vaccination programs – human papillomavirus (HPV) and diphtheria-tetanus-pertussis (dTpa) in Year 7 and meningococcal ACWY in Year 10. Adolescents who miss/opt-out of school-based vaccination can be vaccinated by other immunisation providers, including to 25 years of age for HPV. It is important to identify areas/populations where gaps in vaccination coverage exist.

Methods

Using Australian Immunisation Register data, we calculated HPV, dTpa and meninogcoccal ACWY vaccination coverage in year-wide cohorts of people turning 13–19 years (13–25 for HPV) in 2022 by Indigenous status. We also assessed composite measures of adolescent vaccination coverage in those turning 15 (receipt of both HPV and adolescent dTpa dose) and those turning 18 (receipt of HPV and adolescent dTpa/meningococcal ACWY doses).

Results

In 2022, HPV and dTpa coverage was 72.0% and 73.0%, (60.5% and 61.0%, Indigenous), respectively, in adolescents turning 13. Coverage increased with age – in adolescents turning 18, HPV was 86.7% (88.6%, Indigenous) and dTpa was 88.2% (87.8%, Indigenous). Meningococcal ACWY coverage was lower, 68.2% in adolescents turning 16 (55.7%, Indigenous), and 79.1% (71.2%, Indigenous) in adolescents turning 18. In older cohorts, HPV coverage decreased with age, down to 66.2% (62.6%, Indigenous) in those turning 24 and 41.1% (44.1%, Indigenous) in those turning 25. In adolescents turning 15, 83.7% (80.1%, Indigenous) had received both HPV and adolescent dTpa dose. Coverage for receipt of all three vaccines in adolescents turning 18 was 73.4% (65.4%, Indigenous). Updated 2023 data, including by smaller geographical area, remoteness and socioeconomic status of area of residence, will be presented.

Conclusion

Adolescent and young adult vaccination in Australia is relatively high by global standards. However, a greater focus on increasing uptake, including through facilitating catch-up vaccination and optimising equity of access, would be of benefit.

Optimising HPV vaccination delivery in Tasmanian schools: Lessons from parents and providers

Dr Maria Unwin[3], Professor Alison Venn[3], Dr Cassandra Vujovich-Dunn[4], Associate Professor Nicola Stephens[5], Ms Kerry Cleaver[6], Dr Mark Veitch[6], Professor Rebecca Guy[4], Dr Cristyn Davies[1,2]
[1]Speciality of Child and Adolescent Health, Faculty of Medicine and Health, University of Sydney, [2]Sydney Institute for Infectious Diseases, University of Sydney, [3]The Menzies Institute for Medical Research, University of Tasmania , [4]The Kirby Institute, University of New South Wales, [5]The School of Medicine, University of Tasmania, [6]Department of Health, Tasmania

6F - School programs & immunisation for adolescents, Mezzanine 4, June 13, 2024, 11:00 - 12:30

Introduction: Despite having well-established relationships and processes for the school-based immunisation program (SBIP), Tasmania experiences specific barriers to optimising HPV vaccine completion. The HPV vaccination partnership project aimed to understand facilitators and barriers to students' initiation and completion of vaccination in Tasmanian schools.

Methods: In this qualitative study, we undertook semi-structured interviews with school personnel, council immunisation providers and parents of HPV vaccine-eligible adolescents (2021-2023). We chose a sample of Tasmanian secondary schools across sectors, regions, and demographic variables. Council staff providing the SBIP, key personnel involved in program delivery, and parents of adolescents with incomplete HPV vaccination status were invited to participate. Interviews explored roles and relationships (across health and education sectors, parents, and adolescents); HPV vaccination information, communication, and processes; the school vaccination environment; and parents' perspectives on HPV vaccination for their adolescents. Transcripts were analysed using thematic analysis and reported using the Consolidated Criteria for Reporting qualitative research.

Results: We recruited 18 council staff, 15 school personnel, and 14 parents. HPV vaccination program facilitators included collaborative partnerships with clear roles between health and education; proactive leadership; well-established practices and processes; a supportive vaccination environment; and clear communication and information sharing between stakeholders. Barriers included consent form return processes and complex information for parents; poor communication among stakeholders; unfamiliarity with SBIP roles and processes; and unwelcoming vaccination environments. Parents with poor experiences of school-based vaccination as adolescents, and adolescents with poor experiences of healthcare more broadly, generated unfavourable consumer attitudes toward HPV vaccination.

Conclusion: Findings highlight the importance of clear strategies to promote relationships, define roles, and ensure access to easily understood vaccine information. We also identified the need to revise consent processes by developing online consent forms. The Tasmanian Department of Health is using the study findings to inform future SBIPs.

Invasive meningococcal disease vaccination: targeted literature review of adolescents and parents/caregivers' preferences

Shahina Begum[1], Eliazar Sabater Cabrera[2], Oscar Herrera-Restrepo[3], Twinkle Khera[4], Willings Botha[5], Laurie Batchelder[5], Zeki Kocaata[2]
[1]GSK, [2]GSK, [3]GSK, [4]IQVIA, [5]IQVIA

6F - School programs & immunisation for adolescents, Mezzanine 4, June 13, 2024, 11:00 - 12:30

AIM
Invasive meningococcal disease (IMD) serogroups A, B, C, W, Y are commonly prevented by MenACWY and MenB vaccines. MenABCWY candidate vaccines could potentially provide benefits as less injections, simplified schedules, and increased uptake. However, there is limited insight on factors influencing preferences for IMD vaccines/vaccination (Vax). This targeted literature review synthesized evidence of factors influencing IMD Vax preferences in 16–23-year-old adolescents/young adults (Ado/YA) and parents/caregivers (P/CG) of 16-18-year-old adolescents.

METHODS
PubMed and Google Scholar were searched globally to identify publications on IMD Vax attitudes and preferences, restricted to English and published between 2005-2022. Data were extracted and synthesised from full text reviews to list IMD Vax preference attributes.

OUTCOMES
From the 77 abstracts screened, 19 publications were extracted, with 17 relevant for Ado/YA and P/CG. Knowledge of disease severity (20% of Ado/YA articles) and vaccine (29% of P/CG articles) were the most reported factors influencing Vax preference. Severity of disease increased Vax preference for both groups (14%), while low disease awareness limited P/CGs' willingness to vaccinate children (14% of P/CG articles). Some Ado/YA preferred fewer injections due to reduced injection site discomforts (13%). P/CG preferred less injections due to less time and less physician visits, as it may reduce vaccine preparation/injection/administration and indirect costs associated with parental work loss (7%). Their concerns over injection-related pain were a Vax barrier (14%). IMD vaccine effectiveness was recognized by Ado/YA (13%). Longer duration of protection was important for P/CG (14%), whilst herd immunity and direct protection was preferred in Ado/YA (13%).

FUTURE ACTIONS
Findings highlight IMD Vax characteristics as key considerations among Ado/YA and P/CG when making Vax decisions. To improve vaccination coverage and protection, the evidence supports preferences for vaccinations offering benefits such as fewer injections. Trade-offs between factors relevant for a IMD combination vaccine need further research.

Exploring TikTok's Role in Adolescent Health Messaging: A Journey with @unimelb_health

Mrs Jo Hickman[1,2], Dr Wonie Uahwatanasakul[3,4], Ms Victoria Iliadis[3], Mr Tom Arvanitis[4], Prof Jim Buttery[1,3,4]
[1]Murdoch Children's Research Institute, [2]Monash Health, [3]Royal Children's Hospital, [4]The University of Melbourne

6F - School programs & immunisation for adolescents, Mezzanine 4, June 13, 2024, 11:00 - 12:30

Advances in technology and social media platforms have significantly changed how health professionals and consumers access health information. TikTok is the fastest growing such online platform and is used by approximately two thirds of teens. TikTok offers rapid communication, presenting new opportunities and challenges for adolescent health messaging, with the potential to empower health through preventive healthcare and immunisation. The use of social media during the COVID-19 pandemic in a period of social distancing emphasised the capacity and value of social media platforms in effective science communication.

In 2021, a group of medical students were invited to create TikTok's that were relevant to the COVID-19 pandemic and other health related topics. The videos were shared on the new channel @unimelb_health The target audience was 12- to 15-year-olds, and an age-appropriate consumer reference panel was established to inform relevant content. In the second year of the project, medical students were joined by students of other health disciplines. In 2023 subject matter experts including medical consultants and other health professionals, also began to deliver content. They proved to be effective and impactful science communicators. The channel currently has over 60K followers, and 3.2 million likes, with success also achieved through transference of videos to reels on Instagram. Topics that have covered communicable diseases and immunisation include correct mask wearing and hand hygiene, the immunisation process, influenza and COVID-19 vaccines, sexually transmitted diseases with a focus on HPV (Human Papillomavirus) infection and mumps.

The next stage of the project involves collaboration with the education faculty of the affiliated university, to share videos with relevant year levels at government and independent schools. This will enable feedback from a larger population size to measure the effectiveness of the educational content. The health student experience in digitally engaging the target audience will furthermore be evaluated.

A

B

C

d

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W

Z

Communicable Diseases & Immunisation Conference 2024

PROTECTING COMMUNITIES: EMPOWERING HEALTH THROUGH DISEASE CONTROL AND IMMUNISATION

Tuesday 11 to Thursday 13 June 2024

Brisbane Convention and Exhibition Centre

BRISBANE, QUEENSLAND

#CDIC2024

POSTERS

Phase 3 study evaluating lot-to-lot consistency of V116 in adults 18-49 years

Dr Louise Dunn[1], Dr Paul Scott[2], Dr Ilkka Seppa[3], Dr Yoseph Caraco[4], Dr Silvia Narejos Perez[5], Dr Sady Armada Alpizar[6], Dr Jose Francisco Cardona[7], Dr David Greenberg[8], Dr Carlos Grijalva[9], Dr Walter Orenstein[10], Richard T. Wiedmann[2], Doreen Fernsler[2], Dr Kyeongmi Cheon[2], Dr Jianing Li[2], Dr Heather Platt[2]
[1]MSD, [2]Merck & Co., Inc., [3]Clinical Research, FVR Turun rokotetutkimusklinikka Lemminkaisenkatu, [4]Hadassah-Hebrew University Medical Center, [5]CAP Centelles, [6]Clinical Research Trials of Florida, [7]Indago Research and Health Center, [8]Soroka University Medical Center, [9]Vanderbilt University Medical Center, [10]Emory University

Background: Adult pneumococcal disease (PD) persists, despite pneumococcal conjugate vaccine (PCV) use among children and adults. V116 is an investigational PCV containing the most prevalent serotypes associated with adult PD in regions with established pediatric vaccination programs. This Phase 3 study evaluated safety, tolerability, and immunogenicity across three lots of V116, and of V116 combined lots, compared with PPSV23.

Methods: Pneumococcal vaccine-naïve adults 18–49 years of age were randomized 1:1:1:1 to receive one dose of one of three lots of V116 or PPSV23. Serotype-specific OPA GMTs and IgG GMCs were evaluated 30 days post-vaccination. Safety was evaluated as the proportion of participants with adverse events (AEs).

Results: Across three lots, V116 met predefined equivalence criteria for all 21 vaccine serotypes, as assessed by serotype-specific OPA GMTs; lower and upper limits of the 95% confidence interval of the OPA GMT ratios were within the equivalence margin of 0.5 and 2.0. OPA GMTs were generally comparable between V116 combined lots and PPSV23 groups for the common serotypes and were higher in the V116 group for the serotypes unique to V116. Proportions of participants who reported AEs were generally comparable between the V116 combined lots (80.4%) and PPSV23 groups (74.9%).

Conclusions: V116 elicited equivalent immune responses across three manufacturing lots. V116 is comparable to PPSV23 for common serotypes and higher for serotypes unique to V116, and is generally well tolerated, with a safety profile comparable to PPSV23. These data support the use of V116 in adults.

Strengthening Outbreak Investigation for Diarrheal Disease in Kiribati

Ms Lavinia Boorau
[1]Ministry of Health And Medical Services

Diarrheal disease poses an important public health challenge with outbreaks occurring frequently in Kiribati. Kiribati has a population of 129,000 with the majority living in crowded conditions in South Tarawa. The absence of a standard case investigation for diarrheal disease is an issue for outbreak investigation, resulting in missed essential information and inconsistency in reporting. This abstract highlights the importance of strengthening the outbreak case investigation.

We analyzed retrospective data from the Environmental Health Unit outbreak investigation reports for 2014, 2017, 2019. The analysis of existing data found that in 2014 only 7 cases were investigated and children from the ages of 3 months to 2 years were the most affected. In 2017, 17 cases were investigated from the three reported areas on South Tarawa. The majority cases reported from were in Betio with 50% in children under five. In 2019, seven cases were reported and investigated with the majority cases also in children under five. An identified important gap resulting from no standard case investigation are the missing date of onset of diarrhea and the location of diarrhea case is not specified. South Tarawa is densely populated, and the number of cases investigated suggest under reporting in previous years.

To improve future outbreak investigation a new standard case investigation form was designed and pre-tested. A database was established to support the new form and training was conducted for Environmental health officers on the use of the new form.

Improving an outbreak investigation for diarrheal diseases by establishing standard case investigation forms to provide consistency information, produce quality data and easy for report analysis was a priority. A future analysis using the data from new form will be undertaken to check for improved outbreak investigation and reporting.

SARS-CoV2 Wastewater Surveillance detects novel variants prior to detection in clinical samples

Dr Jaisy Arikkatt[1], Ms Merissa Missingham[2], Dr Son Nguyen[2], Dr Wei Wang[1], Ms Heide Galsote[1], Ms Christina Tran[1], Ms Emelia Ellaby-Hall[1], Dr Murrari Bhandari[3], Mr Peter Burtonclay[1], Ms Kirsten McMahon[1], Mr Nirdesh Poudel[1], Ms Sonja Hall-Mendelin[1], Dr Scott Craig[1], Mr Glen Hewitson[1], Dr Chenwei Wang[2], Dr Alyssa Pyke[1], Ms Kirsten Smyth[1], Dr Sanmarie Schlebusch[1,2,3], Dr Amy Jennison[1,2,3,4], Dr Anna Brischetto[4]
[1]Queensland Public Health Virology, [2]Queensland Public Health and Infectious diseases Reference Genomics, [3]Queensland Public Health Microbiology, [4]Public and Environmental Health

Genomic Sequencing of respiratory samples remains a key tool for ongoing surveillance of SARS-CoV2. Post pandemic, there was a notable decline in case numbers and testing across the wider population. Also, the capacity for routine sequencing declined significantly. This has resulted in a bias representation of SARS-CoV2 variants in the community. In response, SARS-CoV2 sequencing is now being applied to wastewater as a means of enhancing surveillance. Faecal viral shedding from infected individuals into wastewater has been shown to represent an efficient 'community' sample. Queensland has recently introduced wastewater surveillance to complement the existing patient data, and here we aim to compare genomic data from wastewater and clinical surveillance to establish the concordance and determine whether wastewater offers any additional value over clinical surveillance for the detection of novel SARS-CoV2 variants.

Twenty-four-hour composite wastewater samples were collected fortnightly beginning June 2023 from different treatment plants across Queensland. SARS-CoV2 in wastewater was concentrated using membrane filtration and centrifugation, followed by RNA extraction and RT-qPCR detecting the N1 gene. Amplicons were generated using the ARTIC primers and sequenced on the Illumina NextSeq. Illumina paired-end reads were analysed using the US FDA analysis pipeline C-WAP and Freyja. Lineage calling for consensus sequence was carried out by Pangolin. The data were then compared to surveillance data from clinical samples. Statistical analyses and data visualisations were performed using R V4.3.0, R Studio V2023.03.1 and Stata IC 16.1.

Overall, variant evolution and trends represented through the wastewater sequencing analyses aligned with those provided by the clinical patient surveillance. Importantly, several novel recombinant lineages, for example XCP, XCT, XAP, XDP and XDD were detected in wastewater prior to detection in clinical samples. This demonstrates wastewater sequencing capacity to provide both an early detection of novel variants, and detect variants not captured though the current patient surveillance strategy.

Live Vaccine and Varicella Post Exposure Prophylaxis in Paediatric Liver Transplant Recipients

Dr Emily Bonett[1], Ms Rebecca Doyle[1,2], Dr Amin Roberts[4,5], Dr Sophie Wen[1,3]
[1]Queensland Specialist Immunisation Service, Children's Health Queensland, [2]University of Queensland School of Nursing, Midwifery and Social Work, [3]University of Queensland Centre for Clinical Research, [4]Department of Paediatric Gastroenterology, Starship Child Health, [5]Department of Paediatrics, University of Auckland

Background
Administration of live vaccines following liver transplant (LT) has historically not been recommended due to concerns regarding risk of vaccine attenuated disease. However, there is evidence suggesting that in select transplant recipients live vaccinations can be administered safely. Studies in other regions have indicated that despite this evidence many clinicians remain hesitant to administer live vaccinations.

Aims
To assess current live vaccine and varicella post exposure prophylaxis (PEP) practices in paediatric LT recipients in Australia and New Zealand (NZ) and explore barriers to live vaccine administration in this cohort.

Method
A REDCap survey was distributed to gastroenterologists, paediatricians and infectious diseases physicians at paediatric centres across Australia and NZ via email between September and November 2023. The survey included a series of multiple choice and short answer questions regarding live vaccine administration and varicella PEP in paediatric LT recipients.

Results
There was a total of 16 responses to the survey, from 10 different paediatric centres, including all 4 paediatric LT centres in the region. Only 31% (5/16) of respondents (from 3/10 different centres) offer live vaccines. The main barrier to live vaccine administration was clinician reluctance and the main reason for not offering live vaccines was insufficient safety data.

69% (11/16) of respondents take vaccination status and/or serology into account when deciding whether to offer varicella PEP to this cohort. Respondents universally offer varicella zoster immunoglobulin as PEP, though 44% (7/16) also offer it in combination with antivirals.

Conclusions
Outbreaks of measles are increasing globally, and LT patients are at risk of severe infection. Many clinicians in our region remain hesitant to provide live vaccines to paediatric LT recipients, with concerns regarding insufficient safety data. A consensus guideline with clear eligibility criteria for live vaccinations in this cohort may help to address this.

Impact of lockdowns on encounters in Melbourne, Australia, during the COVID-19 pandemic

Ms Aimee Altermatt[1], Associate Professor Nick Scott[1,2], Dr Damian Pavlyshyn[1], Dr Romesh G Abeysuriya[1,2], Dr Rachel Sacks-Davis[1,2,6], Dr Katherine Heath[1], Mr Alexander Thomas[1], Dr Thi Nguyen[1], Professor Dean Lusher[3], Professor Mark Stoové[1,2], Dr Katherine B Gibney[4], Professor Margaret Hellard[1,2,5], Dr Alisa Pedrana[1,2], Dr Anna L Wilkinson[1,2,6]
[1]Burnet Institute, [2]School of Public Health and Preventive Medicine, Monash University, [3]Swinburne University of Technology, [4]Department of Infectious Diseases, University of Melbourne, at the Peter Doherty Institute for Infection and Immunity, [5]Department of Infectious Diseases, The Alfred and Monash University, [6]Melbourne School of Population and Global health, University of Melbourne

Background: During 2020 and 2021 in Melbourne, Australia, lockdowns aimed to reduce COVID-19 transmission risk by preventing physical contact between people. We aim to assess the effectiveness of lockdowns at reducing encounters to inform future public health response.
Methods: The Optimise Study was a longitudinal study of adult Victorians, September 2020–August 2022. Participants completed four diaries every month of follow-up on random days detailing the people they had physical contact with 'yesterday' and the setting/s. One encounter was contact, with one person, in one setting, with multiple encounters in one day possible. For each study day, encounters were summarised as mean and 90th percentile; the 90th percentile represents the number of encounters below which 90% of the data lie and was selected as the outcome because it captures large numbers of contacts. We fitted a linear regression model on the mean-centred 90th percentile of the number of daily encounters, with four 2021 lockdowns as covariates. Model coefficients of lockdown variables represent change in the distance between mean and 90th percentile associated with the lockdown. A large negative distance represents narrowing of the spread encounters (distribution's tail end shifting towards mean).
Results: 474 participants residing in Melbourne, who were not healthcare workers, (69% women, median age 39 years, IQR: 28–56) were included, contributing 654 days. The model estimated during lockdown 3 (13–17 February 2021) the distance changed by -2.3 (95% confidence interval: (95%CI, -3.5, -1.2) compared to no lockdown; by -1.9 (95%CI:-2.6, -1.2) during lockdown 4 (28 May–10 June 2021), by -1.6 (95%CI:-2.3, -0.18) during lockdown 5 (16–27 July 2021) and by -1.4 (95%CI:-1.7, -1.1) during lockdown 6 (6 August–21 October 2021).
Conclusion: Lockdowns were effective at reducing large numbers of contacts people were having during the pandemic and could be an effective intervention to reduce transmission risk in future pandemics.

Vaccinating the immunocompromised patient: When is serological testing warranted?

Ms Cyra Patel[1,2], Dr Xia Wang[1], Professor Michelle Giles[3,4,5], Associate Professor Penelope Burns[6,7], Professor Kristine Macartney[1,8], Dr Phoebe Williams[1,9,10]
[1]National Centre for Immunisation Research and Surveillance, [2]National Centre for Epidemiology and Population Health, Australian National University, [3]Department of Infectious Diseases, Alfred Hospital, Monash Health and Royal Women's Hospital, [4]Department of Obstetrics and Gynaecology, Monash University, [5]Department of Infectious Diseases, Peter Doherty Institute for Infection and Immunity, University of Melbourne, [6]Academic Department of General Practice, Australian National University, [7]School of Medicine, Department of General Practice, Western Sydney University, [8]Discipline of Child and Adolescent Health, Sydney Medical School, The University of Sydney, [9]School of Public Health, Faculty of Medicine, The University of Sydney, [10]Department of Immunology and Infectious Diseases, Sydney Children's Hospital Network

Context/aim: Vaccination can be less effective in immunocompromised people. Serological testing can inform decisions to vaccinate immunocompromised people against vaccine-preventable diseases (VPDs), but appropriate guidance and criteria for testing is lacking. We summarise the evidence on when serological testing can inform clinical decisions about vaccinating immunocompromised people.

Methods: We reviewed the peer-reviewed literature and current recommendations of national immunisation technical advisory groups, and synthesised evidence on correlates of protection (CoPs) and clinical recommendations for serological testing pre- or post-vaccination.

Findings: We identified several issues affecting the utility of serological testing: CoPs are not established for all VPDs; some CoPs relate to specific times post-vaccination; CoPs for some VPDs depend on functionality of antibodies rather than quantification; serological testing for many VPDs is only available in specialist or research-based laboratories; and complexities in interpreting test results for some populations (e.g. those who have received blood products or young infants). To assist decisions to test, we identified three criteria when serological testing is feasible and useful: 1) a reliable commercial serology test is available; 2) a validated immune CoP is established; 3) test results must inform clinical decisions about vaccination or post-exposure prophylaxis. Based on this, we found that serological testing is most useful (albeit with limitations) to determine if additional doses are needed after hepatitis b, measles, rubella and rabies vaccination. Post-vaccination testing for varicella is unreliable, but testing individuals with unknown immune and vaccination status can help determine the need for vaccination. Pre-vaccination testing for yellow fever vaccination is useful in limited circumstances, namely HIV-positive individuals travelling to yellow fever-endemic areas.

Future actions: Further research on CoPs and immune responses after vaccinating immunocompromised people is needed. While clinical judgement in interpreting results and clinical decision-making is unavoidable, context-specific guidance is needed on the limited indications where serological testing is warranted.

Pivotal Phase 3 Study of V116, a Pneumococcal Conjugate Vaccine for Adults

Dr Jennifer Coram[1], Dr Heather Platt[2], Dr Christopher Bruno[2], Dr Eric Buntinx[3], Dr Enrique Pelayo[4], Dr Jackie M. Kamerbeek[5], Dr Diego Garcia-Huidobro[6], Dr Elizabeth A. Barranco-Santana[7], Dr Folke Sjoberg[8], Dr Joon Young Song[9], Dr David Greenberg[10], Dr Carlos G. Grijalva[11], Dr Walter A. Orenstein[12], Leslie Morgan[2], Doreen Fernsler[2], Dr Weifeng Xu[2], Dr Muhammad Waleed[2], Dr Jianing Li[2], Dr Ulrike K. Buchwald[2]
[1]MSD, [2]Merck & Co., Inc., [3]Anima Research Center, [4]Amri, [5]P3 Research Ltd, [6]Pontificia Universidad Catolica de Chile, [7]Ponce Health Sciences University, [8]Karolinska University Hospital, [9]Korea University College of Medicine, [10]Soroka University Medical Center, [11]Vanderbilt University Medical Center, [12]Emory University

Background
Pneumococcal disease (PD) prevention remains an unmet medical need in adults. V116 is an investigational 21-valent pneumococcal conjugate vaccine containing the most prevalent serotypes associated with PD in adults. This phase 3 study evaluated safety, tolerability, and immunogenicity of V116 compared with PCV20 in adults.

Methods
Pneumococcal vaccine-naïve adults ≥18 years were assigned to two cohorts (cohort 1: ≥50 years, n=2362; cohort 2: 18-49 years, n=301) and randomized to receive a single dose of V116 or PCV20. Pneumococcal serotype-specific antibodies were measured at baseline (Day 1) and 30 days after vaccination (Day 30). Primary immunogenicity objectives included assessment of 1) noninferiority of serotypes common to V116 and PCV20 in cohort 1, 2) superiority of serotypes unique to V116 compared to PCV20 in cohort 1, and 3) immunobridging from adults 18-49 to adults 50-64 for all V116 serotypes.

Results
V116 met non-inferiority criteria compared to PCV20 for the 10 serotypes common to both vaccines, and superiority criteria for 10 of 11 unique serotypes as measured by opsonophagocytic activity geometric mean titers (OPA GMTs) at Day 30 and the proportions of participants with a ≥4-fold rise in OPA from Day 1 to Day 30 The predefined criteria for immunobridging were met for V116 participants 18-49 years of age compared to 50-64 years of age for all V116 serotypes as assessed by serotype-specific OPA GMTs at Day 30. There were no vaccine-related serious AEs or vaccine-related deaths.

Conclusions
V116 elicits immune responses that are noninferior to PCV20 for the common serotypes, superior to PCV20 for 10 of 11 unique serotypes in V116 and has a safety profile comparable to PCV20. This pivotal study supports V116 as a novel population-specific PCV for the prevention of PD in adults.

Breaking Barriers: Strategies for Boosting Vaccination Uptake in Influenza and Childhood Vaccinations

Ms Anna Harrison[1], Mr Fotis Sgouros[2]
[1]ORIMA Research, [2]ACT Health

Context and aim:
Global immunisation rates have declined since the COVID-19 pandemic. While vaccination rates remain relatively high in the ACT, ACT Health commissioned research to proactively identify potential strategies to maintain and increase uptake of childhood/ adolescent, and influenza vaccines in the ACT.

Methods:
The qualitative research consisted of 4 face-to-face focus groups, 2 online discussion boards and 10 in-depth interviews, with a total of n=88 participants. The sample comprised members of the general public and parents/ carers of children and adolescents living in the ACT. People who indicated a very low likelihood of vaccine uptake (i.e. strong “anti-vaxxers”) were excluded from the research.

Analysis/ research findings:
The research identified key differences in barriers to vaccination between childhood/ adolescent vaccinations and influenza vaccinations for all ages. For influenza, there were key attitudinal barriers – such as low perceived importance and personal relevance. While for childhood and adolescent vaccinations (excluding influenza), the key inhibitors to vaccination behaviours were practical/ structural – such as the booking wait times and consent processes. Across vaccination types, the research identified some ‘vaccination fatigue’ following COVID-19 which impacts willingness to invest effort into vaccination behaviours. As such, across vaccination types, reducing the actual and perceived burden of vaccination is important to support uptake.

Translational outcomes:
The research identified practical and tangible strategies to reduce or minimise barriers to vaccination. These include structural strategies (e.g. online booking systems; simplifying consent processes; and increasing access to appointments), and communications strategies (e.g. effective channels, tone and style of communications, and tailored messaging based on current perceptions and knowledge gaps for childhood/ adolescent and influenza vaccinations). The purpose of our display will be to share the evidence-based strategies identified in the research which conference attendees can utilise in their own context to support vaccine uptake.

Assessing the experience of Spleen Australia registrants during the COVID-19 pandemic

Assoc Prof Ian Woolley[3,5], Ms Sharon O'Brien[1], Dr Gabriela Khoury[2,4], Ms Vy Nguyen[2], Dr Tim Spelman[2]
[1]Spleen Australia / Alfred Health, [2]Burnet Institute, [3]Monash Infectious Diseases/Monash Health, [4]Department of Microbiology, [5]Centre for Inflammatory Diseases/Monash University

Background: Spleen Australia has a twenty-year history of supporting people with asplenia and hyposplenism. Patients are educated about their increased risk of bacterial infections and provided advice on vaccines and prophylaxis. The risk for COVID-19 infection in this group is unknown. Previously we reported the impacts and negative effects of the COVID-19 pandemic on Spleen Australia Registrants in 2021 (1). The public health measures including lockdowns have largely ended, and Australians now have access to a large range of COVID-19 vaccines. In 2023 we performed a follow-up study to understand if the mental and physical well-being of registrants had changed overtime, to understand vaccine coverage in this group and other aspects of their care since 2021.

Methodology: The surveys collected information on demographics (age, sex, gender, state of residence, reason for asplenia or hyposplenism) and to identify causes of concerns, and negative impacts of the pandemic. Information was captured on access to health and medical care, food, accommodation, relationships, physical and mental health and employment status. The 2023 survey expanded on COVID-19 infection and disease outcomes, and vaccination status. Surveys were distributed via email to Spleen Australia registrants (First survey: November-December 2021, second survey: July-August 2023). The 2023 survey was accessible to the general community.

Results: In the 2021 study 2,864 registrants responded to the survey and in 2023 there were 2,624 respondents (34.4% response rate in the latter). In 2023, we included a general community cohort (n=223). Over the two year period since 2021, the negative impacts, and well-being concerns amongst registrants significantly decreased ($p<0.0001$). COVID-19 vaccine coverage increased in registrants ($p=0.049$), with 46.9% having five doses. This exceeded the general community group uptake (at 31.3%) ($p<0.0001$).
Conclusion: The follow-up study highlights that registrants had improved experiences after two years with many having had five vaccine doses in 2023.

Therapeutic Goods Administration (TGA) vaccine safety surveillance

Dr Megan O'Moore, Dr Belinda Jones[1], Dr Sabrina de Bellis-Ayres[1], Dr Clare King[1], Dr Megan Hickie[1], Bernadette Barton[1], Dr Jessica Gair[1]
[1]Therapeutic Goods Administration

Background
Effective pharmacovigilance systems allow for the early detection, investigation, and management of adverse events following immunisation (AEFI). Protecting public health and maintaining public confidence in immunisation is important given the widespread use of vaccines, including new vaccine products, across the Australian population.

Process
All AEFI reported to the TGA are recorded in the TGA's post-market safety database and are used to monitor the safety profiles of vaccines. In addition to traditional pharmacovigilance methods involving individual case review, the TGA utilises a data mining algorithm to identify potential safety signals. Safety concerns may also be identified through inter-agency communication, jurisdictional notifications, international regulators, pharmaceutical companies, or published literature.

New vaccines and those with projected increased usage or formulation changes undergo additional monitoring to identify potential safety signals. Expanded surveillance involves increased frequency of disproportionality analyses, lower signal thresholds, review of frequently reported AEFI, and monitoring AEFI of special interest including tracking disproportionality statistics, reporting rates, and observed versus expected analyses.

Analysis
In 2023, the TGA undertook expanded surveillance for Shingrix following addition to the National Immunisation Program and continued expanded surveillance for seasonal influenza vaccines. The TGA received 291 AEFI reports involving Shingrix, and 1,300 AEFI reports related to seasonal influenza vaccines. Commonly reported AEFI for both vaccines included fever, headache, and injection site reactions.

Expanded surveillance of these vaccines allowed for AEFI of special interest to be closely monitored, with data providing reassurance regarding their safety profile. Of note, the overall observed number of reports of Guillain-Barre Syndrome was not significantly higher than expected for either vaccine.

Conclusions
Pharmacovigilance systems play an important role in the timely detection and investigation of potential vaccine safety signals. With more new vaccines on the horizon, these systems are vital to ensure the safety of the Australian public and continued confidence in vaccination.

News content may be associated with increased engagement in online vaccine communication

Ms Alice Black[1], Rachael McGuire[1], Katie Butler[1], Georgina Lewis[1,2], Nigel Crawford[1,2,3,4]
[1]Melbourne Vaccine Education Centre (MVEC), Murdoch Children's Research Institute, [2]SAEFVIC, Murdoch Children's Research Institute, [3]Department of Paediatrics, University of Melbourne, [4]Department of General Medicine, Royal Children's Hospital

The Melbourne Vaccine Education Centre (MVEC) is a source of evidence-based immunisation information. MVEC produces educational resources, including immunisation reference pages, eLearnings, plus face-to-face and online events. MVEC also publishes content, related to MVEC's own resources and other reliable vaccine sources, through the social media platform Instagram. MVEC's Instagram audience comprises healthcare professional and consumers.

Staff noticed high engagement (number of likes/saves/comments) for certain posts (e.g. news about vaccine program updates) and low engagement for others (e.g. content about awareness campaigns).

This project analyses whether there is a significant difference in engagement between different types of content shared on Instagram.

The 103 Instagram posts published in 2023 were grouped into seven categories: 'Awareness' (N = 28); 'Medical conditions' (N = 4); 'Vaccines' (N = 42); 'Adverse events following immunisation' (AEFI) (N = 4); 'News' (N = 8); 'Practical advice' (N = 4); and 'Professional development' (N = 6). Seven miscellaneous posts were excluded from the analysis, and one post was excluded due to missing analytics.

Using data on reach (number of unique accounts that view a post) and engagement, we calculated the proportion of engagement for posts in each category.

A chi-squared test was performed to assess the relationship between category and proportion of engagement. There was a highly significant difference in proportion of engagement between all categories ($p = < 10\text{-}5$).

We completed chi-squared tests for each category pair, finding significant differences in proportion of engagement between 'News' and four other categories: 'Awareness' ($p = .012$); 'Vaccines' ($p = < .001$); 'AEFIs' ($p = < .001$); and 'Medical conditions' ($p = .044$).

These findings suggest that 'News' is associated with higher engagement compared with other categories of Instagram posts. This information can inform MVEC's future content-sharing strategies, to optimise the spread of reliable, evidence-based vaccine information.

Opportunistic childhood immunisations at Monash Children's Hospital (MCH) - a targeted approach

Mrs Louise Wills[1]
[1]Monash Health

Monash Children's Hospital (MCH) is part of Monash Health, Victoria's largest healthcare service. It is a major tertiary, teaching and research paediatric hospital. MCH is a network of paediatric healthcare services across three sites. It has been identified on numerous occasions that patients admitted to MCH are due or overdue their vaccines. Hospitalisation provides a point of care for discussion and administration of due/overdue and recommended vaccines to vulnerable patient cohorts.

In 2023 children admitted to the Children's Hospital were identified as being due or overdue for their vaccines by using ward lists and their Australian Immunisation Records (AIR). A form was devised that gave the families information about which vaccines were due or overdue and where they could have them administered.

Australian Immunisation Records were checked after 30 and 60 days to assess whether vaccines had been given as per form. Results showed that 30% of those identified between March to December 2023 had received their recommended vaccine.

Over the last 6 months our service was proactive in providing education to ward staff and forming stronger links with nursing and medical colleagues specifically on one of the adolescent wards. The results showed that the vaccination rates of vaccine preventable diseases improved across this cohort post this education and project implementation. Ideally this practice will become embedded as a standard of care for this cohort of patients.

TGA vaccine safety investigation - mRNA COVID-19 vaccines and heavy menstrual bleeding

Ms Bernadette Barton[1], Dr Clare King[1], Dr Megan Hickie[1]
[1]Therapeutic Goods Administration

Background
Pharmacovigilance is essential to protect public health and to maintain confidence in vaccination. The TGA identifies safety signals though a range of pharmacovigilance methods including but not limited to individual case reviews, disproportionality analysis, literature reviews, and notifications from sponsors and overseas regulators.

The TGA investigates potential safety signals and undertakes risk mitigation measures which may include regulatory actions such as product information updates.

After commencement of the COVID-19 vaccination program, the TGA received numerous reports of heavy menstrual bleeding (HMB) in the context of heightened global awareness of this issue amongst women.

Process
The safety profile of COVID-19 vaccines including reports of HMB were closely monitored. Following the European Medicines Agency's Pharmacovigilance Risk Assessment Committee's decision to include HMB in both the Comirnaty and Spikevax European product information (PI)s, the TGA conducted additional investigation.

Analysis
At the time of the investigation, the TGA had received 737 reports of HMB associated with Comirnaty from females ≤ 50 years, which accounted for 2% of all adverse event reports in this cohort. The TGA also received 88 reports associated with Spikevax from females ≤ 50 years, which accounted for 3% of all adverse event reports in this cohort.

There was disproportionate reporting of HMB associated with mRNA vaccines in both Australian and global adverse event data. Review of the literature found mixed evidence of a causal association but did present evidence of a temporal association and plausible biological mechanisms. Clinical studies were not designed to collect menstrual cycle information and longitudinal studies are required to further understand and measure the potential association.

Outcomes
As a result of the investigation, both the Comirnaty and Spikevax Australian PIs were updated to include HMB.

Going bush for clinical trials: the Japanese Encephalitis vaccine intradermal research experience

Mrs Fatima Gondalwala[1], Dr Emma Goeman[1,2], Dr Yuanfei Huang[1,2], Ms Belinda Smith[1], Ms Lilly Moran[1], Dr Alexandra Dierig[1], Ms Emma Dawe[3], Ms Jennifer Case[6], Ms Priscilla Stanley[5], Ms Emma Carey[1], Dr Tom Douch[4], Dr Alison Nikitas[4], Mr Ajay Jadhav[1], Dr Nicholas Wood[1,2]
[1]National Centre For Immunisation Research And Surveillance, [2]University of Sydney, The Children's Hospital at Westmead Clinical School, [3]Office of the Chief Health Officer, NSW Ministry of Health, [4]Murrumbidgee Local Health District Public Health Unit, [5]Western NSW Local Health District Public Health Unit, [6]Health Protection NSW – One Health Branch

Japanese Encephalitis (JE) is a rare but serious illness caused by the Japanese Encephalitis virus, transmitted by Culex species mosquitoes. Following a sentinel case in 2021 and an outbreak in 70 piggeries and 45 human cases in up to December 2022, the WHO declared JEV endemic in Australia. NSW Health offered free JEV vaccines in specific rural areas of concern identified through routine mosquito surveillance programs. However, due to potential vaccine shortages, NCIRS quickly implemented a clinical trial to explore a dose-sparing strategy at the request of the Chief Health Officer of NSW. This involved investigating the safety and immunogenicity of a 0.1mL (one-fifth) dose of JEV vaccine (Imojev®) via intradermal administration compared to the traditional 0.5mL dose via subcutaneous route. We recruited 254 participants (children 5y+ and adults) in various locations within rural NSW to ensure optimal use of the existing JE vaccine supply.
Conducting a vaccine clinical trial in a rural setting, away from our Sydney base, has been a learning experience. We faced many anticipated challenges, including compressed timelines, the need for urgent ethics and governance approvals and sourcing of staff and equipment. We also encountered some unanticipated hurdles including complicated logistics (typified by storage and transport of patient samples to an interstate laboratory), shortages of local accommodation for staff, short advertising lead times and gaps in the digital connectedness of our predominantly older participant population. Rural participation in clinical trials is essential to providing results relevant to the Australian population. In this presentation, we will share our learnings for those wanting to conduct a rural clinical trial. Along with the practical experience gained in establishing and running a rural clinical trial, the dose-sparing immunogenicity and safety data will inform vaccination programs if there is a significant future JE virus, especially in the event of vaccine shortages.

Risk of congenital malformation after COVID-19 immunization and SARS-CoV-2 infection during pregnancy

Eunseon Gwak[1], Seung-ah Choe[1], Sumyeong Choe[1], Kyuwon Kim[1], Erdenetuya Bolormaa[1]
[1]Korea University

Objective: We report on the results of a nationwide population cohort study that sought to determine the relationship between the diagnosis of congenital anomalies and SARS-CoV-2 infection and COVID-19 immunization during pregnancy.
Method: Retrospective cohort research was conducted using national population data of South Korea. The National Health Insurance System database provided individual-level data on mothers who gave birth between January 1, 2021, and December 31, 2022, together with their neonates. These data were connected to the COVID-19 immunization registry, which is tailored for research, which runs from February 26, 2021 to March 31, 2022. Based on the European Surveillance of Congenital Anomalies categorization and ICD-10 codes, babies with a diagnosis of any kind of congenital anomaly were identified. The odds ratios (ORs) for congenital anomalies per three COVID-19 vaccines during pregnancy were determined after controlling for the age of the mother, residence, employment, disability, the season of delivery, baby's sex, first trimester vaccination, and SARS-CoV-2 infection.
Result: We identified 296,754 mother-child pairs, 3,502 (1.2%) mothers were vaccinated and 48.0% of them received the COVID-19 vaccine during their first trimester. Among those vaccinated pregnant women, 73.5%, 17.9%, and 8.5% received BNT162b2, mRNA-1273, and NVX-CoV2373, respectively. A total of 34,763 (11.7%) newborns had at least one minor and major congenital anomaly. Compared to those with no COVID-19 vaccination during pregnancy, the OR for any type of congenital anomaly during pregnancy was 1.03 (0.93, 1.15), 1.14 (0.94, 1.39), and 1.03 (0.77, 1.38).
Conclusion: Our results highlight the significance of continued observation and investigation to gain a deeper comprehension of the possible effects of COVID-19 immunization on the course of pregnancy. To confirm these results and provide guidance for public health initiatives aimed at protecting maternal and fetal health during the COVID-19 pandemic, more research with longer follow-up periods is necessary.

Establishing surveillance of barriers to childhood vaccination: The National Vaccination Insights project

Prof Margie Danchin[1,4], Dr Jessica Kaufman[1], Miss Suzanna Vidmar[1,4], Dr Kasia Bolsewicz[2], Prof Julie Leask[3], Miss Maria Christou-Ergos[3], Dr Majdi Dafallah[3], Miss Maryke Steffens[2]
[1]Murdoch Children's Research Institute, [2]National Centre for Immunisation Research and Surveillance, [3]University of Sydney , [4]Department of Paediatrics, University of Melbourne

Background: The COVID-19 pandemic has impacted vaccine confidence and coverage in Australia. Routine childhood vaccine coverage has dropped at 1, 2 and 5 years, particularly for Aboriginal children and in certain regions. Identification of measurable and modifiable barriers are of most value to governments and communities, but currently Australia has no routine mechanism to collect data on barriers to immunisation. The two main drivers of low coverage are access and acceptance barriers. This pilot study aims to establish routine national surveillance of parental access and acceptance-related barriers to vaccination for Australian children aged <5 years to inform targeted and effective interventions to improve uptake.

Methods: The first round of data collection and analysis will take place in March 2024. We will recruit a nationally representative sample of n=2000 parents of children aged <5 years living in Australia from an online panel. Using a cross-sectional survey design and the validated Vaccine Barriers Assessment Tool (VBAT), with 7 domains including access, equity, vaccine benefits, intention/commitment, feelings, social norms and trust, we will assess the prevalence of barriers to childhood vaccination; the association of barriers with parent socio-demographic characteristics; and the association of vaccination status with barriers. Data will be recorded on the project website.

Findings: We will complete our analysis of the first survey data in May 2024 and will present the results in full.

Conclusions: National data on parental barriers to routine childhood vaccines will be disseminated through our advisory group of policy makers and key stakeholders. Quantitative data will be enhanced by subsequent in-depth interviews exploring barriers with a priority group with low vaccine uptake. This study will inform the establishment of ongoing, routine tracking of drivers of childhood vaccination and be expanded to other priority groups such as older adults, Aboriginal and Torres Strait children, and pregnant women.

Vaccine Barriers Assessment Tool (VBAT) Study 2B Aotearoa New Zealand Results

Professor Nikki Turner[2], Associate Professor Esther Willing[3], Mrs Lorraine Castelino[1], Dr Janine Paynter[4], Dr Jess Kaufman[5,6,7], Associate Professor Emma Best[4], Dr Felicity Ware[8], Professor Margie Danchin[5,7]
[1]Uniservices, University Of Auckland, [2]Immunisation Advisory Centre, University of Auckland, [3]University of Otago, [4]University of Auckland, [5]University of Melbourne, [6]La Trobe University, [7]Murdoch Children's Research Institute, [8]Hāpai te Hauora

Context and Aim
Vaccination coverage is impacted by a persistent proportion of parents declining, delaying or unable to access vaccines. Immunisation uptake in Aotearoa New Zealand (NZ) is particularly low for Māori (NZ indigenous) infants. Australian and NZ researchers are developing a validated tool to robustly measure and monitor vaccine acceptance and identify practical barriers. The outcome will be a comprehensive, interlinked model of influences on parental acceptance and access to childhood vaccination: The Aotearoa New Zealand Vaccine Barriers Assessment Tool (VBAT). Similar to the Australian version, this is a three-phase study conducted in NZ.

Methods and Analysis
Phase 1 generated a comprehensive bank of list items for the tool. Phase 2: Study 2A subjected the model to testing of dimensionality, reliability and validity with parents to refine the domains/items. Phase 3: Study 2B evaluates the ability of each domain/item to predict vaccination behaviour and vaccine uptake. Ten GP practices were enlisted from two regions of NZ identified with low vaccine uptake for children to recruit a total of 180 parents of Māori tamariki (children) under 5 years of age. A survey is being undertaken online or face to face using the refined domains/items alongside the Parent Attitudes Childhood Vaccines survey (PACV). The child's immunisation history will be checked using the NZ national immunisation register. Each domain/item score will be compared with the PACV and immunisation uptake to construct validity for the domains in the final VBAT survey tool.

Results, Future Actions and Translational Outcomes
Recruitment is in progress. Validation results will be presented. The outcomes will be a NZ-version validated VBAT – both a short form and a long form. These can then be piloted into national and local survey usage to inform targeted and cost-effective strategies to improve coverage in Māori children to inform policy and practice.

Vaccine-Preventable Disease Outbreaks among Healthcare Workers: A Scoping Review

Tasnim Hasan[1], Michelle Lynch[1], Catherine King[1,2], Charbel Wehbe[6], Martin Plymoth[6], Md Saiful Islam[3], Theodore Iannuzzi[6], Aiken Dao[1], Jana Lai[2], Alexandra Martiniuk[1,5], Shalini Desai[4], Meru Sheel[1]
[1]University Of Sydney, [2]National Centre for Immunisation Research and Surveillance, [3]University of New South Wales, [4]World Health Organization, [5]the University of Toronto, [6]Western Sydney Local Health District

Background: Outbreaks of vaccine preventable diseases (VPDs) in health care workers (HCWs) can result in morbidity and mortality for HCWs and cause significant disruptions to health care services, patients and visitors. This scoping review aimed to describe all published studies reporting outbreaks caused by diseases which are prevented by the ten vaccines recommended by World Health Organisation (WHO) for HCWs.

Methods: In April 2022 CINAHL, MEDLINE, Global Health and EMBASE were searched for all articles reporting on outbreaks of VPDs in HCW since the year 2000. Articles were included regardless of language and study type. Data were extracted to describe epidemiological and clinical parameters of outbreaks involving VPDs in HCWs.

Results: Our search found 9363 articles, of which 216 were included in this review. Studies describing six of the ten VPDs were found: influenza, measles, varicella, tuberculosis, pertussis and rubella. There were no articles on polio, hepatitis B, diphtheria and meningococcal. Most articles (93%) were from high- and middle-income countries. There were no studies from the WHO African region. There were 76 articles describing influenza outbreaks and 75 describing measles outbreaks. While most outbreaks occurred in hospitals, several influenza outbreaks were reported in long term care facilities. HCWs vaccination status was poorly documented.

Conclusion: This scoping review describes outbreaks of VPDs in HCWs in the study period (2000 to April 2022). The review emphasises the importance of vaccination against VPDs in HCWs.

Chilling Realities - A Cold Chain Breach and Revaccination

Ms Lisa Allchin[1]
[1]Nepean Blue Mountains LHD

Context
Nepean Blue Mountains Public Health Unit (NBMPHU) identified inadequate cold chain monitoring between 17 April - 30 January 2023 during the investigation of a routine cold chain breach at a high-volume general practice. Vaccines administered at that time may have been ineffective.

Aim
- To facilitate identification of clients requiring revaccination as a result of poor vaccine storage
- Ensure clients have access to safe revaccination
- Prevent recurrence of breaches at this clinic and across the district.

Process
Following advice from an expert panel, clients requiring revaccination were identified. Letters and revaccination schedule were sent to these clients. Due to the high number of schedules requiring completion a Revaccination Schedule Protocol was developed and workload was distributed across the NSW Public Health Network for completion. NBMPHU organised revaccination clinics for this cohort. A media holding statement was prepared. Frequently Asked Questions were developed to assist NBMPHU staff in responding to telephone calls. NBMPHU and the Primary Health Network (PHN) provided extensive cold chain education to all clinic staff prior to vaccination being reinstated.

Analysis
NBMPHU provided recall letters to the 1211 client > 6 years. Further, 368 letters and schedules for children < 6 years were completed. Over a one-week period 5 revaccination clinics were organised and attended by 32 children with 68 vaccines administered. An additional clinic was held a month later with 11 attendees. This issue generated intense media interest. NBMPHU received 50 phone calls from members of the public.

Outcomes
This investigation highlighted the importance of appropriate vaccine storage. Since this incident NSW Health and the NBMPHN have sent reminders to immunisation providers to ensure vaccine storage requirements are met. Education sessions with the PHN have been organised. Initial investigations revealed uptake of revaccination to be less than 50%. Further research to determine the reasons for the low uptake is planned.

VaxPulse Platform for Online Media Analysis: Priority Vaccines in Focus

Dr Muhammad Javed[1,2], Miss Aishwarya Shetty[1,2], Mr Jesse Fryk[1,2], Dr Sedigh Khademi[1,2], Prof. Dr Jim P Buttery[1,2,3,4], Dr Hazel J Clothier[1,2,3], Dr Gerardo Dimaguila[1,2]
[1]Epi-Informatics Group and SAEFVIC, Murdoch Children's Research Institute, [2]Epi-Informatics, Centre for Health Analytics, Melbourne Children's Campus, [3]Department of Paediatrics, The University of Melbourne, [4]Infectious Diseases, Royal Childrens Hospital

Background
Online data sources such as social media are widely used spaces for people to share their opinions, and play a crucial role in providing public health information (and misinformation). In particular, social media helps public health organisations understand public concerns, identify information gaps, and adjust messages accordingly.
Shingrix® zoster vaccine was available in 2021 for Australians but has been used internationally since 2017. The experiences and concerns of consumers locally and internationally are helpful in guiding the development of appropriate vaccine education materials for Australians.
Online discussions on vaccination often cover various topics, including general discussions on shingles vaccines, the earlier Zostavax® vaccine, as well as concerns and adverse events experienced with co-administered vaccines, requiring clear separation related to Shingrix.

Method
The VaxPulse platform monitors public vaccination concerns in near real-time by analysing various online media data sources. We collected comments from Reddit, Facebook, YouTube and Google Trends about the shingles vaccine posted between January 2018 and January 2024:

- After initial preprocessing, segregation of Shingrix-related posts was done: using ChatGPT with prompt engineering.
- Fine-tuned BERT model for sentiment analysis.
- ChatGPT with prompt engineering to identify concerns.
- BERTtopic to extract the topics of discussion.

Results
We identified 5,412 comments about Shingrix vaccine out of 9,021 posts related to the shingles vaccine. The sentiments were 67% neutral, 22% positive, and 11% negative sentiments. The main concern and topic of discussion was vaccine safety and potential side effects, particularly due to past experiences with Zostavax and other vaccines. Misinformation and disinformation also contribute to people's unease.

Conclusion
VaxPulse is a flexible platform that can be adjusted depending on the vaccine under study. Its application on the Shingrix vaccine in the Australian context has demonstrated the importance of listening to past experiences, towards understanding people's concerns and communicating findings more effectively to avoid misinformation.

Projected cost-effectiveness of the COVID-19 vaccines in Australia in 2024

Dr Amy Lee[1], Mr Michael Maschio[1], Dr Michele Kohli[1], Dr Ekkehard Beck[2], Mr Peter Moore[2], Dr Keya Joshi[2], Ms. Eliza Kruger[2]
[1]Quadrant Health Economics, [2]Moderna Tx

Context and aim: In September 2023, the Australian Technical Advisory Group on Immunisation (ATAGI) stated Australians 18-64 years may consider a 2023 COVID-19 vaccine, but recommended one dose for those ≥65 years and two for those ages ≥75 years. Those 60-64 years or deemed high risk may also consider a second dose. In this analysis, the clinical and economic impact of vaccination with a Winter dose for Australians ≥18 years followed by a second dose in Summer for those aged ≥65 years was estimated.
Methods: A previously developed Susceptible-Exposed-Infected-Recovered (SEIR) dynamic transmission model was adapted to Australia. It was then used to predict COVID-19 incidence infections between March 2024 and February 2025, with and without COVID-19 vaccines. The winter dose uptake increased by age to 45.9% for ≥65 years; uptake of the summer dose for ≥65 years was 20.1%. Initial vaccine effectiveness (VE) against hospitalization and infection was assumed to be 84.3% and 57.1% respectively; protection declined 1.4% and 4.8% monthly respectively. A decision tree model was used to predict costs and consequences associated with infection, including quality-adjusted life-years (QALY) gained.
Research Findings: In the base case, the vaccination strategy prevented 240,000 of 1.5 million symptomatic infections predicted to occur in Australia, March 2024 – February 2025. It also prevented 13,500 of 57,900 expected COVID-19 hospitalizations and 1,170 of 4,480 COVID-19 related deaths. 19,400 QALYs were gained with vaccination at an incremental cost of $522 million; the incremental cost per QALY gained was $27,000. Cost-effectiveness results were most impacted by changes in VE, infection incidence rates, and hospitalization rates.
Conclusions: While the morbidity and mortality associated with COVID-19 is declining, use of COVID-19 vaccines in 2024-25 are expected to reduce hospitalization and death. A strategy based on the ATAGI recommendations is expected to be good value for money.

Improving Community Health, Addressing Knowledge and Communication Gap through Village Nurses: Fiji

Mrs Arishma Devi[1], Mrs Sagita Sharma[2]
[1]United Nations, [2]Ministry of Health and Medical Services

Background:
Post COVID-19 pandemic, routine immunisation, COVID boosters and the health of community members were priorities for Ministry of Health and Medical Services in Fiji.
Due to continuation of COVID-19 vaccination programme, indigenous communities feared and distrust was still evident with the health systems and activities. One of health's greatest armours, community health workers (Nasi-ni-Koros) could not address communities, due to lack of information, understanding and updates. This may have been a result of significantly reduced interaction at the height of the pandemic.

Methodology:
A knowledge/information sharing and effective communication toolkit was designed for the Nasi-ni-Koros including, easy-to-understand educational materials. Over 1000 community health workers from Central, Western, Northern and Eastern division participated in area specific workshops. For hard-to-reach maritime areas, nurses travelling on duty to headquarters were trained to train Nasi-ni-Koros in areas.
Workshop design:

- Pretest to gauge knowledge;
- Interactive learning
- Information presentation, demonstrations and visual aids;
- Role-play exercises to assess knowledge/communication skills learnt;
- Live testimonials/Debunking misinformation;
- Material distribution;
- Post-workshop test;
- Follow up;
- Participatory decision making; and
- On spot COVID-19 booster dose

Results

- Detected issues, anti-vaccine campaigns;
- Increased COVID-19 booster uptake;
- Successful routine immunisation "catch up" campaigns;
- Community health workers improved knowledge and communication skills to respond
- to queries and issues in the community regarding health and vaccines;
- Two-way communication formed through Viber Groups for each area between Nasi-ni-Koros and Ministry; and
- Nasi-ni-Koros able to address fake news against vaccines and issues.

Conclusion
Community health workers play crucial roles in bridging existing gaps in health, between communities and the Ministry of Health. Therefore, establishing ensuring flow of information, two-way communication and constant engagements are vital. It helps build/maintain trust and reduce possible raise of misconceptions and activities that affect success of health programmes.

Catching up on immunisation post-pandemic

Ms Susan Ridderhof[1], Ms Natalya Banham[1], Ms Tracie Chong[1], Ms Jodie Robins[4], Dr Anastasia Phillips[1,2,3]
[1]Metropolitan Communicable Disease Control, [2]National Centre for Immunisation Reserach and Surveillance, [3]Telethon Kids Institute, [4]WA Primary Health Alliance

Context and Aim
Immunisation rates have declined during the pandemic, potentially increasing the number of children requiring catch-up vaccination. In addition, the return of migration is likely to increase the need to develop catch-up plans. In July 2023, Metropolitan Communicable Disease Control (MCDC) implemented a quality improvement activity to increase efficiency in completing catch-up plans for general practices (GP) and to provide up to date information on patterns of catch-up requests.

Process
An online form was developed through REDCap which allows GPs to request catch-up plans and indicate relevant information to determine which plans are higher priority. The form includes mandatory fields that must be completed to enable the catch-up plan to be developed. MCDC staff use the system to prioritise requests for completion and to manage workflow. Automated letters are sent via the REDCap with the attached catch-up plan. The process was launched in collaboration with the WA Primary Health Alliance.

Analysis
In 2023, 1145 catch-up plans were requested which was 1.7 times the number in 2022. Since the REDCap system was established, 131 different practices submitted requests. Many (73%) had received vaccines overseas with the top two countries being India and New Zealand (both 11%). Only 5% required record translation from one of 16 different languages. Most (95%) were not Aboriginal and close to half (43%) had not yet set up Medicare. Only 12% of practices had attempted a catch-up plan themselves before requesting assistance. Over half of requests (57%) were related to school, childcare or pre-school entry requirements.

Outcomes
Implementing an automated form has enabled prioritisation within our public health unit and catch-ups can be completed more quickly as all required information is provided. The process has identified a list of regularly requesting practices that can be offered catch-up education by public health nurses. An increase in requests was identified in 2023 which was largely attributable to patients from overseas commencing pre-school or school in Australia.

A public health evaluation of encephalitic flavivirus responses in New South Wales

Dr Andrew Dang Khai Nguyen[1,2,3], Ms Keira Glasgow[4], Ms Jennifer Case[4], Dr Matthew O'Sullivan[3,5]
[1]Western Australian Centre For Rural Health, [2]University of Queensland, [3]Westmead Hospital, [4]NSW Ministry of Health, [5]University of Sydney

Background:
Japanese encephalitis (JEV), Kunjin (KUNV) and Murray valley encephalitis (MVEV) are associated with potentially high morbidity and mortality, and have significant public health implications, given the challenges associated with education, vector and environmental management, and JEV vaccine access. Although emerging literature has focused on flavivirus diagnosis and clinical management, initial flavivirus identification triggering public health management have yet to be evaluated. This study aimed to describe the public health response in New South Wales (NSW) by analysing flavivirus recognition, case confirmation and reporting timeliness from 2021-23.

Methodology:
De-identified statewide surveillance data was collected and visualized including demographics, encephalitic symptoms, time to flavivirus diagnosis, method of case confirmation and time to public health notification.

Research Findings:
There were 14 JEV, 4 MVEV and 0 KUNV cases acquired in NSW during the study period, with 15 (83.3%) males and 3 (15.8%) females. Most cases (n=11, 61.1%) were aged ≥60 years. Nine were confirmed by seroconversion, five via four-fold rise in IgG, three via polymerase chain reaction (PCR) and one via cerebrospinal fluid (CSF) IgM after excluding other flaviviruses. PCR detection rates were 50% for JEV and 33.3% for MVEV. Only 4/9 JEV cases and 3/4 MVEV cases had CSF tested for PCR. The mean time from JEV and MVEV symptom onset to initial testing was 7.6 days and 2.3 days, and final serological confirmation 59.9 days and 27.2 days. By comparison, the mean time to final PCR JEV and MVEV confirmation from symptom onset was 21 days and 9 days. Externally collected samples for JEV and MVEV were 3.7 days and 4.7 days slower than NSW samples.

Conclusions:
Despite improvements in identification and PCR testing for MVEV compared to JEV, delays at collection sites and in ordering PCR slowed public health responses. Education in these areas may improve future flavivirus identification.

Impact of an individual immunisation care plan for paediatric liver transplant patients.

Mrs Deidre Brogan[1], Mrs Janine Sawyer
[1]National Centre For Immunisation Research And Surveillance

Pneumococcal disease is a nationally notifiable disease with the largest proportion of notifications in Australia in children less than 2 years of age (1816 cases). Of those, 9.3% were too young to be vaccinated and more than 13% of 10–14-year-olds with no pneumococcal vaccine recorded1. Children with end stage liver disease and liver transplant recipients have an increased risk of infections such as influenza and pneumococcal and subsequent complications impacting morbidity and mortality. Due to the complexity of their medical condition, health care for these children is primarily delivered by tertiary specialist teams, with long hospital admissions and multiple appointments. As a result, competing priorities and minimal interaction with community health practitioners, additional vaccine recommendations may not be addressed.
The Children's Hospital at Westmead has performed over 463 liver transplants predominantly for children residing within NSW with 25% of referrals from other States and Territories. Over the last seven years (2016-2023), 160 liver transplants have been performed, with most recipients less than 2 years of age. Vaccination is generally deferred for up to twelve months post transplantation due to clinically instability and high level of immunosuppression. Where possible, vaccination is prioritised prior to solid organ transplant to maximise induced immune response.
The changing nature of vaccine recommendations, increased acuity, and volume of patients highlighted the need to address knowledge gaps and improve access to timely vaccination encounters. A parent information letter was developed and distributed in conjunction with individualised counselling, collaboratively between the liver transplant and immunisation service. An immunisation plan was designed, and vaccination was facilitated during clinic appointments to reduce the burden of appointment fatigue.
This presentation will demonstrate a successful collaborative approach between clinicians and families and development of tailored immunisation materials to improve vaccine uptake in this vulnerable population.

Potential Public Health Impact of RSV Vaccination among Older Adults in Australia

Mr Ian Teichert[1], Masnoon Saiyed[1], Alysia Thrasis[1], Marcus Tan[1], Yufan Ho[2], Aruni Seneviratna[2], Daniel Molnar[3]
[1]GSK, [2]GSK, [3]GSK

Background/Purpose: Respiratory syncytial virus (RSV) commonly causes respiratory infections, which may lead to severe clinical complications in older adults (OA). Recently, the Therapeutic Goods Administration approved the first vaccine, AS01E-adjuvanted RSV prefusion F protein-based vaccine (adjuvanted RSVPreF3 OA), to prevent lower respiratory tract disease (RTD) caused by RSV in OA ≥60 years of age (YOA). Estimating the public health impact (PHI) of vaccination is valuable for decision-making regarding vaccination strategies. For the first time, we evaluate the PHI of RSV vaccination in OA ≥60 YOA in Australia.
Methods: A static multi-cohort Markov model compared health outcomes with single-dose adjuvanted RSVPreF3 OA versus no vaccination over a 3-year time horizon capturing the residual protection beyond the median 18-month follow-up period (peak vaccine efficacy [VE] against RSV-acute respiratory infection [ARI] = 74.17%, linear monthly waning = 2.26%; peak VE against RSV-lower RTD = 88.02%, linear monthly waning = 2.10%). Australian influenza vaccination coverage from 2021–2022 was used as a proxy for RSV vaccination coverage (increasing with age, range: 42.5–70.8%). Model inputs for population size estimates, RSV epidemiology, and healthcare resource utilisation were derived from Australia-specific literature where available.
Results: Without RSV vaccination, RSV was estimated to cause 1,077,408 RSV-ARI cases, 644,685 general practitioner (GP) visits, 48,927 emergency department (ED) visits, 63,733 hospitalisations, 11,342 intensive care unit (ICU) admissions, and 5,378 deaths, in 6,479,378 OA ≥60 YOA (2025 population). Vaccinating 4,056,287 of these OA was estimated to prevent 249,973 RSV-ARI cases (81,702 upper RTD; 168,271 lower RTD), 178,380 GP visits, 16,699 ED visits, 22,663 hospitalisations, 4,021 ICU admissions, and 1,961 RSV-related deaths.

Conclusion: Vaccination with adjuvanted RSVPreF3 OA substantially reduced the public health burden of RSV among OA ≥60 YOA in Australia. These results demonstrate the potential benefit of vaccination programmes to prevent RSV disease in this population.

Funding: GSK (Study identifier: VEO-000563)

Adverse event reporting system SAFEVAC – Renovating the house

Dr Dale Carcione[1], Dr Hazel J Clothier[2,3,4], Dr Phoebe Spencer[1], Dr Gerardo Luis Dimaguila[2,3,4], Ms Georgina Lewis[2], Ms Claire Parker[5], Prof Nigel Crawford[2,4], Prof Jim P Buttery[2,3,4,6]
[1]Communicable Disease Control Directorate, WA Department of Health, [2]Surveillance of Adverse Events Following Vaccination in the Community (SAEFVIC), Health Informatics Group, Murdoch Children's Research Institute, [3]Epi-Informatics, Centre for Health Analytics, Melbourne Children's Campus, [4]Department of Paediatrics, University of Melbourne, [5]Infectious Diseases, Perth Children's Hospital, [6]Infectious Diseases, Royal Children's Hospital Melbourne

SAFEVAC, the Australian online reporting database for adverse events following immunisation (AEFI), has provided a mechanism for enhanced passive surveillance in Victoria (SAEFVIC) and Western Australia (WAVSS) for 16 and 13 years, respectively. However, the unprecedented surge of AEFI reports following COVID-19 vaccination identified structural areas within SAFEVAC that were significantly challenged. A commitment to strengthen vaccine safety systems from the Victorian Department of Health has allowed SAEFVIC to enhance SAFEVAC. These enhancements include:
● leveraging cloud technologies for improved efficiency, stability, flexibility, and data sharing across jurisdictions
● triaging for clinical follow-up
● agility to adapt to emerging adverse events
● enabling automated prioritisation for the most urgent or serious AEFI
● data visualisation and reporting bringing intelligence for both policy and community decision-making
● shared governance and meeting public expectations for secure data management.

The upgraded SAEFVAC system presents a suitable model for all states and territories to utilise for jurisdictional reporting purposes and for automated reporting to the Therapeutic Goods Administration. But also, as serious reactions following immunisation are rare, the SAFEVAC system offers the ability to pool data across states and territories to strengthen vaccine safety signal detection and evaluation.

The epidemiology of syphilis in women, Murrumbidgee and Southern NSW, 2014-2023

Ms Rachel Wilkins[1,2], Ms April Roberts-Witteveen[3], Doctor James Macneil[4,5], Ms Lauren Coelli[3], Doctor Anton Forsyth[3]
[1]National Centre For Immunisation Surveillance and Research, [2]Australian National University, [3]Murrumbidgee and Southern NSW Public Health Unit, [4]Royal North Shore Hospital, [5]Faculty of Medicine and Health Sciences, Macquarie University

Context, aim
Syphilis infections have increased in Australia (1). Women of reproductive age (WoRA) are an increasingly at-risk population due to serious consequences of syphilis in pregnancy including congenital syphilis (2).
The Murrumbidgee and Southern NSW Public Health Unit (PHU) covers nearly 170,000 square kilometres in southern NSW, predominantly outer regional and remote areas. It represents an under-studied population in the context of syphilis in Australia.
We describe the epidemiology of syphilis among women in our region.

Methods
All female syphilis notifications to the PHU between 2014–2023 were extracted from the NSW Notifiable Conditions Information Management System. Analysis was performed in RStudio.

Findings
99 female syphilis events were notified between 2014-2023: two-thirds latent infections, one-third infectious syphilis. Cases of infectious syphilis were younger (median=25 years) than latent infections (median=41 years) and most were in WoRA (94%).
Between 2014-2023 syphilis infections (all classifications) among women increased. Women represented an increasing proportion of infectious syphilis. The incidence of infectious syphilis in WoRA increased from 0.02 per 10,000 WoRA in 2014 to 0.15 per 10,000 in 2023 ($p>0.004$, Kendall's Tau 0.707).
The number of female cases born in Pacific Island countries increased significantly between 2014-2019 ($\bar{x}$=11.8%) compared to 2020-2023 ($\bar{x}$=36.5%) ($p=0.0495$, $t8df=2.3119$). The most common country of birth, after Australia, was Solomon Islands. These women primarily had latent syphilis.

Outcomes
Increasing syphilis incidence in women residing in major cities and Aboriginal and Torres Strait Islander women in northern Australia has been highlighted in the literature.
This study describes, for the first time in Australia, a unique population at risk: women born in Pacific Island countries.
Outcomes of this investigation will inform public health action, and support engagement with services increasingly caring for women at risk of severe syphilis sequelae.

References
(1) King, J., McManus, H., Kwon, J., Gray, R. & McGregor, S. (2023). HIV, viral hepatitis and sexually transmissible infections in Australia: Annual surveillance report 2023. Kirby Institute, UNSW Sydney.
(2) Australian Government Department of Health and Aged Care. National syphilis surveillance quarterly report. Quarter 3: 1 July–30 September 2023. December, 2023. Communicable Diseases Epidemiology and Surveillance Section, Australian Government Department of Health.

A systematic approach to onboarding pharmacies as government-funded Vaccine Service Providers

Ms Greta Beaverson[1], Mrs Tracey Vidler[1], Mrs Georgia Clifton[1], Mrs Anuradha Satyamurthy[1]
[1]Metro South Public Health Unit, Metro South Health

A systematic approach to onboarding pharmacies as government-funded Vaccine Service Providers
Context
In 2023, the Department of Health announced that pharmacies are eligible to provide National Immunisation Program (NIP) vaccinations across Queensland. As part of this process, all pharmacies require a vaccine management protocol (VMP) approved by their state health department prior to receiving vaccines in 2024. Metro South Public Health Unit (MSPHU) has the highest number of pharmacies in Queensland that are interested to participate in the NIP program. MSPHU collaborated strategically in a systematic manner with the pharmacies to ensure all 160 pharmacies are approved in a timely fashion.
Aim
This paper outlines the process used by MSPHU to:
1. Engage with pharmacies to review and approve their VMPs.
2. Empower pharmacists with knowledge and skills to administer vaccines.
Process and Analysis:
This was divided into four phases:
Phase 1 Engagement - a phone call to all pharmacies to convey the expectations and requirements of a provider.
Phase 2 Engagement - an email requesting 48hrs of temperature evidence from their vaccine fridge/s, a completed VMP on a MSPHU template and completed vaccine storage self-audit. Pharmacies are required to return documents within ten days.
Phase 3 Empowerment – Approved VMP sent back to providers by email. Most pharmacies had their documents approved on the third attempt taking around two weeks for approval to be completed. They were advised to contact MSPHU with any questions and this is used as an opportunity to network with them.
Phase 4 Empowerment – Site visit and in-person education is underway for those providers identified as needing support.
Outcome:
A methodical approach to address this enormous task of engaging and empowering 160 pharmacies in the Metro South region proved both effective and efficient. This paves the way for higher vaccine coverage and improved equity of access to vaccination.

Epidemiology and outcomes of COVID-19 infections seen in NSW emergency departments

Dr Kishor Kumar Paul[1], Mr Nectarios Rose[2], A/Prof David Muscatello[1]
[1]School of Population Health, University of New South Wales, [2]NSW Health

Context and Aim
Siloed data streams in New South Wales (NSW) are used for epidemic intelligence. The PEARL (pandemic and epidemic risk assessment using linked data) database links NSW respiratory infection-related emergency department (ED) presentations with ambulance, admitted patient, notifiable condition, and death databases. We aimed to describe the epidemiology of ED visits by patients with COVID-19 in NSW using PEARL database.

Methods and analysis
We conducted a descriptive analysis of the characteristics and 28-day outcomes of a cohort with SARS-CoV-2 infection exhibiting PEARL syndrome (acute respiratory/unspecified infections/fever/sepsis) and presenting to EDs in NSW. Multiple hospital events in a 28-day period were collapsed into a single index record for the earliest arrival date.

Research findings
Between January 2020 and February 2023, persons with a SARS-CoV-2 notification and a PEARL syndrome diagnosis made 97,599 index presentations to EDs across NSW. The median age was 39 years (IQR 18, 66), females accounted for 53% of presentations, 32,518 (33%) arrived by ambulance, 36,536 (37%) required admission for inpatient care, 3,064 (3%) required intensive care, 992 (1%) required ventilation, and 2,735 (3%) died. Males were admitted more frequently compared to females (5 vs 4 per 1,000 population) and residents of greater Sydney more frequently than regional residents (5 vs 3 per 1,000 population). Of 20,129 presentations in children aged 0-9 years, 4,748 (24%) required admission. The median length of hospital and ICU stay for those requiring it was 5 days (IQR 2, 11) and 99 hours (IQR 42, 240), respectively.

Outcome
Young children were frequently admitted despite the perception that they do not experience severe illness from SARS-CoV-2 infection.

Future actions
The PEARL database will continue to be used for evaluating how linked ED surveillance information can be used for improved pandemic and epidemic intelligence.

Foundational Course on Immunisation and Vaccines for Timor-Leste NITAG and MoH

Ms Genevieve Foster[1], Dr Aditi Dey, Ms Sera Ngeh, Dr Sudath Peiris, Mr Manuel Mausiry, Mr Mateus Cunha, Dr Sarah Sheridan, Dr Mariano Da Silva Marques, Professor Kristine Macartney
[1]NCIRS, [2]WHO Timor-Leste, [3]MoH Timor-Leste

Background
Since 2019, the Timor-Leste National Immunization Technical Advisory Group (NITAG), immunisation staff and Ministry of Health (MoH) have been building technical capacity, through training and related activities, supported by the Australian National Centre of Immunisation Research and Surveillance (NCIRS) and WHO, with the aim of increasing local knowledge and skills in immunisation. In November 2023, a week-long training course in all aspects of immunisation for Timor-Leste NITAG and MoH staff was conducted.

Methods
The 'Foundational Course on Immunisation and Vaccines' was developed, then delivered over 5 days in Dili, Timor-Leste. The course aimed to increase participant knowledge and skills in immunisation and skills to deliver this training to other healthcare workers. The course program and materials were co-designed with the Timor-Leste NITAG chair and Timor-Leste WHO office staff aiming to maximise relevance and effectiveness. It was practical and engaging, including tutorial-style teaching sessions allowing for questions and meaningful participant discussion, and activity-based sessions for participants to apply their new knowledge to authentic Timor-Leste scenarios, including planning introduction of new vaccines. Pre- and post-training participant evaluation assessed whether participant knowledge and skills were increased by the course.

Results
20 participants attended the week-long course. Comparison of pre- and post-training evaluations found that participant knowledge increased on average by 54% across 11 key immunisation topics. All post-training survey respondents rated the training as either 'excellent' (84%) or 'good' (16%), and all participants rated the course as being 'very relevant' to their job, indicating that course content was appropriately aligned with participant job responsibilities. Course materials will be translated into Tetun to support delivery to other health professionals.

Conclusions
This in-country foundational vaccinology course was an effective method of building local immunisation-based knowledge and capacity in Timor-Leste. Participants were highly supportive of repeating the course for new NITAG members, and expansion for other health professionals.

Frequency and Grade Distribution of Reactogenicity Events Amongst Different COVID-19 Vaccines

Dr Matthew Rousculp[1], Ms Kelly Hollis[2], Mr Ryan Ziemiecki[2], Ms Dawn Odom[2], Mr Shardul Odak[2], Ms Laurin Jackson[2], Dr Mitra Montazeri[1], Dr Anthony M. Marchese[1], Dr Muruga Vadivale[1], Dr. Seth Toback[1]
[1]Novavax, Inc., [2]RTI Health Solutions

Background:
Safety studies suggest that there may be differences in reactogenicity events experienced between mRNA and Novavax protein-based (NVX-CoV2373) COVID vaccine recipients. NVX-CoV2373 may exhibit comparatively lower rates and reduced severity of reactogenicity compared to mRNA vaccines, although the evidence is supported by studies with small sample sizes that were not designed to compare vaccine-associated side effects by vaccine type.

Methods:
The 2019nCoV-406 study was a prospective, non-interventional, observational study of working adults in the United States and Canada who received an approved/authorized COVID vaccine dose. Participants completed a baseline survey on the day of vaccine receipt and a daily diary of occurrence and severity of solicited adverse events over the following 6 days. Although the study did not achieve its primary endpoint, a post-hoc analysis of days 1 and 2 postvaccination data using propensity score–adjusted models for individual reactogenicity endpoints and composite endpoints of interest was conducted.

Results:
A total of 1680 participants were screened, and 1386 were considered eligible. Between July 2022 and March 2023, 1130(NVX=303, mRNA=827) participants received a booster dose. During the day 1 and day 2 postvaccination period, fewer recipients self-reported experiencing any systemic events (60.5% [95% CI: 55.1–65.8] vs. 83.8% [95% CI: 81.3–86.4]; P≤0.0001) and local reactogenicity events (73.7% (95% CI: 68.8–78.5) vs. 91.7% [95% CI: 89.8–93.6]); P≤0.0001] following NVX-CoV2373 versus mRNA booster doses. Compared to mRNA recipients, the NVX-CoV2373 group included a lower percentage of participants with ≥3 simultaneous systemic- or local-specific symptoms, and a lower percentage of participants with maximum severity grade ≥2 systemic or local events.

Conclusions:
In conclusion, this post-hoc analysis suggests that participants who received NVX-CoV2373 versus mRNA boosters exhibited overall lower vaccine-associated reactogenicity. Further research is warranted to determine if lower COVID vaccine reactogenicity may positively impact vaccine hesitancy and improve booster uptake.

Genomics to understand changes in plasmids carrying AMR genes in Queensland shigellosis

Dr Asha Kakkanat[1], Dr Son Nguyen[1], Dr Rikki Graham[1], Dr Amy Jennison[1]
[1]Public Health Microbiology, Forensic And Scientific Services, Queensland Health

Shigella causes bacillary dysentery, shigellosis, in over 100 million cases globally per year. In Australia, infections are generally associated with overseas travel or particular community groups such as men who have sex with men and Indigenous populations. In 2022 the WHO released an announcement regarding the emergence of an extensively drug resistant (XDR) Shigella sonnei in the UK and Europe. This XDR Shigella sonnei strain has been reported with non-susceptibility to all the common antibiotics used for treatment, leaving very limited treatment options for severe cases. These XDR Shigella carry a specific plasmid that contains an ESBL resistance gene called blaCTX-M-27.
During routine genomic surveillance of Shigella isolates grown from Queensland cases, we have detected both Shigella sonnei and Shigella flexneri that carry the blaCTX-M-27 gene, however our routine method of sequencing cannot easily determine whether this gene is being carried on the same plasmid as the international alert Shigella strain. We performed long read sequencing on our blaCTX-M-27 positive Shigella isolates and combined this sequencing information with short read sequences to allow us to determine the context in which the blaCTX-M-27 gene exists in QLD Shigella. A better understanding of the plasmids carrying the blaCTX-M-27 gene can provide important information on whether the XDR plasmid of concern has moved into the QLD Shigella population.

Optimising regional Mpox vaccine access in Gippsland

Miss Rachel Frescura[1], Mrs Bethany French[1], Miss Rebecca McQuillen[1], Miss Sydnee Skinner, Miss Annelies Titulaer[1]
[1]Gippsland Region Public Health Unit, Latrobe Regional Health

Introduction (Background/Context):

On July 23, 2022, Mpox was declared a global public health emergency and subsequently a disease of National Significance by the Australian Chief Medical Officer. The implementation of primary preventive vaccination (PPV) and post-exposure preventive vaccination (PEPV) among close contacts of Mpox cases was required to mitigate disease spread and alleviate breakthrough infection symptoms. The Gippsland Region Public Health Unit (GRPHU) coordinated local vaccination points including offering after-hours services to maximise Mpox vaccine availability and accessibility.

Process:

GRPHU initiated service mapping for specialised Sexual Health Clinics in Gippsland to provide PPV, PEPV, and coordinate the Mpox vaccine rollout. Despite collaboration with four Sexual Health Clinics, gaps in coverage, especially in rural areas, were identified. Embedding Mpox vaccination within an existing mobile COVID-19 vaccination program was identified to supplement existing clinics. Access was further increased through recruitment of a Priority Primary Care Centre to provide after-hours PEPV.

Analysis:

Local Sexual Health Clinics in Gippsland served as trusted Mpox vaccination sites. Expansion of access points included additional clinics, pharmacies, and a local university campus. The mobile outreach model extended services to eligible individuals across a wider geographic area, although was limited by funding discontinuation. Feedback from LGBTQI+ community members highlighted the mobile outreach model provided opportunity for a more inclusive and culturally safe experience compared to clinic visits.

Outcomes:

The local Mpox vaccine response fostered stronger relationships with key stakeholders. Providing Mpox vaccination services beyond regular hours reduced the necessity for travel outside Gippsland. The Mpox mobile outreach model, complementing fixed clinics, ensured equitable access in rural and remote areas, with positive community feedback potentially enhancing future service attendance. Maximising Mpox PPV and PEPV access in Gippsland required collaboration between services. Ongoing funding for mobile vaccination programs is recommended to ensure greater access in rural and remote areas.

Point-Of-Care Testing for respiratory illnesses improves diagnosis, management, and patient behaviours

Dr Susan Bibby[1], Dr Samantha Marsh[2], Professor Anthony Dowell[1], Amanda Sexton[1], Joanne Hilder[1], Professor Nikki Turner[2], Lorraine Castelino[2], Dr Maria Stubbe[1]
[1]University Of Otago, Wellington, [2]University of Auckland

Background:
Multi-viral Point-Of-Tests (POCTs) can detect Influenza, Respiratory Syncytial Virus (RSV), and Covid-19 with a single swab; however, these are not yet available in New Zealand. This prospective multicentre study introduces them into primary care and investigates potential effects on clinician and patient behaviour.
Objectives/Methods:
We investigated whether POCTs could be successfully integrated into the acute management protocols for respiratory illnesses in three primary healthcare settings in New Zealand (winter 2023). Surveys and interviews ascertained patient and healthcare worker views with respect to acceptance, aid in diagnosis and management, behavioural changes, and openness to receiving them in the future.
Outcomes/Results:
1850 swabs were collected of which 14% were positive. Of the 227 patients who responded to the online survey, 17.6% received a positive result. Most participants (>90%) said, if offered, they would accept future swabs, and >95% would like access to these at home. Patients who tested positive reported feeling more unwell, and were more likely to stay at home, take time off work, wear a mask, and avoid the elderly compared to when they were sick with a similar illness, and compared with those with negative results. Healthcare workers generally found the swabs useful aids to management and for discussion around diagnoses; they rated patient satisfaction highly and reportedly prescribed less antibiotics.
Conclusions:
Patients and healthcare workers found multi-viral POCTs acceptable and useful, with positive tests aiding patient satisfaction and understanding, and contributing to behavioural changes that can reduce disease spread of the more serious respiratory viruses. Healthcare workers found that tests integrated well into primary care and reduced antibiotic prescriptions, thus potentially leading to less antimicrobial resistance. Influenza and RSV may in the future have early and potential in-home diagnosis available, paving the way for improved tailoring of disease response in terms of both pharmaceutical and non-pharmaceutical interventions.

Wastewater testing trial of monkeypox virus in Victoria, Australia

Dr Min-Ho Jung[1], Dr Monica Nolan[2], Ms Rachael Poon[2], Dr Helen O'Brien[1], Dr Christian McGrath[1]
[1]Victorian Department of Health Communicable Disease Section, [2]Victorian Department of Health Wastewater Surveillance Program

Introduction

Since May 2022, there has been a global outbreak of mpox, an infectious disease caused by the monkeypox virus (MPXV). Cases have predominantly occurred in adult gay, bisexual and other men who have sex with men. This outbreak represents the first instance of sustained local transmission of mpox in non-endemic regions outside of Africa. In Australia, a peak in cases was observed between June to September 2022, followed by stabilisation. However, case numbers were anticipated to increase during the 2022-23 summer pride season due to potential importation and transmission related to international and domestic travel and LGBTIQA+ events in Australia.

Aim

The Victorian Department of Health conducted a project to test for MPXV in wastewater as a 'proof of concept' for its use in future settings to aid the public health response to mpox.

Method

Wastewater testing for MPXV was conducted in regional catchments during one of Australia's largest LGBTIQA+ festivals between 9 to 13 March 2023, through the existing Wastewater Surveillance Program for SARS-CoV-2. Samples were collected via passive continuous wastewater sampling and analysed using a MPXV quantitative polymerase chain reaction method at an environmental public health laboratory. Public health actions were planned a priori in preparation for wastewater testing results including the risk assessment approach and public communications to raise awareness, encourage testing and promote prevention measures.

Results

MPXV was not detected from any wastewater samples collected during the project. Results were shared with stakeholders as part of closed loop communication.

Conclusion

The project demonstrated the successful use of wastewater testing for MPXV which may aid the public health response to mpox in Victoria and other Australian jurisdictions. The project also highlighted the benefits of leveraging existing resources for innovative research and the importance of collaboration in planning and implementing interventions for complex public health issues.

A

B

C

D

d

M

N

O

P

R

S

T

V

W

Y

Z