ABSTRACT BOOK

Special Edition - Australasian COVID-19 Virtual Conference

Preventing, detecting, controlling and managing COVID-19 – reflections on 2020 and future challenges

Tuesday 8 to Thursday 10 December 2020

#AustCOVID19Conference
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Tuesday 8 December 2020

Concurrent Session 1A - Aged Care
On Demand from 2:00pm AEDT

Collaboration between agencies: Enabling the Victorian Aged Care Response through user-led analytics

Authors: Miss Charlotte Ramage1,3, Dr Tony Stewart2, Stacey Rowe3, Associate Professor Sheena Sullivan1, Dr Suman Majumdar2, Wai Yen Loh1, Chee Lee Chong1,3, Jillian Tallboys1,3, Anthony Sparke1,3, Aidan Wong1,3, Travis Rousell2, Hassan Vally2, Georgia Lack2, Geoff Fisher2

Affiliations: 1Victorian Department of Health and Human Services, Melbourne, Australia, 2Victorian Aged Care Response Centre, Melbourne, Australia, 3Quantium, Melbourne, Australia

Abstract:

In late July to early August of 2020, Victoria’s aged care sector was at critically high levels of risk as a result of the escalating COVID-19 pandemic, with a peak of 2075 active cases in aged care homes in mid-August. A coordinated response command was established through the Victorian Aged Care Response Centre (VACRC), bringing together the Victorian Department of Health and Human Services (DHHS), the Commonwealth Department of Health and other key government decision makers (including the Minister for Disability, Ageing & Carers, the Premier’s Private Office). To effectively deploy operational resources and minimise the health risk across aged care communities, the Centre required timely, accurate, actionable and accessible data and analytics on severity and location of outbreaks.

The Information and Analytics Unit (IAU) and Public Health Intelligence (PHI) at DHHS were tasked with developing a single source of truth for key COVID-19 insights in a single dashboard report. The COVID-19 Aged Care PowerBI report was delivered to users in four iterative releases across the month of August providing daily information to operational leaders on the frontlines of the response.

The report enhanced existing DHHS Aged Care COVID-19 reporting, leveraged and refined existing metrics, and integrated new features, to enable key users at DHHS and VACRC. Improvements to data flows enable the report to be refreshed daily in less than 30 minutes. Daily Situation Reporting was also incorporated into the report such that exportable tables were able to meet critical daily reporting needs.

In this presentation, we will discuss the approach to the successful collaborative effort - including establishing actionable user stories/requirements, structured project governance and team responsibilities (including quality assurance and authorisation processes), centralised management of new user requests and transparent prioritisation.

Additionally, VACRC will present examples of the real-world usage of the PowerBI.

Sentinel surveillance of COVID-19 and influenza-like illness in residential aged care facilities

Authors: Ms Deena Malloy1, Mr Daniel Francis1, Ms Jai Defranciscis1, Ms Christine Frankham1, Ms Kim Langfeldt1, Dr James Smith1

Affiliations: 1Metro North Public Health Unit, Brisbane, Australia

Abstract:

Residential aged care facilities are high risk environments for respiratory illness outbreaks. The absence of uniform surveillance systems and low staff confidence in identifying cases and outbreaks are two key reasons for late notification to local public health authorities. This delays implementation of time dependent outbreak control measures.

In April 2020, the Metro North Public Health Unit lead the establishment of a sentinel surveillance program, for the early detection and prevention of COVID-19 and Influenza-like illness outbreaks in residential aged care facilities. The program was accompanied by enhanced clinical support for outbreak prevention and management planning.

Common and freely available software (Microsoft Outlook, Excel and Epi Info) were employed to develop surveillance reminders, surveying instruments and data synthesis tools. Facilities received a twice weekly reminder to complete an online questionnaire, which collated the number of staff and residents who met clinical case definitions in the previous 72 hours; whether their facility suspected an outbreak; and additional contextual information. Responses were clinically reviewed to determine need for public health follow-up by telephone.

To date, 83 (of 84) facilities in our catchment area have voluntarily taken part in the surveillance program with zero dropouts. The program has demonstrated early indication of improvements to timeliness of case notification to public health, early identification and prevention of outbreaks, staff capacity building, and strengthened partnerships between facilities and public health service providers.
The COVID 19 response in Australian Aged Care: Lessons Learned

Authors: Dr Sarah Whiting 1

Affiliations: 1Alfred Health/ DHHS, Melbourne, Australia

Abstract:
The Australian COVID 19 pandemic has had a disproportional effect on the aged care sector which has in turn propagated outbreaks in community and hospital settings. Apart from a few prominent examples in NSW during the first wave, the sector was largely spared until the second wave in Victoria exposed the weaknesses of the sector and our under preparedness resulting in >170 aged care homes in Victoria experiencing an outbreak. The consequences of the residents have been immense with high attack rates (up to 70%), high mortality rates (approx 30%) and the devastating social consequences that have arisen from prolonged (up to 3 months) lockdown of facilities with an outbreak. Aged Care Staff have been over represented in healthcare worker infections (currently the largest subgroup at 42% of total). Despite this and Aged Care Staff’s lack of infection prevention training compared to hospital staff, they have not had access to the same supports to which hospital workers have had access. Management of outbreaks have required a unique collaboration between the federal (accrediting body of aged care) and state governments which cumulated in the formation of the Victorian Aged Care Response Center. Management of each outbreak has reflected the characteristic s of the outbreak (such as number of cases identified on first round of testing) and the resources that were available at the time. A reflection and analysis of the data is underway so that lessons learned from the Victorian experience can be shared with other states and we can better protect our residential aged care facility residents from future waves of COVID or pandemics (including influenza) in general. Lessons learned should also feed into a broader community discussion regarding the need to reform the aged care sector in general.

Personalisation and pandemic: An unforeseen collision course?

Authors: Professor Helen Dickinson 1, Professor Anne Kavanagh, A/Prof Gemma Carey

Affiliations: 1University Of New South Wales, Canberra, Canberra, Australia

Abstract:
The outbreak of a pandemic provokes fear and risk of ill health for all individuals, however, these events pose even more of a threat to people living with disability, who often have poorer health outcomes because of underlying conditions, have difficulties in accessing health and other services, and typically fare worse once they are in the healthcare system. Recent changes to the structure and operation of disability services in Australia may have left people with disability even more vulnerable in the face of major global challenges such as COVID-19 and we believe this is also likely to have similar impacts in other countries with personalised disability service systems.

Over the past few decades, many areas of the developed world (e.g. Australia, USA, Northern Europe, Canada) have seen the widespread expansion of the personalisation of disability services. While many within the disability advocacy community have argued for greater choice and control over the services that they receive and the ways they are, these schemes are not without challenges. The COVID-19 pandemic brings many of the limitations of these schemes into sharp relief. The intersection of personalisation and this new pandemic may have set us on a collision course where people with disability will lose their lives unnecessarily. In this paper, we outline this argument and consider what might be done to rectify this situation.

COVID-19 outbreak preparedness questionnaire: An important engagement tool with RACF to assess preparedness

Authors: Dr Priya Darshene Janagaraj 1, Deborah Judd 1, Greta Beaverson 1, Dr Bhakti Vasant 1, Dr Emma Gale 1, Dr Satyamurthy Anuradha 1

Affiliations: 1Metro South Public Health Unit, Queensland Health, Brisbane, Australia

Abstract:
Introduction: Metro South Public Health Unit (MSPHU) provides public health support to 94 residential aged care facilities (RACFs) in our region. Elderly people residing at RACFs are particularly vulnerable to COVID-19. Planning and preparation can help RACFs respond to and manage a potential COVID-19 outbreak; protect the health of staff and residents and reduce the severity and duration of outbreaks if they occur. The aim of the questionnaire is to identify any gaps where MSPHU and local aged care stakeholders can provide targeted COVID-19 education and support

Methods: We developed an outbreak preparedness questionnaire, including key contact details, whether the facility has an outbreak management plan, configuration of resident rooms, COVID-19 screening at entry, infection control measures and communication strategies. MSPHU also requested number of staff, residents and frequent attendees to facility along with maps and photographs of the facility. Public Health staff contacted the facility to administer the questionnaire after notifications of suspected COVID-19 cases by Queensland Ambulance Service, notifiable diseases data and notifications by clinicians / RACFs.
Results: Between 1 May and 24 September 2020, MSPHU had 207 encounters with RACFs. Of 94 facilities in the region, 80 facilities (85.1%) were contacted and had the questionnaire administered. Discussions during administration of the questionnaire provided opportunities for RACFs to understand gaps and improve their COVID-19 preparedness. Identified gaps including uncertainty about sourcing of PPE, lack of access to infection control practitioners, lack of lead clinician for outbreak management team and a lack of communication strategies with families. Facility maps and diagrams assisted in understanding facility layout and potential risks. Some facilities did feel “over-surveyed” as they were also assessed by the Australian Aged Care Safety and Quality Commission.

Conclusion: In conclusion, MSPHU assessed RACF preparedness opportunistically when notified of a suspected case of COVID-19 at the facility. Administration of the questionnaire provided opportunities for engagement with RACFs and was generally well received. This has improved our working relationship with facilities and given us a better understanding of their organisational structures.
Concurrent Session 1B - Attitudes, Behaviours and Community Engagement
On Demand from 2:00pm AEDT

Coronavax: Preparing Older Adults and Health/Care Workers for COVID-19 Vaccination

Authors: Dr Lara McKenzie1, Dr Samantha Carlson2, A/Prof Chris Blyth2, Dr Katie Attwell1,2

Affiliations: 1The University Of Western Australia, Perth, Australia, 2Telethon Kids Institute, Perth, Australia

Abstract:

The Coronavax project aims to prepare the Western Australian community and government for a COVID-19 vaccine. This is crucial, as involving the community from the beginning of a public health campaign is vital to ensuring its successful rollout. This is evidenced by previous research, which shows that public controversies about safety spoiled the H1N1 pandemic vaccine rollout in France (Ward, 2016). Coronavax has three key research streams: a social media study, functional dialogues with government stakeholders, and the centrepiece community interviews to ascertain attitudes, information needs, and logistical requirements among key population groups in Western Australia.

The project team will be undertaking in-depth semi-structured community interviews, generating rich data about people’s attitudes and information needs regarding COVID-19 vaccination. This paper explores a subset of the qualitative research to be undertaken for this project, focusing on interviews with our priority participant groups: health and aged care workers, and adults aged 65 and over. The broader study will also be briefly introduced and explained. Recruitment will commence in October/November 2020. Data will be qualitatively analysed using NVivo 12, and themes analysed deductively and inductively.

The project protocol is currently being finalised, and the team intends to publish it to ascertain input and share the project’s design. It is anticipated that interviews will be undertaken with priority groups from November 2020, and we may discuss our preliminary findings. Furthermore, we will outline themes for analysis and contextualise the wider program of work, including additional funding plans and future stages of the research. Our results will provide insights into COVID-19 vaccination intentions in a population that likely does not perceive themselves as at high risk of COVID-19 disease, given that there have been no recent community transmissions in Western Australia. There may be other motivations to vaccinate, however, such as interstate and international travel.

Communication strategies to manage COVID-19 vaccine safety concerns

Authors: Ms Maryke Steffens1, Dr Catherine King1, Dr Eve Dubé1, Dr Julie Leask1,3

Affiliations: 1National Centre for Immunisation Research and Surveillance, Westmead, Australia, 2Quebec National Institute of Public Health, Department of Anthropology, Université Laval, Quebec, Canada, 3University of Sydney, Camperdown, Australia

Abstract:

Background: Public concerns about COVID-19 vaccine safety are to be expected: populations often take time to develop confidence in new vaccines and people may take the rapid development of the vaccines to mean safety shortcuts. Challenges to public confidence in vaccine safety also include use of novel technologies, real or perceived adverse events, amplification of misinformation through social media and other channels, and anti-vaccination activism.

Methods: Risk communication is the exchange of information, advice and opinions between experts and people facing threats to their health and well-being. Risk communication principles offer sound guidance on managing vaccine safety concerns under conditions of uncertainty and evolving knowledge. We present case studies to illustrate the practical application of risk communication principles. These include use of community liaisons to facilitate Ebola vaccine trials in Sierra Leone, use of public role models to encourage H1N1 vaccination in the USA, and employing personal stories on social media to support HPV vaccination in Denmark.

Results: These case studies demonstrate the importance of risk communication approaches, including listening to the public; early and frequent two-way communication with stakeholders, influencers and the public, using various channels including mainstream and social media; developing strategies to manage misinformation; and communicating with transparency. Not sharing vaccine safety information or over-reassuring can backfire. People can lose trust in health authorities if they feel they have been denied access to critical information that affects their health.

Conclusions: Clear and open communication about COVID-19 vaccine safety from trusted individuals or institutions will be key to maintaining public confidence and will contribute to a successful and resilient program. Communication in line with risk communication principles respects people’s right to credible and transparent information, and to have their questions and concerns addressed so they can make informed choices about COVID-19 vaccination.
Tailoring COVID-19 messages for CALD communities in regional NSW: a participatory study.

Authors: Dr Kathryn Taylor1,2, Dr Peter Massey1,2, Dr Susan Thomas1,2, Dr Bhavi Ravindran1,2, Mr Ashley Young1, Dr Nafiseh Ghafoor11,2, Dr Rebecca Healey1,2, Dr Murray Webber1, Ms Dubravka Vasiljevic1, Ms Karinne Andrich1

Affiliations: 1Hunter New England Local Health District, Wallsend, Australia, 2University of Newcastle, Newcastle, Australia

Abstract:
The current COVID-19 pandemic has disproportionately affected culturally and linguistically diverse (CALD) communities in Australia, as in other developed nations across the globe. Experience from the “second wave” of COVID-19 in Melbourne and Sydney suggests that efforts to provide health information may not have reached some CALD community members. Developing a shared understanding of communication channels between health agencies and CALD communities is critical to COVID-19 control efforts, both now and in future when a vaccine becomes available. While work has commenced in metropolitan areas, the issues facing CALD communities in regional areas are unique and under-studied. We present the progress of a partnership between Multicultural Health and Public Health aimed at developing a tailored COVID-19 risk communication strategy for CALD communities in our jurisdiction.

This project seeks to understand how four new and emerging communities in the Hunter New England region (the Afghan, Syrian, and Congolese communities in Newcastle, and the Ezidi community in Armidale) access information on COVID-19; and to explore barriers, enablers and potentially new ways for these communities to engage with government-produced COVID-19 information. A modified framework for improving vaccination uptake (World Health Organization Tailoring Immunization Program (TIP) approach) will be applied. The project will have three phases. Phase 1 will comprise a rapid situation analysis including a review of existing evidence alongside identification and engagement of key community groups. Phase 2 will collect qualitative data from stakeholders including interpreters, refugee and multicultural health services, other CALD service providers, and community members (including community and religious leaders) on their views on currently available COVID-19 information and its effectiveness. Phase 3 will focus on the translation of outcomes from Phase 1 and 2 into a risk communication intervention; developing, disseminating and evaluating tailored COVID-19 preventive messages that have been co-designed with the target communities.

A re-imagine of community engagement from the perceptive of community.

Authors: Mr Mohamed Nur1

Affiliations: 19 Towers, melbourne, Australia

Abstract:
Covid-19 is not the issue when it comes to a lack of community engagement, its systemic and Covid-19 has simply highlighted existing gaps and realities ever present in how we work with diverse communities.

This talk will be broken up into two sections;

- The reality of lock-down policies; a look at the hard-learnt lessons developed during and after lock-down by communities battling Covid-19 and the aftermath of lock-down policies. This is based on user interviews undertaken during and after lock-down by residents across the nine towers, and personal experience helping coordinate services and advocacy for residents both during and after the lock-down, and

- Community engagement essentials; focusing on unpack existing issues with community engagement approaches and re-imagine what the future may look like. This will be based on key insights identified as essential in any future approach, from experiences gathered by community as they continue to deal with Covid-19.

Delivering public health outcomes through emergency communications

Authors: Laura Keating1

Affiliations: 1Mental Health Commission, East Perth, Australia

Abstract:
During the height of the Covid-19 pandemic response in WA, a dedicated Covid-19 Information Coordination Centre was established by the WA Government, bringing together expertise from more than 15 agencies to deliver rapid, informative and comprehensive communications about the closures, restrictions and other public health messages. The pandemic posed an unprecedented challenge of a long term emergency, combined with widespread economic and social impacts and the use of national coordination mechanisms. This presentation will outline how public health principles, the State emergency framework, economics and social behaviours were brought together to deliver cohesive whole-of-government communications solutions for the WA Government and help prevent widespread community transmission in the State.

This leads to the question of whether public health could benefit from the use of communication and behaviour change techniques employed in other industries and play a greater part in the overall health system in the future.
**Concurrent Session 1C - Epidemiology**

**On Demand from 2:00pm AEDT**

**Predictors of severe COVID-19 and poor outcomes in children infected with SARS-CoV-2**

**Authors:** Ms Eleanor Frances Georgina Neal1-3, Ms Rose Noble Kizhakekara2, Dr Wonie Uahwatanasakul2, Professor Fiona Mary Russell1-2

**Affiliations:** 1Asia-Pacific Health, Infection and Immunity, Murdoch Children’s Research Institute, Parkville, Australia, 2Department of Paediatrics, The University of Melbourne, Parkville, Australia

**Abstract:**

**Background:** The majority of cases and deaths from COVID-19 are among adults. However, children and adolescents are also affected. We undertook a global review of predictors for severe COVID-19, and poor COVID-19 outcomes, in children <19 years with confirmed SARS-CoV-2 infection.

**Methods:** A systematic literature review of published (to August 2020) English-language COVID-19 studies was undertaken. Two researchers independently screened titles, abstracts, and full texts of retrieved articles. Uncertainty was resolved by discussion with a third reviewer. Due to heterogeneity amongst factor definitions, results are presented as narrative summaries.

**Results:** Preliminary findings are shown. Six studies were included. Positive associations for COVID-19 severity included young age (<12 months vs >2 years, and <6 months vs >6 months), pre-existing medical conditions, and more than three lung segments involved in pneumonia by CT scan. Positive associations with ICU/high dependency unit admission included young age (<1 month), ethnicity (Black vs white), and lower respiratory tract infections. One study found male sex (aOR 2.12 [95% CI 1.06-4.21] P=0.033) and pre-existing medical conditions (chromosomal abnormalities, chronic kidney or pulmonary disease, congenital disease, and malignancies) (aOR 3.27 [95% CI 1.67-6.42] P=0.0015) to be positively associated with ICU/high dependency unit admission. Conversely, another study reported no difference in the likelihood of ICU/high dependency unit admission for females versus males (OR aOR 0.77 [95% CI 0.42-1.39] P=0.397) or for those with pre-existing medical conditions (aOR 1.72 [95% CI 0.95-3.16] P=0.074). There were no studies from low- or lower-middle-income countries.

**Conclusion:** Our findings suggest COVID-19 is most severe in infants and those with underlying medical conditions, while ICU/high dependency unit admission for COVID-19 is associated with neonates. Studies are required from low and middle-income countries. Final results will be presented at the meeting.

**Epidemiology of COVID-19 infection in young children <5 years: a systematic review**

**Authors:** Dr Mejbah Bhuiyan1, Ms Eunice Stiboy2, Md. Zakiu Hassan3, Dr Mei Chan4, Md Saiful Islam5, Dr Najmul Haider6, Prof Adam Jaffe4,7, Dr Nusrat Homaira4,7

**Affiliations:** 1Westfarmers Centre of Vaccines and Infectious Diseases, Telethon Kids Institute, Perth, Australia, 2Faculty of Medicine and Health, The University of Sydney, Sydney, Australia, 3icdr, b, Dhaka, Bangladesh, 4School of Women’s and Children’s Health, University of New South Wales, Sydney, Australia, 5School of Public Health and Community Medicine, University of New South Wales, Sydney, Australia, 6The Royal Veterinary College, University of London, London, United Kingdom, 7Respiratory Department, Sydney Children’s Hospital, Sydney, Australia

**Abstract:**

**Introduction:** Emerging evidence suggests young children are at greater risk of COVID-19 infection than initially predicted. However, a comprehensive understanding of epidemiology of COVID-19 infection in young children under five years, the most at-risk age-group for respiratory infection, remain unclear. We conducted a systematic review and meta-analysis of epidemiological and clinical characteristics of COVID-19 infection in children under five years.

**Method:** Following the Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines, we searched several electronic databases (PubMed, EMBASE, Web of Science, and Scopus) with no language restriction for published epidemiological studies and case-reports reporting laboratory-confirmed COVID-19 infection in children under five years until June 4, 2020. We assessed pooled prevalence for key demographics and clinical characteristics using Freeman-Tukey double arcsine random-effects model for studies except case-reports. We evaluated risk of bias separately for case-reports and other studies.

**Results:** We identified 1,964 articles, of which, 65 articles were eligible for systematic review that represented 1,214 children younger than five years with laboratory-confirmed COVID-19 infection. The pooled estimates showed that 50% young COVID-19 cases were infants (95% CI: 36% - 63%, 27 studies); 53% were male (95% CI: 41% - 65%, 24 studies); 43% were asymptomatic (95% CI: 15% - 73%, 9 studies) and 7% (95% CI: 0% - 30%, 5 studies) had severe disease that required intensive-care-unit admission. Of 139 newborns from COVID-19 infected mothers, five (3.6%) were COVID-19 positive. There was only one death recorded.
Discussion: This systematic review reports the largest number of children younger than five years with COVID-19 infection till date. Our meta-analysis shows nearly half of young COVID-19 cases were asymptomatic and half were infants, highlighting the need for ongoing surveillance to better understand the epidemiology, clinical pattern, and transmission of COVID-19 to develop effective preventive strategies against COVID-19 disease in young paediatric population.

Flutracking and COVID-19: Insights into COVID testing and respiratory illness in 2020

Authors: Dr Craig Dalton1

Affiliations: 1Flutracking - Hunter New England Health, Longworth Ave, Wallsend, Australia, 2University of Newcastle, Newcastle, Australia

Abstract:
The COVID-19 pandemic has seen unprecedented restrictions on population movement. Australia responded early by closing international borders, quarantine, and implementing a range public health orders designed to limit the spread of the virus. We assessed the impact of the measures on the transmission of respiratory illness in the community and SARS CoV-2 testing among Flutracking participants with mild and moderate respiratory illness. Flutracking is one of the largest online public health surveillance systems in the world. Participants respond to a short online weekly survey, answering questions about respiratory symptoms and healthcare seeking behaviours across Australia. Throughout the COVID-19 pandemic, it has received over 60,000 surveys each week.

Following the introduction of COVID-19 pandemic public health measures during February and March in Australia, Flutracking recorded the lowest ILI incidence since its inception in 2006. The weekly proportion of participants with ILI declined to 0.2% compared to a five year average of 2.1% in May. Cough and fever rates (our definition of "moderate illness") and sore throat and runny nose (our definition of "mild illness") recorded a divergence between NSW and Victoria particularly after stage 4 restrictions were instituted.

Between 40-60% of participants with moderate illness and 30-50% of participants with mild illness reported having SARS CoV-2 testing. There was a noticeable increase in testing among participants with mild illness during the peak of the Victorian COVID-19 pandemic in July and August.

These findings demonstrate how Flutracking can be used to inform the effectiveness of containment measures on respiratory virus transmission. Flutracking data also identified the proportion of symptomatic participants seeking medical attention and COVID-19 testing. We are currently exploring barriers to SARS CoV-2 testing among Flutracking participants.

Lessons from a national First Few “X” household transmission study

Authors: Mr Adrian Marcato1,2, Dr Miranda Smith1,2, Professor Jodie McVernon1,2, Australian FFX Project group

Affiliations: 1The Peter Doherty Institute for Infection and Immunity, Melbourne, Australia, 2The Australian Partnership for Preparedness Research on Infectious disease Emergencies, Melbourne, Australia

Abstract:
A flexible and multifaceted national approach is required to collect key epidemiological, clinical and virological data from confirmed cases and household contacts of emerging pathogens such as COVID-19. First Few “X” (FFX) (formerly First Few 100) studies provide a platform for such data collection, which can inform targeted public health responses in Australia.

The generic ‘WHO Household transmission protocol for COVID-19’ was adapted for implementation and undertaken as a public health/research partnership. Implementation strategies were tailored for participating jurisdictions according to local public health arrangements and staff resources. The spread of COVID-19 within households is modelled with a susceptible-exposed-infectious-recovered (SEIR)-type model, providing a posterior distribution for the household secondary attack rate as well as estimates of other key epidemiological parameters.

Recruitment commenced on the 4th of April 2020. As of September 4, 93 households and 277 household contacts have been recruited across three jurisdictions, with 33 contacts testing positive for COVID-19. Preliminary modelling analysis suggests that the household secondary attack rate is likely to be 10-20% and there is emerging evidence to suggest this rate increases with household size. Primary cases who are children appear less likely to transmit within a household than their adult counterparts. There is currently insufficient information to confidently estimate other epidemiological parameters as chains of infections are not being observed within households. Future work will involve further recruitment, the incorporation of additional data to improve model estimates and efforts to understand recruitment bias and population representativeness of the study population.

Conducting a multi-jurisdictional study for the first time during a pandemic has highlighted ethical, governance and implementation challenges. Ongoing development of FFX protocols and strengthening of public health/research partnerships is crucial to ensure that future FFX studies can be rapidly implemented to inform early epidemic decision making, or decisions for different phases of COVID-19 transmission.
SARS-CoV-2 testing and concurrent capacity building for diagnostic microbiology in Timor-Leste

Authors: Ismael Barreto1, Dr Ian Marr1, Endang Da Silva2, Maria Dolores de Jesus2, Dr Liborio Alves2, Arsenio de Araujo2, Joanico Moises de Araujo2, Elisabeth Hornay2, Joao Ximenes1, Antonio Salles2, Eugenia da Costa2, Lourenco da Costa Ico2, Nevio Sarmento3, Dr Arijayanti Tilman1, Dr Johanna Wapling1, Tessa Wylie1, Dr Robert Baird4, Kevin Freeman4, Dr Dongbao Yu4, Dr Jennifer Yan1, Dr Joshua Francis1

Affiliations: 1Menzies School Of Health Research, Tiwi, Australia, 2Laboratorio Nacional de Saude, Dili, Timor-Leste, 3World Health Organization, Dili, Timor-Leste, 4Territory Pathology, Tiwi, Australia

Abstract:

The public health response to the COVID-19 pandemic relies heavily on the ability to test for SARS-CoV-2 in order to identify cases and contain spread. Polymerase chain reaction (PCR) testing provides the best sensitivity and specificity, and is the mode of testing recommended by the World Health Organization.

Capacity for real-time PCR testing in Timor-Leste has been limited to influenza RT-PCR testing in the National Health Laboratory (NHL) for Severe Acute Respiratory Illness (SARI) and Influenza Like Illness (ILI) surveillance. In March 2020, refurbishment of the NHL and associated capacity building and mentoring activities to improve diagnostic microbiology services, were underway as part of the Menzies-led STRONG TL and Fleming Fund country grant projects, with a focus on improving surveillance and response to infectious diseases challenges.

RT-PCR testing for SARS-CoV-2 commenced in NHL in March 2020 using an Applied Biosystems RT-PCR platform, and an RdRP/N gene assay (Roche). Subsequent assays used have included E (BGI Genomics) and ORF1ab/N (Da An) assays.

Biofire SARS-CoV-2 PCR (Biomerieux) has been used in limited numbers, for confirmation of positives and in cases requiring urgent turnaround. In August 2020, GeneXpert SARS-CoV-2 was introduced, allowing for decentralised SARS-CoV-2 testing in Timor-Leste for the first time. In September 2020, an automated PCR platform (Ausdiagnostics HighPlex) was introduced.

In total, 7587 samples have been tested in NHL. Of these, 569 were tested in parallel at the Royal Darwin Hospital Molecular Laboratory for validation. There have been 28 cases of COVID-19, 4 probable cases, and 7555 negative tests. There is one active case, and all previous cases have recovered with no deaths.

Establishing laboratory capacity in the context of a global pandemic is possible, but requires in-country expertise and close collaboration with supporting institutions based on established relationships and a commitment to ongoing investment in sustainable capacity building.
Concurrent Session 1D - Priority Populations
On Demand from 2:00pm AEDT

‘Waiting it out’: lived experiences of disability in the context of COVID-19

Authors: Alexandra Devine1, Dr Mediya Rangi1, Professor Anne Kavanagh1, Dr Ashley McAllister1, Marie Huska1

Affiliations: 1University Of Melbourne, Melbourne, Australia

Abstract:
The COVID-19 pandemic continues to significantly impact on the lives of people with disability. This is particularly so for those whose health conditions place them at increased risk ofcontracting the virus and of experiencing more complex complications if they do. For some, self-isolation will continue until there is a vaccine, well beyond the restrictions enforced in various jurisdictions. Such isolation is not without its trade-offs. In this presentation we draw on qualitative interviews with more than 100 people with disability, collected as part of the Victorian National Disability Insurance Scheme (NDIS) Utilisation Project. Commissioned by the Victorian Department of Health and Human Services, this project aims to understand why NDIS plan utilisation varies among participants, with a specific focus on groups reported to have lower utilisation, such as people with psychosocial disability, individuals with complex disability and co-occurring conditions, people from Culturally and Linguistically Diverse backgrounds, and, First Nations people with disability.

A key objective of the research was to understand the impact of the COVID-19 pandemic on the experiences of NDIS participants. Substantial reduction in social and community participation, alongside major disruptions in accessing services and supports, have had a detrimental impact on both the physical and mental health of participants. Findings also point to an urgent need to improve structural frameworks to ensure equitable consideration of people with disability within emergency preparedness and response planning, as well as across current and longer term public health and socio-economic recovery efforts. Ensuring the lived experiences of the COVID-19 pandemic through the voices of people with disability are front and center of informing such efforts is critical.

Investigation of a COVID-19 outbreak at a psychiatric facility in Victoria, Australia

Authors: Ms Stephanie Main1,2,3, Ms Rebecca Schack1, Dr Ramona Muttucumaru1, Ms Lucinda Franklin1, Dr Hazel Clothier1, Dr Tony Stewart1, Ms Sally Dougall2, Dr Kathleen Ryan1, Dr Tambri Housen1, Ms Amy Elizabeth Parry2, Dr Jane Greig1,3, Dr Charles Alpren1

Affiliations: 1Victorian Department of Health and Human Services, Melbourne, Australia, 2National Centre for Epidemiology and Population Health, The Australian National University, Canberra, Australia, 3Macfarlane Burnet Institute For Medical Research & Public Health, Melbourne, Australia

Abstract:
Background: On the 1 April 2020, the Victorian Public Health authorities were notified of a confirmed COVID-19 case linked to a psychiatric healthcare facility. We conducted an investigation to support the management and control of this outbreak.

Methods: We undertook a case series, laboratory investigation and site review. We interviewed laboratory confirmed cases by telephone using a standardised questionnaire, data collected included symptoms, and patients’ locations and activities. Staff and inpatients were tested onsite on the 24th of April. Facility site maps and staff rosters were collected, and infection prevention control (IPC) and cleaning protocols were reviewed.

Results: The facility was temporarily closed to support outbreak management. We epidemiologically linked 18 cases to this outbreak: five staff, eight inpatients, and five household/family contacts. Median age of cases was 44 years (range 21-65), and 12 (67%) were female. All identified cases reported symptoms, including cough (83%), sore throat (61%) and fever (39%). Six cases were hospitalised, no associated deaths were reported.

Multiple waves of transmission occurred in the facility, localised to two of four wards, through direct patient care or in group therapy sessions where patients and staff had daily contact for more than one hour per session. The facility established physical distancing measures, however we found IPC practices including PPE use and management of presumptive or confirmed cases were insufficient to meet needs.

Conclusions: This was the first reported outbreak of COVID-19 in a psychiatric healthcare facility in Australia. Our investigation found that facility preventive measures were not sufficient to prevent or manage this outbreak. Our investigation reinforces the importance of rapid case identification, management and isolation, and robust IPC protocols to control COVID-19 within healthcare settings. Findings from this investigation informed refinements to IPC guidelines at the facility and management and information collected for health facility outbreaks in Victoria.
A partnership approach to improving outcomes for people with disability in COVID-19

Authors: Professor Anne Kavanagh¹, Professor Helen Dickinson², Associate Professor Gemma Carey³, Professor Gwynyth Llewellyn⁴

Affiliations: ¹University Of Melbourne, Melbourne, Australia, ²UNSW Canberra, Canberra, Australia, ³UNSW, Sydney, Australia, ⁴University of Sydney, Sydney, Australia

Abstract:

The NHMRC Centre of Research Excellence in Disability and Health (CRE-DH) has played an important role in shaping government responses for children and adults with disability during the COVID-19 pandemic.

During the early stages of the pandemic, there were concerns that people with disability were vulnerable due to a unique combination of problems within the service system and individual risks. People with disability already faced barriers to accessing quality health care; the disability service sector did not have health expertise; and, working across disability and health portfolios were notoriously difficult. People with disability were more likely to be infected with SARS-CoV-2 because of reliance on formal care making it difficult to physically distance, particularly in congregate settings, and many had health conditions which meant they were at risk of poor outcomes if infected.

On March 15 2020 we released our first statement of concern calling on governments to develop a targeted response for people with disability. We released two further statements as new issues emerged. We are on national and state committees (we called for) advising on the COVID-19 response. We have worked closely with advocacy groups and have held discussions with politicians and decision-makers at the highest levels of government. We have conducted rapid research (surveys, systematic reviews, data analyses). We have written for online media and academic journals, appeared on TV and radio, and been an expert witness at the Disability Royal Commission special hearing on COVID-19.

The CRE-DH provided a vehicle for us to make a difference during COVID-19, leveraging off the strong partnerships we had built across health and disability with advocates, services, and government. COVID-19 has shown us that emergency responses require strong partnerships including academic expertise and infrastructure as well as advocacy and policy.

Disability support workers: The forgotten workforce in COVID-19

Authors: Professor Anne Kavanagh¹, Ms Stefanie Dimov¹, Dr Ashley McAllister¹, Dr Helen Dickinson², Ms Mellissa Kavenagh¹

Affiliations: ¹University Of Melbourne, Melbourne, Australia, ²UNSW Canberra, Canberra, Australia

Abstract:

Disability support workers (DSWs) are the forgotten essential workers in the COVID-19 pandemic, despite their vital role in supporting people with disabilities. They are at risk of becoming infected and transmitting SARS-CoV-2 because they often support multiple people, sometimes in congregate settings, and their work requires close personal contact. Indeed, outbreaks in disability residential settings were reported in July-September in Victoria’s second wave.

To understand the risks for this workforce we conducted an online survey of 357 DSWs across Australia from late May to June 2020 with a follow-up survey currently underway. Results for the first survey are reported however the presentation will also include findings from the follow-up survey.

90% of DSWs could not physically distance in their work and 53% provided support with tasks that required close personal contact (e.g. teeth brushing). 23% had not received any infection control training and many reported difficulties acquiring personal protective equipment (PPE) with 64% reporting that they had purchased their own (predominantly masks and gloves). 57% worked in disability residential settings in the previous week. 23% had been tested for COVID-19 and 11% had wanted to get tested but couldn’t, sometimes because they didn’t meet the criteria and were not considered an essential workforce. Of those that had to take time of work because they were sick, only 47% were paid. 37% had worked fewer hours than in February and 44% reported at least one financial stressor (e.g. could not pay bills, mortgage or rent, went without meals).

DSWs should be a priority population for infection control and PPE training, testing, and financial support, including paid pandemic leave. Initiatives to reduce worker movement between work settings would be beneficial provided financial compensation is provided if there is a reduction in work hours.
Management of a COVID-19 outbreak in a youth detention centre

Authors: Dr Kevin O’Callaghan1, Dr Michael Janssens1, Craig Davis1, Janet Farmer1, Bruce Morton1, Mark Myerson1, Catherine Quagliotto1

Affiliations: 1West Moreton Public Health, Goodna, Australia

Abstract:

Background: Detention centres are vulnerable to COVID-19 outbreaks. Internationally, such outbreaks have caused significant morbidity and mortality. Reporting thus far is mostly limited to mainstream media.

Outbreak: On 19/08/2020, after 19 days of no community cases of COVID-19 in Queensland, West Moreton Public Health Unit was notified of a positive test in a Brisbane Youth Detention Centre (BYDC) employee. Initial contact tracing revealed no obvious infection source.

Methods: Outbreak response teams activated locally and state-wide. Non-essential activity in BYDC was suspended; movement of Young People and staff was restricted. BYDC closed to new admissions and visitors. Universal masking was implemented, and on-site infection prevention practitioner support instituted. Contact tracing was extended back to community activity of most recent local COVID-19 cases.

Testing strategy included universal screening with nasopharyngeal swab (NPS) PCR and serology, to characterize active transmission and seek a source. Initially, only identified close contacts were quarantined.

Results: There were 127 young people in BYDC at outbreak notification, with 641 identified staff across several agencies and 330 identified visitors. Testing revealed four additional cases, all staff members.

Based on outbreak evolution, the facility became regarded as the “case” and quarantine was extended to include contacts of the facility. Based on BYDC’s operational needs and the challenge of replacing specialised staff, a “quarantine with work exemption” strategy was devised for lower risk staff.

Repeat NPS screening at day 10-12 of staff and Young People revealed no positive tests. As of 20/10/2020, there is no detected transmission in BYDC for >2 incubation periods. However, community spread from the initial cases precipitated several clusters which were subsequently contained.

Discussion: Management of a COVID-19 outbreak in youth detention is challenging with vulnerable populations and multiple stakeholders. In this outbreak, early aggressive strategies with infection control, testing and quarantine were effective in outbreak containment.
Concurrent Session 1E - Vaccines update
On Demand from 2:00pm AEDT

Clinical trial evaluation of Molecular Clamp stabilized SARS-CoV-2 subunit vaccine

Authors: Associate Professor Keith Chappell1

Affiliations: 1The University of Queensland, St Lucia, Australia

Abstract:
The University of Queensland and partner organisations, including CSL have developed a SARS-CoV-2 subunit vaccine which is currently under evaluation in a Phase I clinical trial. This vaccine consists of the spike protein held in its pre-fusion conformation by UQ’s rapid response molecular clamp platform. The structure of the purified spike protein has been resolved to 5Å resolution and shown to adopt a conformation equivalent to that on the surface of the virus. When formulated with MF59C.1 adjuvant (Seqirus), this vaccine elicits a strong neutralizing immune response, broadly reactive CD4+ and CD8+ T-cell responses and has been shown to provide protection against both viral replication and disease in the Syrian hamster challenge model. Importantly this vaccine is compatible with large scale manufacturing using industry standard mammalian cell bioprocessing facilities and is stable at 4°C facilitating global distribution. In this presentation we will discuss the results of the Phase I clinical trial to be completed in November and provide an update on plans for moving forward into Phase 2/3 trials

Vaccine associated enhanced disease: lessons for COVID vaccines from SARS-CoV-1 and MERS-CoV

Authors: Dr Jean Li-Kim-Moy1,2, Alexis Pillsbury1, Dr Helen Quinn1,2, Professor Katie Flanagan3,4,5, Dr Clayton Chiu1,2

Affiliations: 1National Centre For Immunisation Research And Surveillance, Westmead, Australia, 2University of Sydney, Sydney, Australia, 3University of Tasmania, Hobart, Australia, 4RMIT University, Melbourne, Australia, 5Monash University, Melbourne, Australia

Abstract:
Background: Vaccine associated enhanced disease (VAED) has been observed in previous animal studies of SARS-CoV-1/MERS-CoV vaccines. As a result, VAED is an important safety consideration in the assessment of upcoming SARS-CoV-2 vaccines.

Methods: A targeted review was conducted to summarise VAED with SARS-CoV-1/MERS-CoV vaccines. Using findings of pivotal animal vaccine studies demonstrating VAED, we aimed to determine vaccine platforms affected, potential mechanisms, and strategies to be considered to minimise and evaluate VAED in potential SARS-CoV-2 vaccines. References in the guideline documents and literature review by the Coalition for Epidemic Preparedness Innovations (CEPI) and Brighton Collaboration on disease enhancement with COVID-19 vaccines were used to identify key articles, supplemented with Web of Science citation searches and handsearching of reference lists. Important vaccine studies were examined in full text.

Findings: VAED has been seen with SARS-CoV-1/MERS-CoV vaccines based on numerous platforms including inactivated whole virus, protein, viral vector, RNA and virus-like particle vaccines. Two main mechanisms were demonstrated: 1) vaccine associated enhanced respiratory disease (VAERD) on histopathology in animal models, characterised by a Th-2 biased immune response, cellular infiltration of lung tissue particularly by eosinophils, and predominantly seen with nucleocapsid (N) protein containing vaccines; and 2) in-vitro evidence of antibody-dependent enhancement (ADE) of viral entry into immune cells via Fc receptors, primarily seen with antibodies against the spike (S) protein when present at low levels.

Implications: Findings suggest that avoidance of non-neutralising anti-N antibodies, ensuring a robust neutralising anti-S antibody response, and favouring a Th1-biased immune response may be important to minimise the risk of VAED among those immunised with SARS-CoV-2 vaccines. VAED remains a theoretical safety concern requiring careful monitoring as large-scale human SARS-CoV-2 vaccine trials with broad population coverage progress. Understanding VAED will help guide the design of SARS-CoV-2 vaccines and the safety surveillance systems of COVID-19 vaccination programs.
Clinical Development of an RNA-Based COVID-19 Vaccine

Authors: Dr Nicholas Kitchin¹, Dr James Baber², Dr Richard de Solom², Dr Osamu Kogawara³, Dr David Cooper⁴, Dr Kena Swanson⁴, Dr Kenneth Koury⁴, Dr William C Gruber⁴, Dr Phillip R Dormitzer⁴, Dr Ozlem Tureci⁴, Dr Ugur Sahin⁴, Dr Kathrin U Jansen⁴, Dr Stephen Lockhart¹

Affiliations: ¹Pfizer Vaccine Research and Development, Hurley, UK, ²Pfizer Vaccine Research and Development, Sydney, Australia, ³Pfizer Vaccine Research and Development, Tokyo, Japan, ⁴Pfizer Vaccine Research and Development, Pearl River, USA, ⁵BioNTech, Mainz, Germany

Abstract:

Background: In response to the global pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), multiple vaccine candidates are under development. BNT162b2 is a lipid nanoparticle-formulated, nucleoside-modified RNA (modRNA) vaccine candidate encoding the full-length P2 mutant prefusion spike protein of SARS-CoV-2. We report data from the ongoing clinical development of this vaccine candidate.

Methods: In the Phase 1 component of an ongoing randomized, placebo-controlled observer-blinded Phase 1/2/3 study, 90 healthy adults 18–55 or 65–85 years of age were randomized to receive 2 doses of BNT162b2 or placebo at a 21-day interval. Safety assessments included reactogenicity and adverse events. Immune responses in serum were evaluated using a SARS-CoV-2 neutralization assay and S1-binding IgG direct Luminex immunoassay at multiple time points before and after vaccination.

Results: Two 30µg doses of BNT162b2 were well tolerated with local reactions (primarily pain) and systemic events mostly mild or moderate in severity, with no serious adverse events reported. Antigen-binding and neutralizing responses were elicited in both age groups, were higher in younger adults and were boosted after dose 2. Neutralizing geometric mean titers (GMTs) measured 7 days after Dose 2 of BNT162b2 in adults 18–55 and 65–85 years old were ~3.8 and ~1.6 times the convalescent serum panel GMT respectively.

Conclusion: Available safety and immunogenicity data supported the large-scale evaluation of safety and efficacy of BNT162b2 30µg in the Phase 2/3 part of the study.

Overview of the advancing development of COVID-19 vaccines

Authors: Ye Jin Joo¹, Dr Clayton Chiu¹,²

Affiliations: ¹National Centre for Immunisation Research and Surveillance, Sydney, Australia, ²Children’s Hospital Westmead Clinical School, University of Sydney, Westmead, Australia

Abstract:

Background: Identification and global sharing of the genome sequence of SARS-CoV-2 has enabled expedited development of vaccines to prevent COVID-19. Since mid-March 2020, the co-authors have closely monitored information on vaccine development with the aim to track progress of clinical trials of COVID-19 candidate vaccines, with special focus on elements of their design that may have important implications for assessing suitability for population use.

Methods: A wide range of sources were used to capture descriptive information on COVID-19 vaccines under development. Documents from the World Health Organisation, clinical trial registries, websites of developer institutions and international funding bodies, bibliographic databases, scientific literature and media sources were monitored on a weekly basis to identify candidates and obtain information on trial design, advancing phases of clinical trials, vaccine platforms, and published trial results.

Results: Modern vaccine platforms that utilise genome sequence information, such as viral vector and nucleic acid vaccines, are at the forefront of development, additional to some with traditional technology. On average, a new candidate vaccine entered a phase I clinical trial every fortnight since the first phase I clinical trial. The trend for candidates entering phase III clinical trials is similar. Phase II or III clinical trials began before earlier phase(s) were complete. A few phase I/II trials include younger age groups or HIV-positive participants. Progressive expansion after commencement of clinical trials to include greater number of participants and older adults were common. A wide range of outcomes additional to safety, including neutralising antibodies and cell-mediated immunity were commonly assessed in early-phase trials.

Conclusions: The landscape and acceleration of progress of COVID-19 vaccine development since the pandemic is unprecedented. Using modern vaccine platforms, adaptable clinical trial designs, and overlapping phases of clinical trials have facilitated a compressed time frame of development, whilst scientific rigour is maintained.
Preparedness for the pandemic: public health, vaccines, diagnostics and therapeutics.

Authors: Dr Rob Grenfell

Affiliations: 1CSIRO, Parkville, Australia

Abstract:
The general erosion of a focus, and disinvestment by governments, on the "neglected diseases" which were increasingly afflicting many populations worldwide spurned the World Economic Forum to champion an approach to prepare for the emergence of disease X. This began with a significant boost when the Coalition for Disease Preparedness and Innovation launched in 2017 at DAVOS.

This turned out to be timely, as it provided a framework for the rapid acceleration of vaccine directed responses to the emergence of COVID19.

CSIRO, along with other research organisations aligned to specific parts of the global vaccine development pathway, and contributed significantly to the acceleration of a number of potential candidates.

The rapid progression of vaccine development has not only highlighted what can be done with global collaboration, but it also identified considerable failings too.

This presentation will provide an overview of the pathway to accelerated vaccine development and what we have learned.

Should we develop an effective and safe vaccine, the challenges of manufacturing, distribution and administration pose a challenge we have not faced before. These steps will be outlined.

The presence of a vaccine doesn't remove the need for strict attention to continued public health measures, available POC diagnostics and effective therapeutics. Australia’s response to other epidemics, such as HIV, Hep C, TB and polio will be compared to the challenge we now face.

The future requires a systematic approach to providing resilience in the face of biothreats and a framework for action will be presented. Four pillars: Predict/Prevent, Detection, Response and Recovery.
Wednesday 9 December 2020

Concurrent Session 2A - Diseases management
On Demand from 10:00am AEDT

Co-infection, Hospital-Associated Infection and Antimicrobial Prescribing in Patients Hospitalised with COVI-19: An Australian Experience

Authors: Dr Katherine Langan1, Ms Pauline Megalla2, Dr James MOLTON1, Dr Adrian TRAMONTANA1, Dr Sarah Boyd1, Dr Garry Lane1, Dr Cristina Mateveci1, Dr Alexandra Stewart1, Dr Jenny Wong3, Dr Marion Kainer1

Affiliations: 1Department of Infectious Diseases, Western Health, Melbourne, Australia, 2Department of Pharmacy, Western Health, Melbourne, Australia, 3Department of Microbiology, Dorevitch Pathology, Western Health, Melbourne, Australia

Abstract:

Background: The majority of patients hospitalized with COVID-19 infection are treated with antimicrobials1. Yet, there is limited data on the incidence of co-infection (diagnosed within 48 hours of hospitalisation) and hospital-associated infection (diagnosed after 48 hours of hospitalisation). In a recent meta-analysis, 7% had bacterial infection identified2. It is not known if this is also seen in an Australian context.

Our aim is to describe the incidence of co-infection and hospital-associated infection, as confirmed by culture, PCR, or serology, and antibiotic prescribing in patients hospitalised with COVID-19.

Methods: A retrospective case-series of 355 patients hospitalised at Western Health, Melbourne, Australia between July and September 2020 with COVID-19 infection confirmed by either nasopharyngeal/oropharyngeal swab PCR and/or sputum PCR.

Data obtained from electronic medical records (Cerner® and IntelliSpace Critical Care and Anaesthesia; ICCA®), including:
- Patient demographics
- Admission to ICU
- Microbiological results (blood and respiratory cultures, Streptococcus pneumoniae and Legionella urinary antigen, atypical pneumonia and respiratory virus PCR and Mycoplasma pneumoniae antibody).
- Antibiotic choice and duration of treatment

Results:
- Overall, 355 patients were admitted with confirmed COVID-19. Seven percent (24/355) were admitted to ICU. Antibiotics was prescribed in 70% (237/355); the majority was empirical therapy with no organism identified by laboratory testing. All ICU patients received antibiotics.
- A total of 213 (60%) patients in non-ICU wards received intravenous or oral antibiotics: 65% ceftriaxone, 49% doxycycline, 44% azithromycin, 30% amoxicillin, 27% benzylpenicillin, 24% amoxicillin-clavulanic acid oral, 12% piperacillin-tazobactam, 3% vancomycin.
- Laboratory-confirmed co-infection occurred in 0.8% (3/355; x1 positive Streptococcus pneumoniae urinary antigen, x2 Staphylococcus aureus bacteraemias) and 1.4% hospital-associated infection (5/355; all ventilator-associated pneumonia with Gram negative organisms) in COVID-19 infected hospital inpatients.
- Median duration of inpatient antibiotics was 5 days.

Conclusion:
- Patients admitted to Western Health with COVID-19 infection had low rates of co-infection and hospital-associated infection although antimicrobial use was high.
- Antibiotic prescribing at our institution was consistent with previous reports.
- Empirical antibiotic therapy may not be warranted for the majority of patients hospitalized with COVID-19.
- Active antimicrobial stewardship interventions is a key component of COVID-19 management.

References:
**Sofosbuvir-daclatasvir to treat COVID-19: a pre-planned prospective meta-analysis of randomised trials**

**Authors:** Dr Katherine Heath¹, Dr Jacob Levi², Mr Junzheng Wang³, Dr Andrew Hill⁴

**Affiliations:** ¹Burnet Institute, Melbourne, Australia, ²University College Hospital, London, United Kingdom, ³Imperial College London, London, United Kingdom, ⁴University of Liverpool, Liverpool, United Kingdom

**Abstract:**

**Background:** Sofosbuvir (SOF) plus daclatasvir (DCV) has a well-established safety profile for treatment of hepatitis C. In silico and in vitro studies suggest that DCV, and potentially SOF, may show antiviral activity against COVID-19. In a meta-analysis of three studies in 176 patients, clinical recovery was 34% higher for SOF/DCV versus control (p=0.020); all-cause mortality was 69% lower for SOF/DCV versus control (p=0.005). However, the sample size was too small to make reliable conclusions. New clinical trials have been established to confirm whether SOF/DCV can improve clinical response rates and survival.

**Methods:** Systematic searches of clinical trial databases identified randomised clinical trials of SOF/DCV versus control in COVID-19 infection. The primary objective is to estimate the effect of SOF/CDV compared to a control arm on (i) clinical recovery within 10 days and (ii) all-cause mortality within 28 days using a prospective meta-analysis of eligible trials. Power calculations estimated the potential of the combined trials to detect effects of SOF/DCV on clinical recovery and survival.

**Results:** There are 11 eligible ongoing randomised clinical trials of SOF/DCV versus control in COVID-19 infection. An interim analysis will be conducted in November 2020, and a final analysis in January 2021. Power calculations estimated that the combined sample size of ~1,300 (900 SOF/DCV, 900 SOC) available in November 2020 would provide over 95% power to detect increased clinical recovery rates due to SOF/DCV treatment of ~20%. By January 2021, with ~3,900 participants, we would have >95% power to detect decreased mortality due to SOF/DCV, from ~12% to ~8%. Power calculations assumed 5% significance and used results from existing small-scale trials as a benchmark for expected results.

**Conclusions:** The proposed prospective meta-analysis will be large enough to demonstrate improvements in clinical recovery and survival, if results from pilot studies can be confirmed.

**Clinical Experience with the McMonty Isolation Hood during COVID-19: A Safety Study.**

**Authors:** Dr. Forbes McGain¹, Ms. Sam Bates¹, Prof. Jason Monty², A/Prof. Marion Kainer¹, A/Prof. Craig French¹

**Affiliations:** ¹Western Health, Melbourne, Australia, ²Dept. of Mechanical Engineering, Uni. Melbourne, Melbourne, Australia

**Abstract:**

**Objective:** To examine the safety and comfort of use of a personal isolation hood (https://www.youtube.com/watch?v=McQGJpElqGk&feature=youtu.be).

**Design and setting:** Prospective, clinical, qualitative study of the perceived safety and comfort of an isolation hood during July/August 2020. All adult patients being cared for in the ED/ICU in two Melbourne hospitals who were suspected or confirmed to have COVID-19. We excluded patients with delirium, dementia, patients at risk of self-injuring, and claustrophobia. Convenience sample of 20 patients (Melbourne Health HREC No. 2020.129).

**Interventions:** Questionnaires were undertaken voluntarily by hospital staff and patients (multiple staff questionnaires per patient). The questions assessed patients’ and staff’s perceptions of the isolation hood’s: (i) ability to prevent infectious cross-contamination, (ii) safety (construction, mobility), and (iii) practicality (comfort, noise, temperature and humidity, communication). Questionnaires were either favourable (50% positively answered) or unfavourable.

**Results:** Eight of 20 patients completed the survey; 7/8 were favourable. All patients indicated that the hood helped prevent infection, and safe. The majority (5/8) patients thought the hood comfortable, and could communicate adequately whilst inside. Of the 64 staff surveys, 60 (94%) were included, with 60/60 (100%) favourable. All staff preferred to use the device than not, thought the hood safe to use, understood how it worked, and found it in good working order. Staff were mostly in agreement that the hood was robust and mobile (53/57, 93%), that the hood reduced their chance of being infected with COVID-19 (56/60, 93%), that they felt comfortable administering aerosol generating procedures to patients using the hood (21/23, 91%).

**Conclusions:** In this prospective, 20-patient clinical study we found that more than 75% of questionnaires from patients and staff were favourable of the use of the personal isolation hood. Such findings inform studies of the use of isolation hoods to prevent healthcare worker infections from respiratory infections.
Severe post-COVID syndrome 6 months after a mild infection in a HCW

Authors: Dr Emma Tippett1,4, Ms Naomi Pratt1, Dr Manuja Premaratne1,2, Dr Peter Kelley1, Dr Damon Eisen1,2,3

Affiliations: 1Peninsula Health, Ormond, Australia, 2Monash University, Clayton, Australia, 3James Cook University, Townsville, Australia, 4The Peter Doherty Institute, Melbourne, Australia

Abstract:
As we come to understand the acute impact of severe COVID-19 infection we must now turn our attention to the long-term sequelae. A significant body of research is emerging which demonstrates that a high proportion of people who suffer COVID-19 infection will be left with long term complications but the natural history and underlying pathophysiology is as yet unknown. The major symptoms reported on the severe end of the spectrum include debilitating fatigue, persistent shortness of breath, muscle and joint pains, palpitations, gastrointestinal disturbances as well as cognitive, mood and sleep changes. Other less severe but unique symptoms that appear specific to post-COVID syndrome include skin rashes, loss of hair, persistent sore throat and voice changes.

We present the case of a 49-year-old senior health care worker with a history of hypertension only, infected with COVID-19 during the first wave. She suffered a relatively mild acute phase marked only by persistent PCR positive results and lingering nasal congestion. Following clearance for return to work she developed tachycardia, shortness of breath, fatigue, severe chest and shoulder pain, sleep and concentration difficulties and more. Under the care of cardiology and respiratory specialists, investigations to date include a CT-pulmonary angiogram, high resolution CT scan, echocardiogram and lung function tests with all tests showing relatively normal results. Six months following later she has still not been able to return to full time work.

This case presents the severe long-term sequelae of mild COVID-19 infection in an otherwise healthy person and provides the unique learning opportunity of following the progress of a one of the first people infected in Australia. The clinical course and management of this case will be presented in parallel with the first-person account of her journey. Further, pathophysiological processes underpinning post-COVID syndrome will be discussed.

Youth hit hard during COVID-19: Findings from the Youth Employment Study

Authors: Ms Stefanie Dimov1, Prof Anne Kavanagh1, Dr Samia Badji2

Affiliations: 1Disability and Health Unit, The University Of Melbourne, Parkville, Australia, 2Centre for Health Economics, Monash University, Clayton, 3800

Abstract:

Background: Young people in Australia are predicted to be the hardest hit by the economic fallout from the COVID-19 crisis. Already experiencing high levels of unemployment and under-employment, young people are likely to be disproportionately impacted by pandemic-induced job losses. Furthermore, government programs aimed at supporting young jobseekers are rarely evaluated. A better understanding of young people’s experiences during the COVID-19 pandemic is needed to identify how governments might best support young people in finding suitable employment into the future.

Methods: Data is drawn from the Youth Employment Study (YES), a study about the employment experiences of young people during COVID-19, over the period June to November 2020. Descriptive statistics are used to show the job-seeking strategies used by young people and their experiences of employment programs. The mental health and wellbeing of youth will also be analysed, along with housing and financial stresses.

Results: Noting that recruitment is still underway, preliminary findings from 250 participants (70% female, aged 15-25) show that of those not looking for work, 23% reported COVID-19 as the reason for this. 13% of the sample felt it unlikely they will have a job in the next 12-months. A third were involved in an employment program (22% of which were mutually obligated) and 33% were dissatisfied with the program. With regards to financial and psychological stress, 21% had skipped meals, 70% were receiving no income support and 50% reported a likely serious mental illness. Only 32% of young people were hopeful about Australia’s future and only 47% were hopeful about their personal future. This presentation will present complete data from the first survey.

Conclusion: These results will show the significant challenges facing young people, both vocational and non-vocational, as a consequence of the health and economic fallout of the COVID-19 pandemic.
Embodied experiences and social effects of COVID-19: a qualitative longitudinal cohort study

Authors: Dr Kari Lancaster1, Professor Tim Rhodes1,2, Professor Greg Dore3,4, Professor David Darley5,6, Associate Professor Gail Matthews1,4

Affiliations: 1Centre for Social Research in Health, University of New South Wales, Sydney, Australia, 2London School of Hygiene and Tropical Medicine, London, UK, 3Department of Infectious Diseases, St Vincent’s Hospital Darlinghurst, Sydney, Australia, 4Kirby Institute, University of New South Wales, Sydney, Australia, 5Department of Thoracic Medicine, St Vincent’s Hospital Darlinghurst, Sydney, Australia, 6UNSW Medicine, St Vincent’s Clinical School, University of New South Wales, Sydney, Australia

Abstract:

Background: COVID-19 is a new disease. Little is known about the embodied experiences and social effects of SARS-CoV-2 infection or how patients navigate their recovery, especially in the face of uncertainty.

Methods: A prospective observational cohort study was established at St Vincent’s Hospital Sydney (the ADAPT study), comprising patients in recovery following community and hospital-managed SARS-CoV-2 infection. Forty patients were enrolled into a qualitative sub-study. Interviews were used to generate data related to patients’ experiences of infection, diagnosis and treatment, as well as the longer term physiological, psychological and social effects of COVID-19. The first qualitative interviews were conducted up to 4 months after first detection of SARS-CoV-2.

Results: Drawing on critical social science and an ‘evidence-making interventions’ approach, we traced the multiple emergent embodied and social effects of COVID-19 through patients’ accounts. We examined three themes: (1) The initial and ongoing effects of COVID-19 on patients’ health and well-being, including embodied experiences of change in respiratory function, cognitive function, olfactory perception, and exercise capacity; (2) The initial and ongoing effects of COVID-19 on patients’ emotional, psychological, social and economic well-being, focusing on notions of connection including in relation to experiences of isolation, infectiousness, stigma, and care; and, (3) How patients, through everyday practices and embodied experiences of infection and recovery, come to know COVID-19 and manage uncertainty including in relation to notions of immunity and protection. For those with persisting ‘long COVID’, we examined how patients have adapted to the virus’s ongoing (and as yet unknown) physical and social effects.

Conclusions: This is the first qualitative longitudinal study of its kind to examine the embodied experiences and social effects of SARS-CoV-2 infection. By generating better understandings of patients’ experiences of infection and disease, sociological analysis will help inform practices of care, including how people might be supported in recovery.
Concurrent Session 2B - HCWs and COVID-19

Supporting the HIV, viral hepatitis and sexual health workforce during COVID-19

Authors: Ms Karen Seager1, Mr Scott McGill1, Associate Professor Edwina Wright2

Affiliations: 1ASHM, Sydney, Australia, 2The Alfred Hospital, Melbourne, Australia

Abstract:

Background: On March 11th the WHO announced pandemic status for COVID-19. That month, the Australasian Society of HIV, Viral Hepatitis and Sexual Health (ASHM) recognised the need to rapidly convene a COVID-19 Taskforce specifically to support the healthcare workforce caring for populations living with HIV, hepatitis B (HBV), hepatitis C (HCV) and STIs in Australia and New Zealand.

Approach: ASHM assembled clinicians, basic scientists, social researchers and community organisations with expertise in HIV, viral hepatitis, STIs, migrant health, injecting drug use, sex work and criminal justice and immigration detention health.

Outcomes: We convened 100 members into focus cluster groups. A dedicated website and a weekly newsletter to the BBV & STI sector were established by April 2nd 2020. Weekly webinars commenced on April 2nd 2020 and Guidance documents on the care of populations living with HIV HBV and HCV during the pandemic were produced by April 16th. Subsequently, the Taskforce has produced reports on the status of STI services and Indigenous health; provided guidance on mental health care for patients and healthcare providers; called for the release of people in Immigration Detention Centres and Criminal Justice settings and called for free healthcare, accommodation and financial support as needed for international students, people on temporary working visas and undocumented workers. By end of September there were over 45,000 website visits, with webinars and clinical guidance receiving the most views.

Conclusions: The ASHM COVID-19 Taskforce was able to rapidly generate key clinical guidance and relevant reports to support the BBV and sexual health workforce and their patient populations in Australasia.

Psychosocial impact of the COVID-19 pandemic on hospital clinical staff

Authors: Dr Sara Holton1,2, Dr Karen Wynter1,2, Ms Melody Trueman2, Ms Suellen Bruce2, Ms Sue Sweeney2, Adjunct Professor Shane Crowe2, Dr Adrian Dabscheck2, Dr Paul Eleftheriou2, Ms Sarah Booth2, Dr Danielle Hitch2, Associate Professor Catherine M Said2,3,4, Associate Professor Kimberley J Haines2, Professor Bodil Rasmussen1,2

Affiliations: 1Deakin University, Burwood, Australia, 2Western Health, St Albans, Australia, 3The University of Melbourne, Parkville, Australia, 4Australian Institute for Musculoskeletal Science, St Albans, Australia

Abstract:

Aim: To assess the impact of the COVID-19 pandemic on the psychological wellbeing and personal and work lives of Australian hospital clinical staff.

Methods: An anonymous, online, cross-sectional survey conducted in a large metropolitan tertiary health service located in Melbourne, Australia completed by nurses/midwives, doctors and allied health (AH) staff (15 May to 10 June 2020). The Depression, Anxiety and Stress Scale (DASS-21) assessed psychological wellbeing in the past week. Study specific questions (Likert-scales) assessed COVID-19 contact status, concerns, use and effects of precautionary measures, personal and work impacts, and perceptions of the health service’s response.

Results: 618 respondents: nurses/midwives, n=358; doctors, n=125; AH staff, n=135. Of these, 108 (17.5%) had direct contact with people with a COVID-19 diagnosis. Approximately a quarter of respondents reported symptoms of psychological distress. Between 11% (AH staff) and 29% (nurses/midwives) had anxiety scores in the mild to extremely severe ranges. Nurses/midwives had significantly higher anxiety scores than doctors (p<0.001) and AH staff (p<0.001). Direct contact with people with a COVID-19 diagnosis (p<0.001) and being a nurse/midwife (p<0.001) were associated with higher anxiety scores. Higher ratings of the health service’s pandemic response and staff support strategies were protective against depression (p<0.001), anxiety (p<0.05) and stress (p<0.001). Respondents were concerned about passing COVID-19 on to family members (n=317, 52.7%) and caring for a patient who has or has suspected COVID-19 (n=217, 36.1%); felt their job put them at risk of getting COVID-19 (n=493, 82.3%) and that people close to them were concerned for their health (n=451, 78.3%); and their health service was well-prepared (n=544, 90.8%).

Conclusions: The COVID-19 pandemic has had a significant impact on the psychological wellbeing and personal and work lives of hospital clinical staff, particularly nurses/midwives. Staff would benefit from (additional) targeted supportive interventions during the current and future outbreaks of infectious diseases.
Hearing the voices of Australian healthcare workers during the COVID-19 pandemic

Authors: Dr Michelle Ananda-Rajah, Dr Benjamin Veness, Ms Danielle Berkovic, Ms Catriona Parker, Dr Greg Kelly, Doctor Darshini Ayton

Affiliations: 1Monash University, Melbourne, Australia, 2Psychiatry Registrar, Melbourne, Australia, 3Paediatric Intensivist, Sydney, Australia

Abstract:
Background: The statistics of healthcare worker (HCW) COVID-19 infections do not convey the lived experience of HCWs during the pandemic. This study explores the working conditions and issues faced by Australian HCWs.

Methods: Qualitative analysis of free-text responses from Australian HCWs from 3 August to 5 August 2020 from an open letter calling for better respiratory protection for HCWs, transparent reporting of HCW COVID-19 infections and diversity in national infection control policy development. The open letter was sent to an email list of 23,000 HCWs from a previous campaign and promoted on social media.

Results: Among 2,733 HCWs who signed the open letter during the study period, 407 free-text responses were analysed. Doctors and nurses accounted for 58% and 35% of respondents, respectively. Most respondents came from Victoria (48%); New South Wales (18%); Queensland (12%) or Western Australia (12%). Dominant themes included concerns about: work health and safety standards; guidelines on respiratory protection including the omission of fit-testing of P2/N95 respirators; deficiencies in the availability, quality, appropriateness and training of personal protective equipment; a top-down workplace culture that enabled bullying in response to concerns about safety that culminated a loss of trust in leadership, self-reported COVID-19 infections in some respondents and moral injury.

Conclusion: Occupational moral injury in HCWs is the consequence of lapses in leadership at policy-making and organisational levels that have violated the normative expectations of HCWs. The challenge for healthcare leaders is to address workplace culture, consultation and engagement with HCWs in order to prevent this hidden pandemic from spreading throughout the health system.

Effect of COVID-19 on student midwives: Uncertainty and Expendability

Authors: Dr Lesley Kuliukas, Professor Yvonne Hauck, Dr Zoe Bradfield, Professor Linda Sweet, Dr Karen Wynter, Dr Vidanka Vasilevski, Dr Rebecca Szabo, Dr Alyce Wilson, Professor Caroline Homer

Affiliations: 1Curtin University, Perth, Australia, 2Deakin University, Burwood, Australia, 3University of Melbourne, Melbourne, Australia, 4Burnet Institute, Melbourne, Australia, 5University of Technology, Sydney, Australia

Abstract:
The impact of the COVID-19 pandemic on student midwives is multi-faceted. In this cross-sectional mixed methods research study, 142 Australian midwifery students from entry to registration courses were recruited through social media to discover the impact of COVID-19 on their practice and studies. Data were collected through questionnaires and semi-structured interviews. The completed questionnaires were analysed using SPSS software and the transcribed interviews and open text questionnaire answers were interpreted through qualitative analysis. This study revealed that students found communication from hospitals and universities confusing and inconsistent and often relied on the mass media and each other to remain updated. The move to online learning and being isolated from student colleagues made it difficult for students to remain engaged with their learning and potential changes to course requirements caused anxiety regarding graduation delays. Within the clinical area students felt expendable in terms of personnel and available equipment. They also felt sidelined, being unable to attend women’s appointments. Witnessing reduced midwifery care and feeling empathetic for women increased the student emotional burden and additional household responsibilities and financial concerns added to the student load. A silver lining was that students witnessed women’s appreciation of an improved ‘babymoon’ experience, with fewer visitors, allowing uninterrupted time for women to establish breastfeeding and the new relationship with their baby. This study could offer insights into the management of future clinical crises.
Impacts of the COVID-19 pandemic on Australian Midwives

Authors: Dr Zoe Bradfield1,2, Adj Prof Yvonne Hauck1,2, Prof Caroline Homer3, Prof Linda Sweet4,5, Dr Alyce Wilson3, Dr Rebecca Szabo6, Dr Karen Wynter6, Dr Vidanka Vasilevski1,2, Dr Lesley Kuliukas1

Affiliations: 1 Curtin University, Perth, Australia, 2 Department of Nursing and Midwifery Education and Research, King Edward Memorial Hospital, Subiaco, Australia, 3 Burnet Institute, Melbourne, Australia, 4 Deakin University, Melbourne, Australia, 5 Centre for Quality and Patient Safety Research, Western Health Partnership, Melbourne, Australia, 6 The University of Melbourne, Melbourne, Australia

Abstract:

Background: The COVID-19 pandemic has required rapid and radical changes to maternity care. As key members of the global maternity workforce, midwives have been at the frontline of implementing changes set out in policy. There has been little evidence of how the changes have impacted midwives’ provision of maternity care.

Aim: To explore and describe midwives’ experiences of providing maternity care during the COVID-19 pandemic in Australia.

Methods: A two-phased cross-sectional descriptive study was conducted. Data collection occurred through an online survey and semi-structured interviews during May-June 2020. A total of 620 survey responses were received and 16 midwives participated in interviews.

Findings: Midwives from every state and territory, and a variety of models, reported a move to telehealth appointments for antenatal and postnatal care. For care during labour, 70% of midwives reported a limitation in the support available to women and 77% indicated postnatal visiting was impacted. Qualitative data derived from open-text survey responses and interviews revealed five main themes: rapid and radical changes, woman-centred care, professional resilience, personal and professional challenges and, looking forward.

Discussion: Restrictions applied to women’s choices around care provision which impacted ways that midwives were able to work with women and their families caused stress and anxiety to the staff. Women’s fear became directed at midwives; care in continuity models appeared to be protective for both women and midwives. Professional resilience was supported through collaborative working relationships with colleagues. Lessons to be learned from current experiences and silver linings from the COVID-19 experience were described.

Conclusion: Findings provide critical evidence and understanding of the impact on midwives providing maternity care during the COVID-19 pandemic in Australia. Policy makers and health leaders should consider this evidence when planning maternity service redesign and ways to support midwifery workforce in the current and future pandemics.

Sexual Health, BBV, COVID19 Advisory Group for the Asia Pacific Healthcare Workforce

Authors: Dr Michelle O’Connor1, Associate Professor Edwina Wright1,3,6, Dr Nittaya Phanuphak4, Midnight Pounkasetwattana5, Associate Professor Catherine C O’Connor1,2, Scott McGill1, Alexis Apostolellis1, Nikki Teggelove1, Chad Hughes6, Jessica Michaels1, Joanna Akritidu1, Karen Salter4, Anne Lechner4, Sumathi Govindasamy1, Dr Nicholas Medland1,2

Affiliations: 1 Australasian Society for HIV, Viral Hepatitis and Sexual Health Medicine (ASHM), Sydney, Australia, 2 The Kirby Institute, UNSW, Sydney, Australia, 3 Alfred Hospital and Central Clinical School, Monash University, Melbourne, Australia, 4 Institute of HIV Research and Innovation, Bangkok, Thailand, 5 APCOM, Bangkok, Thailand, 6 The Burnet Institute, Melbourne, Australia

Abstract:

Methodology: ASHM invited clinicians, scientists, social researchers and community organisations with expertise in HIV, viral hepatitis, sexual health from across the region to become members of the group. The needs of health workers and affected communities (such as people living with HIV, viral hepatitis, sex-industry-workers and people who inject drugs) was assessed through online surveys, emails and virtual meetings.

Results: 73 advisory group members from 15 countries have contributed: Thailand, Malaysia, Singapore, Hong Kong, Vietnam, Cambodia, Philippines, South Korea, Indonesia, Timor Leste, Nauru, Solomon Islands, Fiji, Papua New Guinea and Australia. The RAG has 3 sub-groups: 1) Science, Epidemiology and Research, 2) Clinical Care 3) Priority Populations. An additional group focuses on targeted support to Papua New Guinea.

Key needs identified included guidance on protecting HIV ART supply and distribution, differentiated models of care and infection control. Based on these needs, the RAG continues to publish guidance through a weekly bulletin with a reach of 25,000 sector individuals in 30 countries and a dedicated website. Fortnightly webinars are held to facilitate south to south sharing of lessons learnt and best practices. The RAG and Australasian Taskforce website received over 23,000 hits and the five RAG webinars to data have received approximately over 1500 views.

Conclusions: The Regional Advisory Group for Asia and the Pacific offers a model of regional collaboration to support the HIV, sexual health and viral hepatitis workforce and community during COVID-19. The model can be extrapolated, and the group utilised to support the health care workforce during future regional and global epidemics.
Concurrent Session 2C - Immunity and immunopathology
On Demand from 10:00am AEDT

COVID-19 serology: a collaborative private-public pathology endeavour

Authors: Dr Michael Wehrhahn1, Suzanne Brown2, Dr Ian Chambers1, Dr Smathi Chong3, Jenny Evans4, Dr Mel Figtree5, Laurence Hainke1, Dr Linda Hueston1, Dr Sadid Khan2, Elizabeth Marland1, Dr James Newcombe1,2, Dr Matthew O’Sullivan6, Dr Miriam Paul1, Helen Powell4, J Roy3, Dr Lynnette Waring2, Megan Yu1, Dr Jenny Robson6

Affiliations: 1Douglas Hanly Moir Pathology, Macquarie Park, Australia, 2Sir Charles Gairdner Hospital, Nedlands, Australia, 3Clinical Pathology, Australia, 4Sullivan Nicolaides Pathology, Australia, 5Royal North Shore Hospital, St Leonards, Australia, 6CIDMLS, Westmead, Australia, 7Melbourne Pathology, Australia

Abstract:

Background: Serology has played a role in the diagnosis of COVID-19 and helps estimate attack rate, case fatality rate and reproduction number.

Methods: We evaluated sensitivity and specificity of four commercial SARS-CoV-2 serology assays targeting different antigens (Roche and Abbott: nucleocapsid; Diasorin and Euroimmun: spike), and compared them to reference laboratory IFA and micro-neutralisation, in PCR-positive patients and in a PCR-negative and 2019 cohort, in four Australian states.

Results: 1080 samples from 1080 patients (158 positive/922 negative) were analysed. Sensitivity and specificity of the Roche (n=1033), Abbott (n=806), Diasorin (n=1034) and Euroimmun (n=175) were 93.7%/99.5%, 90.2%/99.4%, 88.6%/98.6% and 91.3%/98.8%, respectively. IFA values correlated better with spike assays than with nucleocapsid assays. ROC analysis with specificity held at 99% increased the sensitivity for the Roche and Abbott assays from 93.7% to 98.7% (cut-off 0.21) and 90.2% to 94.0% (cut-off 0.91), respectively. Overall seropositivity of samples increased from 38% for samples 0-7 days-post-symptom-onset (dps0) to 65% from samples 8-14 dps0 and 99% from those ≥15 dps0. 19/20 and 18/20 patients with samples >180 dps0 were positive on the Roche and Diasorin assays respectively. Given the low prevalence in the community (assumed as 1%), two-step algorithms on initial positive results saw an increase in the positive predictive value (PPV) of positive samples from 65.7% to 98.8% for positive Roche assay followed by Diasorin, and 39% to 98.8% for positive Diasorin assay followed by Abbott assay. Negative predictive value (NPV) was high (≥99.8%) regardless of which assay was used initially.

Conclusion: Currently available commercial assays generally perform well when compared with IFA assays and antibody appears to remain detectable for at least 6 months. In low prevalence areas such as Australia, the use of a two-step approach targeting different antigen types increases the PPV of a positive result while maintaining high NPV and overall accuracy.

A comparison of SARS-CoV-2 antibody assays evaluated in Auckland, New Zealand

Authors: Dr Shivani Fox-Iewis1, Ms Alana Whitcombe1,2,3, Dr Reuben McGregor2,3, Ms Lauren Carlton2, Ms Yulia Hwang1, Mr Paul Austin1, Ms Lisa Aspin1, Mr Bryan Rail1, Dr Rachel Webb2,6,7, Dr Susan Taylor8, Dr Sally Roberts1,9, Dr Nicole J Moreland1,2, Dr Gary McAuliffe1,10

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Abstract:

Introduction: Serological assays for SARS-CoV-2 have a diagnostic role in situations where detection via molecular methods alone is insufficient, due to the timing and quality of sample collection. Serological assays must be assessed in the relevant epidemiological context, to determine locally-applicable sensitivity and specificity data. We present a comparison of nine serological assays conducted in Auckland, New Zealand.

Methods: The nine assays evaluated were the Abbott Architect IgG, Roche Elecsys total antibody, Euroimmun IgA to Spike protein and IgG to Spike and nucleocapsid proteins, EDI IgM and IgG, in-house University of Auckland two-step ELISA and surrogate viral neutralisation assay (cPASS, GenScript).

Pre-pandemic and pandemic (positive and negative RT-PCR) samples were tested on each assay, and sensitivity and specificity calculated. Pandemic samples were from inpatients to Auckland City Hospital and Middlemore Hospital March to May 2020. Results: With the exception of the IgA and IgM assays, the remaining seven assays demonstrated high specificity (94.2-100%) and reasonable sensitivity (86.7-100%). The in-house ELISA and cPASS assays performed best (100% sensitivity and specificity), but present challenges to implementation in diagnostic laboratories. The high-throughput Abbott and Roche assays are readily implemented, highly specific (100%, 99.2% respectively) but have lower sensitivity (86.7%, 89.5% respectively).
Validation and application of SARS-CoV-2 serological assays

Authors: Dr Katherine Bond1,2, Ms Suellen Nicholson3, Dr Seok Ming Lim1, Mr Theo Karapanagiotidis3, Dr Eloise Williams1, A/Prof Douglas Johnson1,2, Ms Francesca Mordant4, Ms Tuyet Hoang5, Ms Cheryl Sia1, Prof Damian Purcell1,2, Dr Maryza Graham1,2, Prof Sharon Lewin6, Dr Mike Catton1, Prof. Kanta Subbarao1,2, Prof Benjamin Howden1,3,5, Prof Deborah Williamson1,2,6

Affiliations: 1The Royal Melbourne Hospital, Parkville, Victoria, Australia, 2Microbiological Diagnostic Unit, University of Melbourne, Melbourne, Australia, 3Victorian Infectious Diseases Reference Laboratory, Melbourne, Australia, 4WHO Collaborating Centre for Reference and Research on Influenza at The Peter Doherty Institute for Infection and Immunity, Melbourne, Australia, 5The Peter Doherty Institute for Infection and Immunity, Royal Melbourne Hospital and The University of Melbourne, Melbourne, Australia, 6The University of Melbourne, Parkville, Australia, 7Monash Health, Clayton, Australia, 8Monash University, Clayton, Australia

Abstract:
Robust serological assays are essential for long-term control of the COVID-19 pandemic. Many of the initially released point-of-care (PoCT) serological assays were distributed with little pre-market validation. Here we describe the challenges associated with post-market validation of numerous assays and demonstrate the importance of confirming all results obtained with this testing. Further, we also demonstrate the importance of multidisciplinary approaches in COVID-19 translational research, even when conducting laboratory validations.

Fifteen PoCT assays have been validated using a panel of sera from SARS-CoV-2 RT PCR confirmed cases and pre-pandemic sera. Overall sensitivities range from 38.5% (95%CI:30.3-47.3%) to 90% (95%CI:78.2-96.7%) depending on the sera panel used for validation and the timing of serum collection. Specificities range from 94.1% (95%CI:80.3-99.3%) to 100.0% (95%CI:96.1-100.0%). In general sensitivity was more variable between assays and fell short of the manufacturer’s reported performance characteristics more frequently than did reported specificity.

Sera from SARS-CoV-2 RT-PCR confirmed cases was collected up to 6 months post infection and tested on the Abbott Architect (N antigen) and DiaSorin Liaison (S antigen) SARS-CoV-2 IgG assays to determine sensitivity. The Abbott assay was more sensitive early; 63.6% (95%CI:30.8-89.1%) versus 45.5% (95%CI:16.8-76.6%) at day 0-14 following symptom onset; while the DiaSorin was more sensitive later; 87.8% (95%CI:73.8-95.9%) with only one sero-reversion, versus Abbott 65.5% (95%CI:49.4-79.9%) with 12 sero-reversions for days 151 to 180 post symptom onset. Sensitivity for both assays peaked at 90-100% between days 15-150. Specificity was marginally higher for the Abbott assay at 100% (95%CI:98.4-100%) versus 98.7% (95%CI:96.3-99.7%).

When undertaking PoCT on 1,217 samples from patients presenting with respiratory symptoms, 39/1,217 were positive for IgM and/or IgG, of which only one was confirmed by microneutralisation. This represents a false positive proportion of 97.4%, and illustrates the critical importance of confirmatory testing in a low prevalence setting such as Australia.

Conclusion: This study presents a comparison of nine serological assays within the epidemiological context of New Zealand. The IgG, the total antibody and surrogate viral neutralisation assays demonstrated high specificity and reasonable sensitivity. The application of these assays needs to incorporate local laboratory workflow and logistics, with respect to the anticipated testing volume.

Prospective COVID-19-Biobank of Clinical and Biological Data from Hospitalised and Community Settings

Authors: Dr David WJ Griffin1, Anna Coldham1, Dr Jillian SY Lau1,2,3, Janine Roney1, Jessica O’Bryan4, A/Prof. Ben A Rogers4, J Wiesziewski2, L Blakeway2, G Blakeway2, H Tsimitakis2, Prof. M Southey4,5,6, Dr Bradley Gardiner1,2,9, Dr Kashpa S Singh9, Dr Dan Sheffield4,10, Dr Ben Dixon4, Prof. Andrew Spencer12, Prof. Hans Schneider11, Prof. Jennifer F Hoy1,2, Prof. Allen Cheng1,2, Dr Adam Jenney1,2, Prof. Anton Y Peleg1,2, Dr James H McMahon1,2,4

Affiliations: 1Department of Infectious Diseases, Alfred Health and Monash University, Melbourne, Australia, 2Monash University Faculty of Medicine, Nursing and Health Sciences, Melbourne, Australia, 3Department of Infectious Diseases Eastern Health, Melbourne, Australia, 4Department of Infectious Diseases, Monash Health, Melbourne, Australia, 5Biobanking Victoria, Precision Medicine, School of Clinical Sciences, Monash University, Melbourne, Australia, 6Department of Clinical Pathology, The Melbourne Medical School, Monash University, Melbourne, Australia, 7Cancer Epidemiology Division, Cancer Council Victoria Melbourne, Australia, Melbourne, Australia, 8Epworth Healthcare, Melbourne, Australia, 9Department of Infectious Diseases Peninsula Health, Melbourne, Australia, 10 Cabrini Healthcare, Melbourne, Australia, Melbourne, Australia, 11Department of Pathology, Alfred Health, Melbourne, Australia, 12Department of Haematology, Alfred Health, Melbourne, Australia

Abstract:
The prospective collection of matched clinical and biological data from individuals with COVID-19 provides an opportunity to better characterize the clinical course and pathogenesis of infection, identify predictors of severe disease and explore potential therapeutics.
The COVID-19 Biobank prospectively collects blood for plasma and peripheral blood mononuclear cells (PBMCs), consecutive throat swabs and clinical information from consented individuals with COVID-19 over a 12-month period. Collection and storage processes are standardized across sites. Participants include hospitalised and ambulatory patients, recruited or diagnosed at Monash Partners sites. This Biobank also collects residual plasma from routinely collected blood samples from hospitalised people with COVID-19, and for selected individuals, large volume blood samples via leucapheresis and tonsillar lymphoid tissue.

From April 4th to September 25th 2020, 313 individuals with COVID-19 have been enrolled (58% male). This includes 235 outpatients and 78 hospitalised individuals across Alfred Health, Monash Health, Eastern Health, and Epworth Healthcare. Of the 235 ambulatory patients, 75 have been enrolled within the first 5 days of symptoms and had their first specimens collected while infectious. Over 450 separate samples of plasma/PBMCs +/- throat swabs have been collected. Tonsillar node biopsy has been safely completed in 5 individuals with excellent lymphoid tissue recovery.

Biobank specimens have been accessed by 10 collaborating laboratories across Australia for SARS-CoV-2 research projects, after approval by the Protocol Steering Committee and HREC. These include validation of rapid diagnostics, development of virus neutralisation assays, assessment of innate and adaptive immunity, development of methods to quantitate SARS-CoV-2 viral load from respiratory specimens, and the impacts of SARS-CoV-2 on cardiac function and coagulation.

This Biobank, with both clinical and specimen repository represents an invaluable resource to answer clinically-relevant questions in real time about the immunological, virological and clinical responses to SARS-CoV-2 and facilitate collaboration amongst clinical and laboratory-based scientists.

The utility of SARS-CoV-2-specific serology in COVID-19 diagnosis and surveillance.

Authors: Dr Tasnim Hasan1,2, Dr Ling Lim2,3, Ms Jennifer Case4, Dr Linda Hueston5, Dr Shopna Bag3, Prof Dominic E Dwyer5, Dr Matthew O’Sullivan1,2

Affiliations: 1Westmead Hospital, Westmead, Australia, 2NSW Health Pathology, ICPMR –Westmead, Westmead, Australia, 3Public Health Unit, Centre for Population Health, Western Sydney Local Health District, Parramatta, Australia, 4NSW Ministry of Health, St Leonards, Australia, 5NSWHP, Public Health Pathology, Australia

Abstract:

Background: The Communicable Diseases Network of Australia (CDNA) case definition includes laboratory criteria for diagnosing confirmed or probable coronavirus-2019 (COVID-19) cases by serological testing. The additional value of serology to nucleic acid testing (NAT) in the diagnosis and surveillance of COVID-19 has not been reported. We present preliminary findings that support the utility of serology for public health investigations including retrospective upstream case identification (undiagnosed by NAT) or asymptomatic infection in close contacts of NAT-confirmed cases.

Methods: From January to 31st July 2020, the following information was collected from individuals with positive SARS-CoV-2-specific antibody testing using immunofluorescence performed at NSW Health Pathology, ICPMR-Westmead: history of contact with confirmed or probable cases of COVID-19, recent travel, symptoms consistent with COVID-19, date of symptom onset and SARS-CoV-2 NAT results. This data was used to classify individuals as confirmed or probable (by CDNA criteria), possible (SARS-CoV-2-specific IgG positive with compatible symptoms or epidemiologic risk) or indeterminate (SARS-CoV-2-specific IgG positive without symptoms or epidemiologic risk, or SARS-CoV-2-specific IgA/IgM positive without SARS-CoV-2-specific IgG cases).

Results: 11923 serology samples from 10595 individuals were tested in the 6-month period. 9.8% (1037) individuals had positive SARS-CoV-2-specific serology; 556 (53.6%) were NAT-confirmed COVID-19 cases and 286 (27.6%) were part of a cruise ship sero-survey. The remaining 195 individuals (NAT negative) were individually classified as serologically confirmed (7, 0.7%), probable (81, 7.8%) possible (66, 6.4%) and indeterminate (36, 3.6%) cases. Maternal antibody transfer was inferred in one infant and 4 were unclassified.

Conclusion: SARS-CoV-2 serology is a key diagnostic tool for retrospective identification of COVID-19 infection. It can facilitate identification of additional cases, enhance public health surveillance (including serosurveys) and aid outbreak investigations.
Characterization of the longevity, breadth, and neutralization potency of SARS-CoV2 antibodies

Authors: Dr Deepti Pilli1,8, Dr Fiona Tea1,8, Dr Anupriya Aggarwal2,8, Dr Alberto Ospina Stella3,8, Dr David Darley3,8, Professor Gregory Dore1, Dr Fiona X. Z. Lee1, Ms Vera Merheb1, Dr Stefan Pöhlmann4, Ms Venüla Mathivanan2, Dr Veronica Hoad6, Dr James Daly2, Professor Joanne Pink2, Professor David Irvin4, Professor Iain Gossbell5, Associate Professor Philip Cunningham6, Professor Anthony Kelleher2,9, Associate Professor Gail Matthews2,3,9, Associate Professor Fabienne Brilot1,7,9, Associate Professor Stuart G Turville2,9

Affiliations: 1the Children's Hospital at Westmead, Westmead, Australia, 2The Kirby Institute, Sydney, Australia, 3St Vincent Hospital, Sydney, Australia, 4Deutsches Primatenzentrum GmbH, Leibniz-Institut für Primatenforschung, Göttingen, Germany, 5Lifeblood, Sydney, Australia, 6SydPath, Sydney, Australia, 7School of Medical Sciences, Discipline of Applied Medical Science, Brain and Mind Centre, Marie Bashir Institute for Biosecurity, Faculty of Medicine and Health, The University of Sydney, Sydney, Australia, 8Co-First Authors, 9co-senior authors.

Abstract:

Background: Future control of the COVID-19 pandemic depends on population resistance to infection, which might be achieved through a combination of post-infection and vaccination-induced immunity. The type and the level of generated immunity, and its longevity remains largely unknown.

Methods: We characterized the immune response to SARS-CoV2 in n=517 sera from convalescent patients from ADAPT, a prospectively assembled cohort with a spectrum of disease severity at acute infection, and LIFE, a cohort recruited from nationwide COVID-19 convalescent Lifeblood donors. We developed high content machine-scored assays that span PC2 and PC3 facilities to separately assess viral fusion, infection, and neutralization in physiologically relevant human cell targets. In addition, we designed an ultrasensitive high-throughput flow cytometric cell-based serology platform that allows rapid and sensitive identification of isotype antibody responses.

Results: Across all samples from ADAPT and LIFE cohorts, these assays revealed Spike-specific serological responses with sensitivity of 96% and to date specificity of 100% using 106 pre-pandemic negative controls. In contrast commercial EIAs observed sensitivities only as high as 80%. Full virus neutralisation titers covered a continuum of responses ranging from: 96% > 1/40, 80% > 1/80, 55.5% > 1/160, 32% > 1/320, and 15.3% > 1/640. IgG responses were maintained over time as long as 4 months post PCR-confirmed COVID-19 diagnosis. Whilst neutralisation titers were correlated with Spike IgG, a subset of patients rapidly lost neutralisation potency and this was correlated with loss of Spike IgM. Higher disease severity was associated with higher Spike specific IgG responses and neutralisation titres.

Conclusions: Our data demonstrate the development of a suite of assays with significant high sensitivity. We observed long-lasting humoral response to SARS Cov2 and their association with disease severity, often associated with high levels of either Spike specific IgG or IgM.
Delayed health care access during the COVID19: A mixed methods exploration.

Authors: Dr Jennifer White1, Mr Dominic Cavenagh1, Professor Deborah Loxton1, Professor Julie Byles1

Affiliations: 1University Of Newcastle, Newcastle, Australia

Abstract:
Background: Preventing delayed health care access may mitigate and manage health risks and inform interventions under pandemic conditions. This study investigated experiences of delayed health care access in Australian women during COVID19.

Methods: A mixed methods study using data from the Australian Longitudinal Study on Women’s Health COVID 19 survey 4 (health care access or delay). Logistic regression models containing demographic and health behaviour information modelled the probability of delaying access to General Practitioners (GPs), Allied Health and Specialist services. Free-text comments were analysed thematically, employing a process of constant comparison.

Results: COVID19 Survey 4 was completed by 8200 women and 2727 provided free-text comments. Of the women who needed the health service, 25% (1268/5071) delayed seeing their GP, 23.6% (570/1695) delayed seeing a specialist and 45% (791/1757) delayed use of an allied health service. Age was most significantly associated with delaying attendance. Women born 1989-95 were significantly more likely to delay compared to women born 1946-51 (OR’s: GP=0.28 (0.22, 0.35); Specialist=0.65 (0.45, 0.92; Allied Health=0.59 (0.42, 0.82)). Women born 1973-78 were also likely to delay GP visits (0.69, (0.58, 0.83). Qualitatively, four key themes emerged including: (1) Challenges negotiating care during a pandemic; (2) Ongoing uncertainty towards accessing health care when a specialist delays an appointment; (3) Accessing health care (or not) using Telehealth; (4) Managing complex care needs.

Conclusions: COVID-19 has had a significant effect on access to health care. Women have delayed seeking help for cancer screening, mental health, and other health conditions including those with chronic and complex needs for health and social care. While there is a need to rationalise and optimise health access during a national crisis, key outcomes from this study suggest a need for public health campaigns such as how to access care and engage with telehealth.

Safer Sexual Health Services in a COVID-19 Context

Authors: Ms Jessica Michaels1, Ms Courtney Smith1, Ms Lynsabdy Ma1, Mr Scott McGill1, A/Professor Edwina Wright2

Affiliations: 1ASHM, Sydney, Australia, 2The Alfred Hospital, Melbourne, Australia

Abstract:
Background: Sexual health service delivery has been challenged by the evolving demands of COVID-19. The testing and treatment of Sexually Transmitted Infections (STIs) for key populations remain critical in optimizing health during the COVID-19 pandemic including the safe use of HIV PrEP and ensuring that new infections are prevented.

Description: ASHM’s Taskforce for BBVs, Sexual Health and COVID-19 surveyed five sentinel sexual health clinics in Australian capital cities across patient attendance, declines and structure of services. In addition ASHM developed guidance on harm minimization related to sexual practices and safe HIV PrEP usage during COVID-19 lockdowns and physical distancing.

Results: Staff redeployment, PPE shortages and efforts to reduce potential transmission of COVID-19 necessitated changes in the provision of services. Both service providers and consumers welcomed the guidance on harm minimization.

Lessons learned: Providers ceased walk-in appointments based on health department directives, utilising a combination of telehealth and face-to-face appointments for STI screening and HIV clinical care. Innovations included mailing out 12 months of prescriptions for HIV antiretroviral drugs and deferring routine pathology. 60% of clinics reported an increase in self-collected throat and anal swabs. 50% of the clinics using peer-based services had suspended HIV point-of-care testing to minimise close contact. 60% of clinics had stopped offering STI screening to asymptomatic patients. 60% of the clinics reported a 30% - 50% reduction in demand for STI screening, PrEP and PEP services. Two of the clinics reported a 30%-50% decline in positive syphilis test results and one clinic reported a 31% decrease in positive test results for urethral gonorrhoea.

Conclusions: Sexual Health services quickly adapted to COVID-19 and associated restrictions, modifying services to ensure optimal continuity of care. Social research initiatives and STI surveillance data are needed to better understand changes in sexual behaviour and STI rates during the COVID-19 pandemic.
Partners/support persons of pregnant women: Experiences of receiving maternity care during COVID-19

Authors: Dr Vidanka Vasilevski1,2, Professor Linda Sweet1,2, Dr Zoe Bradfield1,2, Dr Alyce Wilson3, Professor Yvonne Hauck3, Dr Lesley Kuluikas3, Professor Caroline Homer5, Dr Rebecca Szabo6, Dr Karen Wynter1,2

Affiliations: 1Deakin University, Melbourne, Australia, 2Western Health, Melbourne, Australia, 3Curtin University, Perth, Australia, 4King Edward Hospital, Perth, Australia, 5Burnet Institute, Melbourne, Australia, 6The University of Melbourne, Melbourne, Australia

Abstract:

In Australia, the delivery of maternity care during the COVID-19 pandemic was significantly modified to minimise transmission of the virus. Many maternity services limited face-to-face appointments to only the pregnant woman, and restricted the number of support people present during labour and birth to one person. The impacts of reducing the participation of partners and support persons is unknown, and thus the aim of this study was to explore the experiences of partners/support persons of pregnant women receiving maternity care during the COVID-19 pandemic.

A two-phased study including a cross-sectional survey and online interviews was undertaken. Qualitative data from the surveys and interviews was analysed using content analysis and a number of key themes were identified.

Partners and support persons identified a sense of ‘missing out’ from the pregnancy and maternity care experience because of changes in the provision of care during the pandemic. As a result of the restrictions placed on partners/support persons, they reported feelings of isolation, heightened distress, and reduced bonding time with their babies. Conflicting and constantly changing guidelines and processes within and across maternity care providers led to feelings of uncertainty and a perceived reduction in the quality of care.

This study provides detail from the unique perspective of partners/support people receiving maternity care during the COVID-19 pandemic. Many were negatively impacted by restrictions implemented in maternity services. The findings from this study can be used to inform the revaluation of policies and practices that exclude partners/support people from the provision of maternity care.

Providing breastfeeding support during COVID-19: Concerns of mothers who contacted the ABA

Authors: Ms Naomi Hull1, Ms Renee Kam1, Dr Karleen Gribble2

Affiliations: 1Australian Breastfeeding Association, Ashgrove, Australia, 2Western Sydney University, Australia

Abstract:

Concerns of mothers seeking breastfeeding support during the COVID-19 pandemic, and the experiences of Australian Breastfeeding Association (ABA) volunteers who assisted them, were explored via an online survey. Surveys were completed 16th March to 18th of May 2020 and described the COVID-19 related concerns of 340 individuals. One hundred and thirty-six mothers (64%) sought support to protect their infants by continuing breastfeeding, increasing milk supply, or restarting breastfeeding. Mothers were commonly stressed, isolated and needing reassurance. Thirty-four (10%) raised concerns about COVID-19 and breastfeeding safety. One hundred and twenty-nine (61%) informed volunteers they were unable to access face-to-face health services because of fear or unavailability. Most common breastfeeding concerns were related to insufficient milk or weight gain, painful breasts, relactation, and reducing supplemental milk. Volunteers reported mothers were worried stress had reduced milk supply, that milk supply concerns were exacerbated by the inability to weigh infants, and that seeking medical treatment was being delayed. ABA volunteers stated they felt supported and confident assisting mothers while also expressing distress at mothers’ situation. ABA’s role in emergency response should be recognised and national planning for infant and young child feeding in emergencies, must be urgently developed, funded, and implemented.
Impacts of COVID-19: Comparing Experiences of Five Key Stakeholders of Maternity Care

Authors: Dr Zoe Bradfield1,2, Dr Karen Wynter3, Prof Yvonne Hauck1,2, Dr Vidanka Vasilevski3,4, Dr Lesley Kuliukas1, Dr Alyce Wilson4, Dr Rebecca Szabo5, Prof Caroline Homer5, Prof Linda Sweet3,4

Affiliations: 1Curtin University, Perth, Australia, 2King Edward Memorial Hospital, Subiaco, Australia, 3Centre for Quality and Patient Safety Research, Western Health Partnership, Melbourne, Australia, 4Deakin University, Melbourne, Australia, 5Burnet Institute, Melbourne, Australia, 6The University of Melbourne, Melbourne, Australia

Abstract:

Introduction: The global COVID-19 pandemic has radically changed the way maternity care is delivered around the world. Evidence regarding the experiences of those who have received or provided maternity care is essential to support practice during these challenging times.

Aim: The aim was to explore and compare the perspectives and experiences of those receiving and providing maternity care during the COVID-19 pandemic in Australia.

Methods: A cross-sectional study was conducted in Australia through an online survey between 13th May and 24th June 2020. Responses were sought from five key cohorts: childbearing women, their partners, midwives, doctors and midwifery students. A total of 3701 responses were received. Similarly matched questions were presented across each of the cohorts.

Findings: Although self-rated anxiety was high among all cohorts, there were statistically significant differences between each of the groups for most survey items. Women indicated higher levels of concern about their own and family’s health and safety in relation to COVID-19. Midwives, doctors and midwifery students indicated higher levels of concern regarding the risk for occupational exposure to COVID-19 through working in a health setting, compared with those receiving care through attending these environments. Midwifery students and women’s partners reported higher levels of isolation because of the changes to the way care was provided. Despite concerns about care received or provided not meeting expectations, most participants were satisfied with the quality of care provided, although midwives and midwifery students were less likely to agree.

Conclusion: This study provides a novel exploration and comparison of experiences of receiving and providing maternity care during the COVID-19 pandemic in Australia. Findings are useful to support further service changes and future service redesign. New evidence provided offers unique insight into key stakeholders’ experiences of the rapid changes to health services, with utility for future pandemic planning.
Concurrent Session 2E - Infection prevention and control in Hospitals
On Demand from 10:00am AEDT

Analysis of a Sydney hospital COVID-19 outbreak, Integrating epidemiologic investigations and whole genome sequencing

Authors: Thiruni Adikari1, Dr Elaine Tennant1-4, Dr Melanie Figg1, Dr Bernie Hudson1, Jo Tallon1, Bill Rawlinson4, Rowena Bull1, Malinna Yeang5, Ira Deveson4, Drew Hilditch-Roberts1

Affiliations: 1Northern Sydney Local Health District, Sydney, 2Sydney Local Health District, Sydney, 3NSW Ministry of Health, Sydney, 4UNSW, Sydney, 5NSW Health Pathology, Sydney

Abstract:

Background: During March-April 2020, Ryde Hospital experienced an outbreak of COVID-19 which was concurrent with several community clusters. Nosocomial transmission occurred between patients and staff. We performed an analysis to define the involved cohort, establish community case linkages and explore the transmission dynamics, drivers and outcomes.

Methods: Retrospective cohort analysis, with integration of molecular, clinical and epidemiological data.

Results: 23 persons (12 staff and 11 patients/visitors) these were implicated in either transmission and/or acquisition of COVID-19 on hospital grounds. Of those subjects whose samples were able to be sequenced, the hospital outbreak cases clustered phylogenetically and were identified as clade B4. Whole genome sequencing supported the epidemiologic hypothesis that the hospital outbreak seemed to arise from admitted cases from a local residential aged care facility, but was phylogenetically discrete from other identified community clusters. Staff who acquired the infection had better outcomes than patients (30 day survival rate 100% vs 50%) but suffered long quarantine periods (median 26.5 days, range 14-191) and one required ICU-level care. 140 additional staff were furloughed for quarantine. No secondary transmissions occurred when contacts were identified and isolated prior to their infectious period. Airborne transmission may have occurred from a patient administered a nebuliser prior to their infection being identified. No transmissions were identified from any patient once appropriate contact and droplet precautions had been implemented. Transmission from index cases showed wide dispersion (mean number of secondary cases 0.58 per staff member, 3.25 per staff, range 0-12).

Conclusions: This hospital associated outbreak had wide-ranging impacts on patients and staff. Once cases were identified, infection control interventions were effective. Genomic sequencing is a useful adjunct to traditional contact tracing methods. Secondary transmission in our cohort was heterogeneous, as demonstrated in previous studies.

Exploring the experience and perspectives of infection prevention in managing covid-19

Authors: Monash University Alisha Baswa1, Dr Darshini Ayton3, Dr Phillip Russo3, Dr Joseph Doyle3, Dr Andrew Stewardson1,2

Affiliations: 1Monash University, Clayton, Australia, 2Alfred Health, Melbourne, Australia

Abstract:

Background: Infection prevention and control (IPC) teams within Australian hospitals have been critical to the COVID-19 response. Despite pre-existing pandemic plans, hospital infection control units faced unanticipated and potentially avoidable challenges when implementing a response to COVID-19.

Aims: We aimed to examine the experience of IPC teams (infection control professionals and infectious diseases physicians) in development and implementation of COVID-19 practice and policies in acute hospitals.

Methods: We conducted a mixed-methods study including 1) exploratory semi-structured interviews with IPC located at one hospital to develop a focused survey; and 2) online survey IPC team members employed in Australian hospitals. This survey included the domains of demographics, experience of IPC, staffing and redeployment, personal protective equipment (PPE), communication, guidelines, education and training, leadership and teamwork and outbreak response.

Results: There were 160 respondents: 122 infection control practitioners, 36 physicians, and 2 physician trainees; 61% in metropolitan hospitals. While the content of government guidelines was perceived as being sufficiently detailed and scientifically based, the timing of the delivery of these guidelines and sources of contradictory information, from both health professional guidelines and media, impacted IPC’s ability to implement guidelines. The most useful strategy when training hospital staff on PPE use was demonstration and the most important tool when training redeployed staff to work in IPC was written standard operating procedures. During the course of the pandemic, hospitals had to switch brands/models of PPE, requiring frequent re-education of staff, a challenge identified by 81% of respondents. Respondents described increased workload and burnout, and were more concerned about hospital-based issues like a hospital outbreak rather than personal concerns like acquiring COVID-19 themselves.

Conclusions: This data identifies key issues in guidelines, communication and staffing that could be addressed in future pandemic planning.

Authors: Dr Adrian Tramontana1, Dr Norelle Sherry2, Dr Marion Kainer1

Affiliations: 1Western Health, Footscray, Australia, 2the University of Melbourne, Melbourne, Australia

Abstract:
Increased aerosol emission associated with loudness of human speech from singing and shouting have been implicated in a number of community super spreading events of COVID-19. Prior to this report there was limited awareness of the risk of transmission from shouting and other aerosol generating behaviours (AGB) in healthcare settings and AGBs have largely not been mentioned in infection prevention guidelines. We describe here the identification of likely transmission of COVID-19 to staff from an 84-year old with COVID-19 pneumonia exhibiting AGBs. Contact tracing and chart review identified 5 of 44 staff infected with COVID-19 of which three were infected with the same genomic strain as the patient. Excluding two staff who were part of a separate genomic cluster, the attack rate amongst 42 staff attending to this patient was 7.14%. The attack rate amongst twelve staff in attendance whilst the patient had AGBs was 25% with all three infected staff members exposed to AGB. These staff members had applied droplet and contact precautions and had no exposure to infected staff or patients without personal protective equipment (PPE). They developed symptoms 5, 7 and 9 days after exposure to this patient whilst he was calling out, shouting and thrashing. No transmission was seen amongst staff who were exposed during episodes of confusion and agitation without associated AGBs or during periods of high flow oxygen administered via nasal cannula and non-rebreather mask. These other exposures that did not result in transmission occurred before and after the episodes of AGBs. Following identification of this transmission event local and state COVID-19 infection prevention guidelines were revised and now recommend P2/N95 respirators for patients with COVID-19 exhibiting aerosol generating behaviours. Due to burden of COVID-19 in aged care and unpredictability of AGBs, P2/N95 respirators were applied in all COVID-19 areas of our hospitals.

Mitigating the risk of SARS-CoV-2 transmission through hospital design and infrastructure

Authors: Dr Brendan Kennedy1,2, Diana Lagana1, Professor David Shaw2

Affiliations: 1Royal Adelaide Hospital, Adelaide, Australia, 2Communicable Disease Control Branch, SA Health, Adelaide, Australia

Abstract:
Built in 2017, the new Royal Adelaide Hospital (RAH) was designed to respond to major disasters, including emerging pathogens and pandemics. It is South Australia’s designated quarantine hospital and during the first surge of COVID-19 cases in Australia, 103 adult cases were admitted from February to May 2020 including 18 patients in intensive care with 8 requiring mechanical ventilation. This period of high case load and was compounded by a global shortage in particulate filter respirators and limited understanding of SARS-CoV-2 transmission. Despite these challenges, no outbreaks occurred within the hospital and only one healthcare worker acquired COVID-19 while at work. We describe how the RAH mitigated the risk of the transmission of SARS-CoV-2, and focus on the hospital infrastructure, including hospital design and the sophisticated air-handling system, in addition to usual infection control practices. These features should be strongly considered when designing future hospitals or redesigning clinical areas to reduce the risk of transmission of emerging pathogens within the healthcare setting.

The iterative development and evaluation of a hospital COVID-19 resource nurse team

Authors: Dr Sarah Lynnar1,2, Caroline McCarthy1, Jenny O’Shaughnessy1, Dr Jane Davies1,2

Affiliations: 1Royal Darwin Hospital, Tiwi, Australia, 2Menzies School of Health Research, Darwin, Australia

Abstract:
Background: In March 2020, the COVID-19 pandemic was rapidly approaching the Northern Territory (NT), an area populated by 244,761, of which 26% identify as Aboriginal. In 1919, 20% of Aboriginal Australians died from pandemic influenza, and in the 2009 H1N1 pandemic rates of hospital admission and ICU admission were 12 and 5 times higher respectively for Aboriginal patients in the Top End of the NT. Royal Darwin Hospital (RDH), the tertiary referral centre for the region, has a limited staffing pool, the only ICU, and is a significant distance from other tertiary referral hospitals. These factors combined meant any outbreak could have devastating consequences.

Methods: We describe the iterative development and evaluation of a novel team of 15 dedicated COVID-19 Resource Nurses (CRNs) at RDH. This team was proactively created to provide a 24/7 hospital-based service enabling safe transfers, personal protective equipment (PPE) competency, scenario testing and management of resources.

Results: Since formation in April 2020, the CRNs played an integral role in the pandemic response, creating, implementing and auditing policies and procedures. On average, they coordinated 271 transfers, with 73 breaches identified and 116 episodes of education each month. 124 staff were trained as PPE trainers. They facilitated staff and visitor screening; 76 people in July and 45 in August were not fit for entry. Most recently, they implemented an extended mask use policy, evaluated using the RE-AIM framework.
The team provided consistency, support and education across RDH on COVID-19 inpatient management, reducing staff anxiety. Their existence facilitated easy development and implementation of daily auditing tools, providing real-time feedback. All results were regularly reviewed by the COVID-19 Incident Management Team.

Discussion: With no community or hospital transmission in the Northern Territory to date, this novel team approach has played a vital role in the pandemic response in the NT.

Implementing Respiratory Protection in Victoria: Key Findings from a Fit Testing Trial

Authors: Dr Victoria Madigan1, Dr Christian McGrath1, A/Prof Craig Aboltins1

Affiliations: 1Northern Health, Epping, Australia

Abstract:

Healthcare workers (HCW) have been over represented in COVID-19 infections in Victoria since July 2020. In response, the Victorian Government announced that Healthcare Services will be required to have a Respiratory Protection Program (RPP). A key component of the RPP is the requirement for fit testing of P2/N95 filtering facepiece respirators for all HCW. In early September Northern Health (NH) commenced a pilot fit test program in conjunction with Safer Care Victoria (SCV) and Worksafe. The pilot is helping other health services and SCV to develop fit test programs. The data is being used to inform both NH and SCV with regard to distribution of P2/N95 respirators as well as developing protocols for workforce allocation in the event of P2/N95 shortages, failed fit tests and HCW who cannot wear P2/N95 for other reasons.

The pilot program aims to test 800 staff over a six week period. Staff have been initially drawn from high risk work locations with the eventual aim to fit test all NH staff who may be required to wear P2/N95 masks as part of their work duties.

Quantitative fit testing has been implemented using the ambient aerosol condensation nuclei counting method and OSHA 1910.134 Fast Filtering Facepiece protocol. Data collected includes fit test and fit check results for each mask, age, sex, smoking status, physical characteristics and occupational history with specific focus on COVID-19 exposure in 2020.

Key quantitative findings from the pilot trial to be discussed include overall and mask-specific pass rates, as well as differences in pass rates according to demographic, physical characteristics and occupational factors. In addition, qualitative findings such as staff satisfaction and wellbeing, resource and workforce issues, governance and other health service impacts will be discussed.
Concurrent Session 3A - Preparedness and response
On Demand from 10:00am AEDT

A COVID-19 Outbreak at Residential Aged Care Facility – Central Queensland, Australia, May 2020

Authors: Jacina Walker1, Odewumi Adegbija1, Kalie Green1, Gulam Khandaker1

Affiliations: 1Central Queensland Public Health Unit, Rockhampton

Abstract:

Background: COVID-19 in aged care facilities (ACFs) is associated with an increased risk of poor health outcomes among residents, including death. We share our experience managing a COVID-19 outbreak in a Central Queensland ACF in May 2020 following a confirmed COVID-19 notification in a healthcare worker who worked while infectious.

Methods: A rapid response team was deployed from the local public health unit within hours of notification to investigate the source of infection, potential burden of disease and identify all close contacts for quarantine. The facility was immediately placed into lockdown with stringent infection prevention and control measures implemented, including resident isolation, increased cleaning frequency and strict adherence to droplet and contact precautions. All residents and staff were screened for symptoms and undertook nose and throat swabs for nucleic acid testing (NAT). Interval testing of residents at day at day four, eight and 12 from their last exposure, and if symptomatic, was also undertaken. Staff identified as close contacts were screened during their quarantine period if they became symptomatic and upon completion of their quarantine. All other staff were encouraged to have a low symptomatic threshold, seek immediate testing and remain absent from work until symptom resolution.

Results: The outbreak investigation identified 39 close contact residents and 44 close contact staff with no further COVID-19 cases identified in residents or staff. With no new cases, the outbreak was declared over 15 days after the index case was notified.

Conclusions: The COVID-19 outbreak in the Central Queensland, Australia ACF was the first reported outbreak in the region. Given the ongoing global COVID-19 pandemic, a low threshold for testing staff and residents with COVID-19 symptoms is recommended, along with immediate staff and resident isolation and implementation of enhanced infection prevention and control strategies is paramount in minimising ongoing transmission.

Control of a COVID-19 outbreak using the ship as a quarantine facility

Authors: Ms Sera Ngeh1,2, Dr Tudor Codreanu1, Ms Abigail Trewin3, Dr Paul Armstrong1

Affiliations: 1Western Australia Department of Health, Perth, Australia, 2Australian National University, Canberra, Australia, 3National Critical Care and Trauma Response Centre, Darwin, Australia

Abstract:

Outbreaks of COVID-19 on cruise ships were an early feature of the pandemic, and on-board quarantining has been a key response measure. This has been only partially effective, with further cases occurring after the end of the quarantine period. Here, we describe the response to an outbreak on the MS Artania, with the successful use of the ship itself as a quarantine facility.

A health-lead, multi-agency response was implemented, centred around a strict 14-day quarantine regime. Based on established principles of outbreak management and experiences of COVID-19 outbreaks on cruise ships elsewhere, key response elements were population density reduction on-board; crew segregation; vessel cleaning and sanitation; infection risk zones and control measures; health monitoring; case identification and management; access, food preparation, delivery, and waste management control; communication, welfare and security.

On arrival into Fremantle Port, Western Australia on 25 March 2020, there were 832 passengers and 503 crew on board. Prior to the 14-day quarantine period, 28 (3.3%) passengers and 30 (6.0%) crew tested positive to COVID-19. All passengers and some crew were disembarked prior to the quarantine period. During quarantine, 21 out of 441 (4.8%) crew who remained on the ship tested positive to COVID-19. No crew became symptomatic after completion of quarantine, and the ship safely returned to Germany.

Infection surveillance involved 2,934 SMS messages, 3,339 phone calls, 1,033 face to face visits, and 245 COVID-19 tests. No serious health issues were reported, no response staff became infected, and only one quarantine protocol breach occurred among crew.

Conducting a large-scale, multi-agency outbreak response to COVID-19 on a cruise ship has highlighted governance and implementation challenges. Future outbreaks on vessels will continue to be an economic, political and health issue, and on-board quarantine should be considered as a viable option associated with financial and operational advantages.
Early warning surveillance for COVID-19 cases in aged care facilities, Victoria 2020

Authors: Dr Hassan Valley1,2, Dr Tony Stewart1,2, Dr Suman Majamdar1,2, Ms Georgia Lack1,2, Mr Geoff Fisher1,2, Professor Martyn Kirk3

Affiliations: 1Strategic Intelligence & Planning Unit, Melbourne, 2Victorian Aged Care Response Centre, Melbourne, 3Department of Public Health, La Trobe University, Melbourne

Abstract:
Outbreaks of COVID-19 in residential aged care facilities (RACF) were a major contributor to the resurgence of infections in Victoria during July – September 2020. Early detection of outbreaks to initiate a prompt public health response is vital in controlling the spread of COVID-19. However, at the peak of the epidemic Victorian residents experienced significant delays of up to five days between being tested and receiving results. As a result, soon after the formation of the Victorian Aged Care Response Centre (VACRC), we established early warning surveillance (EWS) for notification of suspected cases of COVID-19.

Given the urgency of the situation, EWS was implemented rapidly on 7th August adopting a simple approach. An email was sent out to all 780 RACFs in Victoria, asking them to notify suspected cases of COVID-19 on a daily basis to a dedicated email account. We defined a suspected case of COVID-19 according to the Series of National Guidelines where a staff member or resident had respiratory infection requiring testing. A surveillance officer reviewed notification on a daily basis data and assessed this along with other intelligence on RACFs. Those facilities that were deemed to be high risk were followed up with a phone call to assess their preparedness status with a decision being made to refer facilities on for further action if issues were identified. Overall, 47% (364/780) of RACF in Victoria reported 2,064 suspect cases in the first six weeks of operation. In the four week period from 26th August to 22 September, 68 facilities were deemed to be of high risk and were followed up to assess preparedness. Five of these were referred on for further public health action. Overall, we had good engagement with RACF with a high level of reporting that facilitated early awareness and investigation.

Veterinary epidemiologists in the national response: lessons, contributions, and future collaborations

Authors: Dr Rachel Iglasias1, Dr Laura Macfarlane-Berry1, Dr Andrew Breed1, Dr Greg Hood1, Dr Sam Hamilton1

Affiliations: 1Department of Agriculture, Water and the Environment, Canberra, Australia

Abstract:
Department of Agriculture, Water and the Environment (DAWE) epidemiologists have been contributing to the national response for COVID-19 from 16 March 2020 to date. Secondments have ranged between two to four months with four epidemiologists working in the Department of Health’s National Incident Room and one in the Department of the Prime Minister and Cabinet.

DAWE epidemiologists have contributed to a range of activities and outputs, including national and regional epidemiology reports, situation reports, national surveillance planning, risk assessment and genomics. While skills have been generally transferrable from the animal to the public health sector, there are notable differences in the governance structures, testing and surveillance approaches and reporting. Given the focus of the animal health sector on biosecurity and trade, veterinary epidemiologists have been able to offer alternative perspectives and approaches for consideration.

As well as an opportunity to support our public health counterparts, the national response to COVID-19 has highlighted areas of the animal health sector that may require further investment. This includes national animal data systems to automatically generate outputs in real-time, rapidly deployable tools for outbreak analysis, appropriate and regular training for staff and the application of genomics for contact tracing and identification of disease clusters.

The involvement and contribution of veterinary epidemiologists underscores the benefits of cross-sectoral partnerships to disrupt and innovate, both in health responses and for animal and public health sector response preparedness. Future efforts to foster cross-sectoral partnerships between organisations, senior decision makers, and technical experts including epidemiologists, are particularly important given the increasing threat of emerging and re-emerging pathogens to human (and livestock) populations, most of which originate in animals.
Adherence towards COVID-19 mitigation measures and its associated factors

Authors: Mr Zelalem Nigusse

Affiliations: 1University Of Gondar, Ethiopia, Gondar, Ethiopia

Abstract:

Background: Considering its pandemicity and absence of effective treatment, authorities across the globe designed various mitigation strategies to combat the spread of COVID-19. Although adherence to the preventive measures is the only means to tackle the virus, reluctance to do so has been reported to be a major problem everywhere. Thus, this study aims to assess community adherence towards COVID-19 mitigation strategies and its associated factors among Gondar City residents, Northwest Ethiopia.

Methods: A community based cross-sectional study design was employed among 635 respondents from April, 2020-27, 2020. Cluster sampling technique was used to select the study participants. Data were collected using interviewer administered structured questionnaire. Epi-Data version 4.6 and STATA 14 were used for data entry and analysis. Logistic regressions (Bivariable and multivariable) were performed to identify statistically significant variables. Adjusted odds ratio with 95% CI was used to declare statistically significant variables on the basis of p < 0.05 in the multivariable logistic regression model.

Results: The overall prevalence of good adherence towards COVID-19 mitigation measures was 51.04 (95%CI: 47.11, 54.96). Female respondents (AOR: 2.39; 95%CI (1.66, 3.45)), receiving adequate information (AOR: 1.58; 95%CI (1.03, 2.43)), and favorable attitude towards COVID-19 preventive measures were significantly associated with good adherence to COVID-19 mitigation measures. Whereas, those respondents who had high risk perception towards COVID-19 were less likely to comply with COVID-19 mitigation measures (AOR: 0.61; 95% CI (0.41, 0.92)).

Conclusions: The findings have indicated that nearly half of the study participants had poor compliance towards COVID_19 mitigation measures. Sex, level of information exposure, attitude towards COVID-19 preventive measures, and risk perception towards COVID-19 were factors significantly influence the compliance with COVID-19. Therefore, it is crucial to track compliance responses to the COVID19 measures, scale up the community awareness on COVID-19 mitigation strategies through appropriate information outlets.


Authors: Mrs Deborah Hilton

Affiliations: 1Deborah Hilton Statistics Online [http://sites.google.com/site/deborahhilton/], Ashwood, AUSTRALIA

Abstract:

Context and Aim: To assess the scientific medical literature [quantity/quality] generated from pandemics, namely Spanish flu and COVID-19. A famous Māori quote/proverb is 'I walk backwards into the future with my eyes fixed on the past'. In essence our eyes, our vision looks at past history before making future decisions as we forge new paths and grapple with scientific priorities. The Spanish flu, the deadly influenza pandemic [H1N1 influenza A virus] (1918-1920), infected 500 million people – 1/3 of the world’s population. The COVID-19 pandemic [coronavirus] began in Wuhan, China in Dec 2019 and the World Health Organization declared a pandemic in March 2020.

Methods and Analysis: The following searches performed ascertained the number of medical research publications on pandemics. The Proceedings of the Australian Health and Medical Research Congresses [AHMRC] in 2002 and 2006 were reviewed to locate abstract titles on infectious diseases specifically coronavirus [not plenary speakers or orators]. Firstly Pubmed; search term 'Spanish flu', secondly MESH search term 'coronavirus'. The 2nd search included a date [previous year] and study type filter selecting clinical trial, systematic review, meta-analysis and/or randomised controlled trial to weed out good quality recent research.

Results and Findings: The Spanish flu Pubmed search retrieved 1705 records, from 1949. The AHMRC [2002] included one symposium with an abstract titled emerging and re-emerging infections while no abstracts in the 2006 congress were on coronavirus topics. The subsequent Pubmed search, term [coronavirus] retrieved 47,609 hits, the oldest being 1949. A date filter and study type filter resulted in 655 records, 573 records were meta-analysis and/or systematic reviews.

Conclusions: The avalanche of current high-quality medical research generated by the 2020 pandemic creates a literature pyramid to enable planning for the next century. This wealth of information, while vast and complex to read, is vitally important for our community.
COVID-19 public health preparedness in the Kimberley: collaboration is key

Authors: Dr Emma Croager1, Dr Caitlyn White2, Katy Crawford2, Dr Pippa May2, Dr Lorraine Anderson2, Rob McPhee2

Affiliations: 1Kimberley Population Health Unit, Broome, Australia, 2Kimberley Aboriginal Medical Services, Broome, Australia

Abstract:

In early 2020, the Kimberley had the highest number of COVID-19 cases in regional Western Australia, with 17 confirmed cases notified among Kimberley residents. There were no cases in remote communities or Aboriginal people. All cases have now recovered, and several months have passed without any new cases, however it is vital the region is prepared for a second wave of COVID-19.

WA Country Health Service (WACHS)-Kimberley collaborated with Kimberley Aboriginal Medical Services (KAMS) to test procedures and communication between Kimberley agencies and state-wide bodies involved in the COVID-19 public health pandemic response.

Three tabletop exercises co-designed and facilitated by KAMS and WACHS-Kimberley using World Health Organization methodology have been conducted. Scenarios tested were: a case in a remote Aboriginal community; a tourist travelling through the region; and an outbreak affecting multiple Aboriginal communities. Participants included key Government agencies, Aboriginal Community Controlled Health Organisations, non-Government organisations and key representatives from communities that were the focus of each scenario. Exercises were evaluated by observation, oral debrief and written feedback. Data were grouped and themed in accordance with the exercise aim, objectives and assessment criteria to inform findings and recommendations for improving planning and preparedness.

The initial exercise identified 5 key themes – coordination, communication and information sharing; capabilities for a timely response; preparedness plans, roles and responsibilities; joint problem solving; and culturally secure planning and response – and 13 recommendations were developed to improve these. Refinements to regional public health plans, procedures and communication processes were made. These were then tested and, if required, refined further in each subsequent exercise. Key lessons learned included: the importance of rapidly establishing clear command and control structures once the first case has been identified, to establish clear lines of communication within and outside the region; and timely, open and honest communication with communities.

Supporting RACF in COVID-19 preparation

Authors: Dr Lyn-Il Lim1,2, Associate Professor Mary O’Reilly1, Associate Professor Michael Murray1,3, Ms Leanne Houston1,4, Stewart Dawes5

Affiliations: 1Victorian Aged Care Response Centre and Eastern Health, Box Hill, 2Doherty Institute, Box Hill, , 3Austin Health, 4Kilmore and District Hospital, Kilmore, 5Australian Defence Force, Bandiana

Abstract:

Aim: To assess Victorian Residential Aged Care Facilities (RACF) COVID outbreak preparedness

Background: The Victorian Aged Care Response Centre was established 27 July 2020 as a collaborative Commonwealth, Victorian and Aged Care Quality and Safety Commission emergency response to COVID-19 outbreaks in Victorian RACF. Since the first report in a Victorian RACF on 4 May, there have been 173 outbreaks (22% of all facilities); over 1960 residents and 2020 staff affected with new outbreaks peaking in early August.

Methods: An observational checklist was developed to assess facility COVID-19 preparedness. This was based on factors identified as relevant in early outbreaks. Clinically led teams, predominantly the Australian Defence Force (ADF), were trained in use of the checklist and site visits arranged to RACF.

The checklist was binary. Results were scored using a weighting based on both score qualitative feedback, sense checked by senior clinicians to develop a perceived risk. Immediate and written feedback was provided. RACF were offered further support following determination of a facility risk rating with findings included in the outbreak Incident Management System.

Outcomes:

616 VACRC initial Prevention visits have been completed. These identified:

- RACF required support in developing a floorplan including identification of donning/doffing stations and outbreak zones - 31%
- incorrect PPE use - 9%
- inadequate hand hygiene product availability - 12%
- lack of signage for occupancy in communal staff areas - 17%

One in five facilities were identified as benefiting from a further support visit; commonest issues requiring further remediation included use of PPE, insufficient planning to support use of clinical spaces in event of outbreak, and lack of communal area signage to support social distancing by staff particularly at tea breaks. Visits have been arranged.
Conclusion: The eight week program highlighted significant gaps most could be addressed to support RACF COVID preparedness.

Impacts of the COVID-19 pandemic on the path to an equal society.

Authors: Rachel Iglesias

Affiliations: 1Department Of Agriculture, Water And The Environment, Canberra, Australia

Abstract:
The COVID-19 pandemic has already been shown to have deepened inequality in society, with an expanding body of grey and peer reviewed literature demonstrating disproportionate impacts on women, those with caring responsibilities, particular racial and ethnic minorities, those with disabilities or chronic health conditions, particular age groups, those with low socioeconomic status and members of the LGBTIQ community. These impacts are unlikely to end when the pandemic is over. Those who suffer experience inequality also tend to experience longer term impacts after a crisis, and greater difficulty in recovering, as has been demonstrated in relation to crises such as economic recession. This may lead to long term impacts on the pathway to equality and inclusion.

Inclusion and equality are also among the social determinants of health recognised by the WHO. As a result of the worsening of inequality, there are likely to be longer term health impacts that affect a broader cohort and continue into the future.

The role of the scientific expert has been central in responding to the crisis. However, ‘expert’ is an inherently exclusive term. Experts, particularly those in senior positions represent a very limited section of society. While they may be well-intentioned and have considerable expertise in the field in which they work, they do not share the lived experiences of those who suffer due to inequality. By privileging the voices of experts, we have silenced voices with alternative viewpoints and life experiences.

It is not too early to start preparedness planning for the next pandemic. In doing so, we should take an inclusive approach and involve all members of society to minimise the negative impacts of future responses on minorities and the pathway to equality. We may discover innovative approaches by leveraging the expertise of all members of society in their own lives and challenges.
Concurrent Session 2B - Impact on health systems
On Demand from 10:00am AEDT

Long journey home: Characteristics of persistently positive SARS-CoV-2 RT-PCR in returned travellers

Authors: Dr Liam Beiglari1, Dr Renee Tuddenham1, Dr Owen Hutchings1, Dr Rebecca Davis1

Affiliations: 1Royal Prince Alfred Hospital Sydney, Sydney, Australia

Abstract:
COVID-19 is diagnosed using reverse-transcription polymerase chain reaction (RT-PCR) for SARS-CoV-2 RNA on respiratory samples. Some patients return positive RT-PCRs for up to 45 days1. We investigated persistent positive cases in patients in the community and quarantine.

We conducted a retrospective audit of the SARS-CoV-2 database in our microbiology department and our clinical database from January-August 2020. Subjects were divided into two categories: SARS-CoV-2 RT-PCR positive on 2 separate nasopharyngeal samples taken >7 days apart and those with only 1 positive result. Each group was compared based on risk factors, outcomes, and Ct values.

52 of 415 patients in our cohort had persistently positive RT-PCR results [12.5%]. This sub-group had predominantly mild [67.3%] or moderate [19.2%] disease. 93.1% of the cohort had mild disease and 3.45% had moderate disease. Median length of illness was 18 days compared to 28.8 days for the cohort.

Within 10 days of symptom onset the median E gene Ct value was 23.27 [IQR 18.62-27.93] compared to 33.2 [IQR 30.63-35.77] for those symptomatic after 10 days and 30 [IQR 27.77-32.23] for those recovered after 10 days. This corresponded to a fall in estimated viral load from >200,000 to 2000-20,000 copies/mL.

Persistent positivity was less common than previously reported2. Increasing Ct values in samples taken after day 10 of illness is similar to previously reported3 and reflects lower rates of replicable virus4. These data support a symptom and time-based strategy for de-isolating SARS-CoV-2 cases.

References

COVID-19 changes to maternity care: experiences of Australian doctors.

Authors: Dr Rebecca Szabo1,2, Dr Alyce Wilson3, Prof Caroline Homer3, Dr Vidanka Vasilevski4,5, Prof Linda Sweet4,5, Dr Karen Wynter4,5, Professor Yvonne Hauck6, Dr Lesly Kuliukas6, Dr Zoe Bradfield6,7

Affiliations: 1The University of Melbourne - Department of Medical Education and Department of Obstetrics and Gynaecology, Parkville, Australia, 2The Royal Women’s Hospital - Gandel Simulation Service, Parkville, Australia, 3Maternal, Child and Adolescent Health Program - Burnet Institute, Melbourne, Australia, 4Deakin University, Melbourne, Australia, 5Western Health, Melbourne, Australia, 6School of Nursing, Midwifery and Paramedicine, Curtin University, Perth, Australia, 7King Edward Memorial Hospital, Perth, Australia

Abstract:
Background: The COVID-19 pandemic has meant rapid and significant changes to maternity services in Australia. All maternity services have undertaken significant changes in relation to policies, service delivery and practices and increased use of personal protective equipment.

Aims: The aim of this study was to explore and describe doctors’ experiences of providing maternity care during the COVID-19 pandemic in Australia.

Materials and Methods: A national online survey followed by semi-structured interviews with a cohort of participants was conducted during the first wave of the COVID-19 pandemic in Australia (May-June 2020). Participants were recruited through social media networks. Eighty-six doctors completed the survey and eight were interviewed.

Results: Most respondents were based in the most populous states in Australia (New South Wales, Victoria, and Queensland). The majority of respondents were women (86%), 50-years of age or younger (84%), and worked exclusively or mostly in the public sector (57%), and resided or worked in urban areas (67%).
Almost all doctors reported rapid development of new guidelines and major changes to health service delivery. Professional colleges were the main source of new information about COVID-19.

Most doctors felt sufficiently informed to care for women with COVID-19. Less than half of doctors felt changes would be temporary. Doctors described work force disruptions with associated personal and professional impacts.

The ability to access and process up-to-date, evidence-based information was perceived as important. Doctors acknowledged that altered models of care had increased pregnant women’s anxiety and uncertainty. All doctors described silver linings from sector changes.

Conclusions: This study provides unique insights into doctors’ experiences of providing maternity care during the COVID-19 pandemic in Australia. Findings have immediate relevance to the maternity sector now and into the future. Lessons learnt provide an opportunity to reshape the maternity sector to better prepare for future public health crises.

The impact of COVID-19 on pharmacist vaccination services in Australia

Authors: Ms Cyra Patel1, Ms Lauren Dalton1, Dr Aditi Dey1,2, Prof Kristine Macartney1,2, Dr Frank Beard1,2

Affiliations: 1National Centre For Immunisation Research And Surveillance, Westmead, Australia, 2University of Sydney, Sydney, Australia

Abstract: The demand for and scope of pharmacist-administered vaccinations has grown considerably in Australia in recent years. We aimed to assess impact of COVID-19 on pharmacist vaccination.

We surveyed pharmacists nationally between 5 June and 13 July 2020, about their practices for recording and reporting vaccination data. The survey included three multiple-choice questions related to COVID-19 impact, namely whether demand for and ability to provide vaccination services or report data to the Australian Immunisation Register (AIR) were affected. Proportions were calculated for each question. Respondents who indicated that provision of vaccination services was affected were asked for further details in an open-ended question, with responses analysed using content analysis.

Of 243 eligible respondents, 228 (93.8%) answered questions related to the impact of COVID-19 on pharmacist vaccination services. Almost all (95.6%, 217/228) reported higher than expected demand for influenza vaccination in their pharmacies in 2020. Twenty-seven percent (61/228) indicated that their ability to provide vaccination services was adversely affected. New protocols, such as additional cleaning and distancing requirements, hindered ability to provide vaccination services for 46% (28/61). Six respondents (9.8%) were unable to accept walk-in clients and had to introduce new booking systems. Four respondents (7%) reported a limited supply of personal protective equipment. Staff shortages and rostering difficulties were reported by 13% (8/61). Ability to report to AIR was unchanged for the majority of respondents (93.4%, 213/228). Two respondents reported being unable to offer vaccination services at all due to COVID-19 challenges.

Our findings are consistent with international reports of the adverse impact of the pandemic on the provision of pharmacist services. Addressing these issues through a health systems lens and person-centred approach can strengthen pharmacist vaccination services, and place them in a better position should they have a role in administration of a COVID-19 vaccine.

Women’s experiences of receiving maternity care during the COVID-19 pandemic in Australia

Authors: Dr Alyce Wilson1, Professor Linda Sweet2, Dr Zoe Bradfield3,4, Professor Yvonna Hauck3, Dr Karen Wynter2, Dr Lesley Kuliukas5, Dr Rebecca A Szabo6, Professor Caroline SE Homer1, Dr Vidanka Vasilevski2

Affiliations: 1Burnet Institute, Prahran, , 2Deakin University and Western Health, Melbourne, Australia, 3Curtin University, Perth, Australia, 4King Edward Memorial Hospital, Perth, Australia, 5Royal Women’s Hospital, Parkville, Australia, 6University of Melbourne, Parkville, Australia

Abstract: The COVID-19 pandemic has led to multiple changes to maternity care in Australia at an unparalleled pace and scale. The women at the centre of this care have experienced much uncertainty and upheaval to their pregnancy, birth and postnatal experience.

Aims: To explore and describe women’s experiences of receiving maternity care during the COVID-19 pandemic in Australia.

Materials and Methods: A national online survey followed by semi-structured interviews with a cohort of participants was conducted during the first wave of the COVID-19 pandemic in Australia (May-June 2020). Participants were recruited through social media networks. 3364 women completed the survey and twenty-six were interviewed.
Results: Women felt isolated, anxious and uncertain with regard to the rapid changes to their maternity care. Limited face-to-face contact with health providers, altered models of care and limitations on support people left women feeling like they had little choice and control over the care they received. Women reported feeling underinformed about the potential health consequences of COVID-19 for themselves and their babies. Experienced mothers expressed particular concern for new and first-time mothers. All women described some ‘silver linings’ including benefits of visitor restrictions due to both hospital policies and lockdown measures, allowing women and their babies to have more time for rest, bonding and breastfeeding establishment

Conclusions: This study provides unique insights into women’s experiences of receiving maternity care during the COVID-19 pandemic in Australia. Findings have immediate relevance to the maternity sector now and into the future. Lessons learnt provide an opportunity to build back better and reshape the maternity sector to best meet the needs of women and future public health crises.

Disruption of MCHN services on maternal and infant care during COVID-19 pandemic.

Authors: Doctor Shane Licheni, Doctor Latha Devaraja, Mr Benjamin Watson, Dr Marcelle Simeonovic, Dr Jane Standish, Ms Louise Gawler, Dr Sarah McNab, Associate Professor Margie Danchin

Affiliations: 1The Royal Children’s Hospital, Parkville, Australia, 2Murdoch Children’s Research Institute, Parkville, Australia

Abstract:
Background: In response to the COVID-19 pandemic, maternal child health nurse (MCHN) service providers were requested to change their mode of service delivery from face-to-face home visits and centre appointments to telehealth or phone consultations. MCHN services provide essential breastfeeding and emotional support at a time of adjustment and vulnerability for new parents. This vulnerability was exacerbated by social distancing and subsequent lack of extended family support. We aimed to compare the frequency and nature of admissions to a tertiary paediatric hospital in Melbourne secondary to infant feeding or maternal mental health concerns during the COVID-19 pandemic to the same period in 2019.

Method: All babies < 3 months old admitted to a general medicine unit at the Royal Children’s Hospital from March 1st to June 30th in 2020 with a primary problem of feeding difficulties, poor growth, irritability or maternal mental health concerns were retrospectively identified and compared to the same period in 2019. Medical records were reviewed to ascertain the proportion of infants below birth weight at time of admission, nature of feeding difficulties, Edinburgh Postnatal Depression Scale scores and proportion of mothers who required referral to early parenting centres and/or perinatal mental health services.

Results: Preliminary findings demonstrate a two-fold increase in admissions over the four-month period in 2020 compared to the same time period in 2019 secondary to growth, irritability and/or feeding concerns. There have been more referrals to enhanced MCHN services, early parenting centres and perinatal mother-baby units. Analysis is ongoing and complete results will be presented.

Conclusion: Lack of face to face MCHN services in Victoria during the COVID-19 pandemic and government-enforced lockdown has had a profound unintended effect on early infant feeding, growth and maternal mental health. These findings will inform policies for MCHN services for maternal and infant care in future pandemics.

Impact of COVID wards on inpatient management of general medical patients

Authors: Dr Hayley Stratton, Dr Gary Yip, Dr Jillian SY Lau

Affiliations: 1Eastern Health, Box Hill, Australia, 2Monash University, Faculty of Medicine, Nursing and Health Sciences, Clayton, Australia

Abstract:
The COVID-19 pandemic has had profound impacts on the health of those infected but has also indirectly affected other users of the medical system due to restructuring and reallocation of resources. The formation of COVID wards designed to cohort infected patients and reduce exposure to healthcare workers has the potential to unintentionally divert resources from COVID negative patients. This study aims to determine whether there have been delays of healthcare delivery to COVID negative patients due to the formation of COVID wards at a tertiary hospital in Victoria, Australia. This study has been approved by the Eastern Health Human Research Ethics Committee (approval number QA20-113).

A retrospective cohort study was conducted on patients admitted under the General Medicine unit at Box Hill Hospital between March and June 2020. Data was collected from the electronic medical records of fifty COVID negative patients admitted first to a COVID ward for disease exclusion and fifty patients that were admitted directly to the general medical ward. Measures including hospital length of stay, time from referral to imaging, theatre, consultation by specialty teams, allied health assessment and pharmacy, and 30-day morbidity/mortality outcomes will be compared across both cohorts. Furthermore, measures recorded will be reviewed across two distinct timepoints during the pandemic; in March 2020 when PCR testing had a 48-hour turnaround time (TAT), to June 2020 with a TAT of 4-hours. This will determine the impact of faster TATs on timing of healthcare delivery.

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The analysis for this work is still underway but will be completed by December 2020. The results of this study will help inform how COVID wards have impacted on all users of the healthcare system regardless of COVID status and will help guide future pandemic response.

**Implementing drive-through vaccinations during COVID-19 to improve immunisation coverage at RCH Melbourne**

**Authors:** Ms Sonja Elia¹,²,³, Associate Professor Nigel Crawford¹,²,³, Ms Skye Miller¹

**Affiliations:** ¹Royal Children’s Hospital Melbourne, Parkville, Australia, ²Murdoch Children’s Research Institute, Parkville, Australia, ³The University of Melbourne, Parkville, Australia

**Abstract:**

**Context:** From March 2020, various levels of restrictions occurred across Australia as a result of the COVID-19 (coronavirus) pandemic. Despite assurances from the Australian Technical Advisory Group on Immunisation (ATAGI) that it is safe to attend regular Immunisation services, vaccine providers experienced a downturn in patient presentations. Drive-through vaccination clinics have been used extensively overseas as part of national influenza prevention efforts. The Immunisation Service at the Royal Children’s Hospital (RCH) Melbourne developed a drive-through clinic, based on a model previously implemented at Monash Health [https://mvec.mcri.edu.au/immunisation-references/melbourne-immunisation-drive-through-clinics/].

**Process:** A drive-through vaccination clinic was established within a two week period, using the model already designed for COVID testing at RCH. An appointment booking system was developed, portable refrigeration units were purchased and IT infrastructure tested. The clinic was promoted through various media platforms, including print, broadcast and internet with vaccination commencing in late August 2020.

**Analysis:** From 25th August to 23rd September 2020, 156 patients attended the drive-through vaccination clinic. A significant proportion of attendees were overdue for immunisation. The responses from families was extremely positive and there are plans underway to obtain more formal feedback via a survey sent to families. There were no adverse events reported.

**Outcomes:** A drive-through vaccination clinic is one way to ensure that families receive the essential National Immunisation Program (NIP) vaccines, particularly during COVID-19 when there has been a decrease in face-to-face medical visits. Through adequate planning and promotion, we have demonstrated that this can be successfully implemented, beneficial and well received. We will continue to monitor the progress of the RCH Immunisation drive-through clinic and are considering it’s role in COVID-19 vaccine readiness planning.

**Monash Immunisation Drive In Service- a response to COVID-19**

**Authors:** Mrs Joanne Hickman¹, Professor Jim Buttery¹,²,³

**Affiliations:** ¹Monash Health, Clayton, Australia, ²Monash University, Clayton, Australia, ³Saefvic, Parkville, Australia

**Abstract:**

In response to the COVID-19 pandemic Monash Immunisation (MI) changed their model of care to a drive in service commencing in April. The service operates from a council hall that has a driveway that can accommodate one way flow of traffic, space for a marquee, width for two cars and designated waiting bays post immunisation. The Victorian Department of Health and Human Services also changed their guidelines allowing drivers to be immunised in their car. Antenatal services have also re located off site, with MI being able to facilitate on site immunisation for this priority group.

Relocation of the service involved a slick and co-ordinated effort from Monash Health departments including media and communication, information technology, transformation office, corporate services, data engineering, Monash Council and team MI.

The drive in service to date has delivered over 4,300 vaccines. The number of influenza vaccines administered to high-risk patients is comparable to 2019. MI has adapted to ensure all other services previously delivered continue. Five palivizumab clinics for high-risk cardiac and respiratory infants were conducted through the autumn and winter months. Collaboration with vaccine research continued. Over 50 research patients were consulted and immunised at the hall. BCG clinics continue in accordance with the varying stages of lockdown, and Saefvic (vaccine safety clinics) remain operational.

Consumer surveys were conducted exploring referral source, overall experience, perceived safety and protection from COVID-19 infection with overwhelming positive patient experience and support for better protection from the outdoor elements for health care workers.

Attitudes and experiences of nurses operating at the drive in service were furthermore examined. Personal safety concerns around vehicle management, patient aggression, fear of contracting COVID-19 and often limited access to patient data were monitored - data that can drive change leadership for future drive in services for a COVID-19 vaccine rollout.
Time to Clearance for COVID-19 Positive Healthcare Workers: Policy and Practice Implications

Authors: Dr Stacey Law, Dr Katherine Todd, Dr Peter Lewis, Ms Kylie Downs, Mr Andrew Dixon

Affiliations: 1CCLHD, Gosford, Australia

Abstract:

SARS-COV-2, the organism responsible for the COVID-19 pandemic, first emerged in Wuhan province, China in December 2019 and rapidly spread, causing massive societal and economic disruption as well as morbidity and mortality, with global deaths as of September 2020 in excess of 2 million. In the initial phase of the pandemic, the Australian National Control Guideline for COVID-19 required COVID-19 positive healthcare workers to have obtained ‘COVID-19 clearance’ via two consecutive RT-PCR nasopharyngeal swabs collected at least 24 hours apart, prior to being released from isolation and returning to healthcare settings.

We conducted a retrospective cohort study investigating the time to clearance for NSW resident healthcare workers infected with COVID-19 between February and June 2020. In this period, 104 healthcare workers were diagnosed with COVID-19. For 85 workers with sufficient information available to assess their time to clearance, the median time between symptom onset and clearance to return to work was 24 days, with a range of 9 – 67 days. This prolonged staff absence is likely to have incurred financial, health and social costs to both individuals and healthcare organisations. In addition, the study revealed that significant challenges arose in interpreting indeterminate results, in deploying a consistent testing regime, and in categorising what constituted a “health care worker”. As a result, whilst some healthcare workers spent many weeks in home isolation, others were cleared for return to work without having met the clearance criteria.

This study highlighted the challenges in this context of using the highly-sensitive RT-PCR nasopharyngeal swabs for determining infectivity and as a clearance criterion for return to work for healthcare workers. These findings support the change to the COVID-19 National Guideline in June 2020, to symptom-based criteria for return to work for healthcare workers following COVID-19 diagnosis.

Dedicated inpatient ward for suspected COVID-19 cases during first wave of epidemic

Authors: Varsha Sivalingam, Matthew Tweedale, Ethan MacMinn, Yashneel Prasad, Sanjaya Senanayake, Craig Boutlis

Affiliations: 1Infectious Diseases Department, The Canberra Hospital, Garran, Australia, 2Respiratory Department, The Canberra Hospital, Garran, Australia

Abstract:

Introduction: COVID-19 represents the first major pandemic of this century that has tested our health care system resulting in innovative treatment and health care approaches. A novel dedicated coronavirus ward called the Respiratory Assessment Unit (RAU) was started at The Canberra Hospital that had the capacity to isolate and cohort 16 patients.

Aims/Method: Analysis of epidemiological data regarding the demographics and clinical features that were admitted to RAU is important to review as it represents a novel project. The RAU ran for a total of ten weeks. A dedicated ward was no longer required due to several weeks without any positive cases. This retrospective audit will describe the epidemiology and clinical features of suspected cases admitted to this dedicated ward, while reviewing their ultimate diagnosis in the context of low case numbers here in the Australian Capital Territory.

Results: The total number of admissions to RAU during this period was 382 patients. Females represented 50.5% of admissions. Among both genders, 24.3 % were over the age of 80. 56.8% of patients tested did not meet any epidemiological, clinical or imaging criteria. Patients were most likely to be tested based on clinical grounds (fever and respiratory symptoms). Residents of aged care facilities made up the majority of those tested based on epidemiological criteria (n=40). Only four patients (1%) ultimately had a COVID-19 related admission. Pneumonia made up 29.6% of ultimate discharge diagnosis, followed by other infections at 23.3%, other medical reasons 18.1%, exacerbation of chronic airways disease 10.7%, heart failure 7.6%, surgical pathology 7.3% and pulmonary embolism 2.4%.

Conclusion: Where case numbers are low, a health care system will have to test as per public health guidelines while ensuring appropriate investigation and management of other causes of shortness of breath and febrile episodes.
Using Technology to Protect Health Care Workers and Connect Patients With Families

Authors: Dr Aaron Bloch1, Dr Georgina Cunningham1, Dr Stephanie Bond1, Dr Richard Kelly2, Dr Clinton Hoxhallari1, Dr Anna Collins1, Le Truong1, Sally Bray1, Samantha Blade1, Kim O’Sullivan1, Professor Kumar Visvanathan1, Dr John Daffy1, Dr Hui Yi Ng1, Dr Jonathan Darby1, Dr Amy Crowe1, Katrina Rushworth1, John Groves1, Dr Jonty Karro1, Associate Professor Antony Tobin1, Associate Professor Wilma Beswick1

Affiliations: 1 St Vincent’s Hospital Melbourne, Fitzroy, Australia

Abstract:

Background: The SARS-COV-2 pandemic has challenged public health systems globally and in some cases overwhelmed healthcare systems. High rates of health care worker infections have resulted both from clinical exposures and challenges presented by presymptomatic transmission in a setting where social distancing is difficult.

To mitigate transmission, health authorities have restricted visitors, with the sometimes tragic outcome of patients dying alone. To tackle these dual problems, the authors used novel technological methods when designing their hospital’s COVID-19 response.

Methods: A structured problem solving framework, the lean six sigma approach, was utilised to achieve the aim of maximising communication whilst minimising physical traffic to the COVID-19 ward.

A rudimentary electronic medical record (EMR) was rapidly developed using the hospital’s clinic software and paired with a new inpatient telehealth program.

Implementation utilised existing hospital clinical information technology infrastructure along with ipads.

Results: The bespoke COVID-19 EMR allows clinicians to access patients’ clinical history from outside the COVID ward. Bespoke templates focus on clinical features of COVID-19 and goals of care.

The inpatient telehealth program uses a secure platform on regularly disinfected Ipads. One clinician at the bedside can facilitate video consults with multidisciplinary specialists outside the COVID-19 zone, thus minimising exposure. Similarly, one clinician leads virtual ward rounds, whilst colleagues watch remotely, entering notes into COVID-19 EMR.

Finally, a virtual visitor program using the same telehealth technology, allows patients to spend valuable time with relatives via video-call, combating isolation and providing comfort in a time of need.

Conclusion: Rapid adoption of novel clinical workflows using technology- a custom designed EMR and inpatient telehealth - have allowed clinicians to provide high quality care to patients whilst minimising exposure to COVID-19. Whilst this pandemic denies patients the comfort of their family’s touch, use of the same technology has ensured that they are not alone.
Concurrent Session 3C - International epidemiology
On Demand from 10:00am AEDT

Investigating COVID-19 transmission in Vietnam’s tertiary hospital using social network analysis

Authors: Ms Ngoc-Anh Hoang\textsuperscript{1,2}, Ms Ha-Linh Quach\textsuperscript{1,2}, Dr Thai Pham\textsuperscript{2}, Dr Khanh Nguyen\textsuperscript{2}, Dr Florian Vogt\textsuperscript{1}

Affiliations: \textsuperscript{1}National Centre for Epidemiology and Population Health, Research School of Population Health, College of Health and Medicine, Australian National University, Canberra, Australia, \textsuperscript{2}Department of Epidemiology, National Institute of Hygiene and Epidemiology, Hanoi, Vietnam

Abstract:

Background: A cluster of 45 COVID-19 cases was identified in a large referral hospital in Hanoi, Vietnam on 18 March 2020, constituting the first SARS-CoV-2 outbreak in a healthcare setting nationwide. We assessed transmission patterns during this outbreak using social network analysis.

Methods: We investigated COVID-19 cases using contact tracing, PCR testing, and movement monitoring through mobile tracking and video surveillance. We conducted network analysis using degree centrality to identify cases with the highest number of connections; betweenness centrality to reveal cases that connect sub-clusters; and closeness centrality to indicate how close a case was to other cases in the network.

Results: A total of 7,200 tests were performed among 1,982 persons at day 0, day 3–4, and day 14 after last exposure to a known case. Overall, 26 (57.8%) ancillary support staff, seven (15.6%) caregivers, five (11.1%) out-patients, two (4.4%) nurses, two in-patients (4.4%), and three (6.7%) secondary cases outside the hospital tested positive. We identified a total of 67 connections between 45 cases. Three cases (a caregiver, an ancillary support staff, and a patient) had the highest score in each social network metric (degree, betweenness, and closeness centrality). The highest degree centrality was detected in one ancillary support staff who was linked to ten (22.2%) other cases. Among the ten most important cases selected by each network metric, transmission dynamics clustered in 15 cases. Among these, nine (60.0%) were ancillary support staff, while three (20.0%) were caregivers and three (20%) were patients.

Conclusions: Our analysis revealed the importance of ancillary support staff in transmission dynamics during this outbreak. This study shows the potential of social network analysis techniques to understand SARS-CoV-2 infection patterns in hospitals and similar contexts. All employees of health facilities with high-frequency movements should be monitored regularly for SARS-CoV-2 infection regardless of their profession.

High COVID-19 attack rate among attendees of wedding events in Bali, 2020

Authors: Dr Bhavi Ravindran\textsuperscript{1,2}, Freya Hogarth\textsuperscript{1,4}, Dr Kirsten Williamson\textsuperscript{1,4}, Rose Wright\textsuperscript{1}, Professor Martyn Kirk\textsuperscript{1,4}, Associate Professor Craig Dolton\textsuperscript{1,2}

Affiliations: \textsuperscript{1}Population Health, Hunter New England Health, Newcastle, Australia, \textsuperscript{2}School of Medicine and Public Health, University of Newcastle, Newcastle, Australia, \textsuperscript{3}National Incident Response Division, Australian Government Department of Health, Canberra, Australia, \textsuperscript{4}National Centre for Epidemiology and Population Health, Australian National University, Acton, Australia

Abstract:

Large gatherings are associated with the spread of coronavirus 2019 disease; however, transmission dynamics are not well understood. We investigated a cluster of COVID-19 cases in returning Australian residents who attended wedding events in Bali, during 15–21 March 2020. Attendees participated in various social events and were in close proximity, providing multiple opportunities for transmission. We conducted a retrospective cohort study of the 41 attendees, of whom 17 participated in a structured interview that included history of illness, risk exposures and event attendance. We obtained data for the remaining 24 participants through corroborative histories and public health unit case investigations. COVID-19 was identified in 56% of attendees (23/41), with illness onset between 21 March and 2 April 2020. One secondary case was identified in a household contact of an attendee. The median age of cases was 31 years (range 3–64). One case was hospitalised and did not require critical care. There were no deaths. No cases occurred among six attendees who left prior to the actual wedding day. Guests attended multiple events and participated in high-risk transmission behaviours such as shaking hands, kissing, dancing, sharing drinks and sharing shisha (water pipes). Attack rates ranged from 64% to 87% for different exposures. We could not identify a single risk exposure that accounted for all cases; it is therefore likely there were multiple episodes of transmission. Our investigation identified a high attack rate of COVID-19 among a cohort of wedding event attendees. Attendees engaged in close physical contact, shared drinks and shisha, and were in close proximity during the wedding events, which may have contributed to the high attack rate. This outbreak highlights the significant role social events can play in transmission of COVID-19 and underscores the importance to limit gatherings and close physical contact to control the spread of the virus.
Epidemiology and Pathogens from SARS-CoV-2-positive versus SARS-CoV-2-Negative Hospitalised Patients: US Multicentre Evaluation

Authors: Laura Puzniak¹, Lyn Finelli², Pamela Moise³, Kalvin Yu³, Carisa De Anda³, Latha Vankeepuram³, Prashant Parikh³, Vikas Gupta³, Andree Hubber¹

Affiliations: ¹MSD, Macquarie Park, Australia, ²Merck & Co., Inc, Kenilworth, USA, ³BD (Becton, Dickinson and Company), Franklin Lakes, USA

Abstract:

Background: Past experiences with viral epidemics have indicated an increased risk for bacterial, fungal, or other viral secondary or co-infections due to patient characteristics, healthcare exposures and biological factors. It is important to understand the epidemiology of these infections to properly treat and manage these complex patients. This study evaluates the frequency, source, and pathogens identified among SARS-CoV-2 tested patients.

Methodology: This was a multicentre, retrospective cohort analysis of SARS-CoV-2 tested patients from 271 US acute care facilities with >1 day inpatient admission with a discharge or death between 3/1/20- 5/31/20 (BD Insights Research Database [Becton, Dickinson & Company, Franklin Lakes, NJ]). We evaluated pathogens identified from blood, respiratory tract (upper/lower), urine, intra-abdominal (IA), skin/wound and other sources and classified them with respect to Gram-negative (GN), and Gram-positive (GP) bacteria, fungi, and viruses among those SARS-CoV-2 positive and negative.

Results: There were 599,709 admissions with 142,054 (23.7%) patients tested. Among those SARS-CoV-2 tested, 17,075 (12%) were positive and 124,979 (78%) were negative. Higher rates of urine and respiratory cultures and higher rates of P. aeruginosa and fungi were seen in SARS CoV-2 positive patients. The top pathogens for urine cultures were Escherichia coli and Klebsiella pneumoniae, for blood Staphylococcus aureus and Escherichia coli and respiratory Staphylococcus aureus and Pseudomonas aeruginosa. SARS-CoV-2 positive patients had an overall longer length of stay (LOS) than negative, which almost doubled when a positive pathogen was identified.

Conclusions: There were similar rates of positive pathogen identification among SARS-CoV-2 test positive and negative patients, which might highlight similarities in clinical presentation. However, SARS-CoV-2-positive patients had longer hospital LOS and increased with positive culture. Sources of infection and pathogens varied based on a positive or negative SARS-CoV-2 result. Identifying likely causative pathogens of co-infections in the era of SARS-CoV-2 is critical for treatment optimisation.

Physical distancing and non-respiratory notifiable diseases in the Northern Territory, March-May 2020

Authors: Ouli Xie¹,², Peter Markey¹, Anthony Draper¹,², Vicki Krause¹

Affiliations: ¹Centre for Disease Control, Public Health Unit, Top End Health Service, Darwin, Australia, ²Menzies School of Health Research, Darwin, Australia

Abstract:

Background: Strict physical distancing measures and border controls have been introduced in Australia and the Northern Territory (NT) to reduce the spread of Coronavirus Disease 2019 (COVID-19). These measures have been associated with reduced incidence of other respiratory illnesses such as influenza. It is unknown what effect these measures have on non-respiratory communicable diseases. The NT has a widely distributed, and largely remote, population with a disproportionate burden of communicable diseases such as invasive group A streptococcal disease (iGAS) and shigellosis and a unique spectrum of illnesses such as melioidosis and crusted scabies which are notifiable within the NT but not nationally. We aimed to measure the incidences of notifiable non-respiratory infectious diseases in the NT from 15 March 2020 to 15 May 2020 compared to two control periods.

Methods: The incidence of notifiable non-respiratory communicable diseases from 15 March to 15 May 2020, the period of most restrictive physical distancing in the NT, were compared with 2 control periods: (i) the 4 months immediately prior and (ii) the same period from the preceding 5 years. Notifiable disease data were extracted from the NT Notifiable Diseases Surveillance System (NTNDS).

Results and discussion: There was a decline in incidence of communicable enteric illnesses, particularly shigellosis and rotavirus where person-to-person spread is the main transmission route. There was an increase in chlamydial conjunctivitis in areas with endemic trachoma which is under further investigation. There was no observed increase in conditions associated with crowding such as those related to group A streptococcal infection. Rates of sexually transmitted infections did not differ significantly. While our data does not account for changes in healthcare seeking behavior and testing rates, it suggests there may be additional unintended benefits of physical distancing measures for non-respiratory tract illnesses.
COVID–19, Sexual Practices and HIV/STIs Risks among International Students in Sydney

Authors: Sylvester Okeke

Affiliations: 1UNSW, Sydney, Australia

Abstract:

Background: COVID–19 has potentially impacted almost every aspect of human existence including sexual practices. This study investigated the impact of this pandemic on sexual practices and HIV/STIs risks among East Asian and sub-Saharan African international students.

Methods: This study employed a qualitative research design involving 18 international students from East Asian and sub-Saharan African backgrounds, enrolled in various universities in Sydney. Data was generated through telephone semi-structured in-depth interviews. Generated data were processed using NVivo and analysis was guided by the thematic content analysis framework.

Findings: Patterns in the data showed three themes reflecting normative sexual practices and HIV/STIs risks among participants as a result of COVID–19. First, sex was perceived as buffer against mental health pressure associated with COVID–19. Most of the participants reported increased sexual activities (penetrative sex, masturbation and e-sex) especially during lockdowns, as a way of navigating anxiety and uncertainties occasioned with the COVID–19 pandemic. Second, the risk of HIV/STIs was downplayed as preventing COVID–19 was the primary concern while seeking sexual partners. Participants also reported that COVID–19 affected condom access, contact with regular sexual partners and health promotion messages which became skewed, focusing only on COVID–19. Risk associated with alcohol use during lockdown and restrictions and its impact on safe sexual decisions were also cited as possible risks for HIV/STIs. Lastly, there was consensus among participants that socio-economic vulnerabilities faced by international students could increase transactional sex as a means for survival and this could also increase HIV/STIs risks.

Conclusion: This study indicates a need for comprehensive public health response in a pandemic, especially for priority populations. Restricting public health response to COVID–19 around the pandemic without considering other potential spill overs like risky sexual practices could result in reducing mortality and morbidity relating to COVID–19 while increasing these indicators in other aspects of health.

SARS-COV-2 Testing and Outcomes at an Victorian Children’s Hospital over 6 months

Authors: Dr Shidan Tosif1,2,3, Dr Rebecca Hughes1, Dr Laila F Ibrahim1,2,3

Affiliations: 1Royal Children’s Hospital, Melbourne, Australia, 2Department of Paediatrics, Melbourne University, Melbourne, Australia, 3Infection and Immunity, Murdoch Children’s Research Institute, Melbourne, Australia

Abstract:

Background: Studies describing COVID-19 in children have shown low proportions of paediatric cases and generally a mild clinical course. We set out to describe clinical features and outcomes over the first 6 months of the pandemic in Australia, including data from a recent surge in cases in our state.

Methods: We conducted a retrospective cohort study at The Royal Children’s Hospital in Melbourne. It included all paediatric patients (0–18 years) who presented to the hospital and tested for SARS-CoV-2. The 6-month study period started after the first positive confirmed case on 21st March 2020, until 20th September 2020. We recorded epidemiological and clinical data.

Results: There were (~10,000) patients in whom SARS-CoV-2 testing was performed. There were x (%) who had positive SARS-CoV-2 results.

Epidemiological risk factors were identified in x (%) SARS-CoV-2 positive patients and x (%) SARS-CoV-2 negative patients. Comorbidities were identified in x (%) positive patients. The most common symptoms on presentation were x(%) and x(%). However there were also a proportion of children (%) who were asymptomatic.

SARS-CoV-2 S1/S2 IgG serology was performed on x(%) children who were SARS-CoV-2 PCR positive on nasopharyngeal swab. X (%) of children were serology positive.

The majority (x %) of SARS-CoV-2 positive children were managed as outpatients. X (%) of patients required short hospital admissions. One patient (%) developed severe disease requiring intensive care.

Conclusion: Our study describes a large paediatric population, and captures a time where there was significant community transmission in our region. We identified a low rate of SARS-CoV-2 positive cases in children. Most children were asymptomatic or had mild clinical disease. A small number of children were admitted to hospital, and one patient required intensive care. Early data from SARS-CoV-2 S1/S2 IgG serology shows that a proportion of children do not develop antibodies after testing positive.
Impact of COVID-19 restrictions on influenza and RSV activity in Western Australia

Authors: Dr Daniel Kheng Yeoh1,2, Dr David Foley1, Ms Cara Minney-Smith1, Dr Andrew Martin1, Dr Ariel Mace1,3,7, Dr Chisha Sikazwe1,3,6, Dr Huong Le1, Dr Avram Levy1,3,6, Dr Christopher Blyth1,3,7,8, Dr Hannah Moore7

Affiliations: 1Perth Children’s Hospital, Perth, Australia, 2Sir Peter MacCallum Department of Oncology, University of Melbourne, Melbourne, Australia, 3Department of Microbiology, PathWest Laboratory Medicine WA, Perth, Australia, 4Department of General Paediatrics, Perth Children’s Hospital, Perth, Australia, 5Department of General Paediatrics, Fiona Stanley Hospital, Perth, Australia, 6Faculty of Health and Medical Sciences, University of Western Australia, Perth, Australia, 7Wesfarmers Centre for Vaccines and Infectious Diseases, Telethon Kids Institute, University of Western Australia, Perth, Australia, 8School of Medicine, University of Western Australia, Perth, Australia

Abstract:

Background: COVID-19 has had a profound impact in 2020 with a broad range of public health measures implemented regionally. These measures are not specific to SARS-CoV-2 transmission; therefore have potential to impact other respiratory viruses. We aimed to describe the weekly detections of paediatric respiratory syncytial virus (RSV) and influenza virus through winter 2020 in Western Australia (WA), compared to the previous eight seasons in the context of implementation and subsequent relaxation of local COVID-19 restrictions.

Methods: Laboratory data were prospectively collected as part of routine regional public health surveillance, from January 2012 to 30th August 2020. Cases were defined as detections of influenza virus or RSV by validated nucleic acid or antigen detection kits in children resident in the metropolitan area; samples were drawn from all public hospitals and emergency departments. Case numbers in 2020 and the average epidemic curve (2012-2019) were mapped against public health measures in WA.

Results: Following implementation of initial stay-at-home orders (week 14) there was a reduction in paediatric RSV (n=10) and influenza (n=1) detections that was sustained to the end of winter (week 35). Compared with average detections from 2012-2019, viral detections in 2020 were 98.0% lower for RSV and 99.4% lower for influenza. This reduction in activity was sustained in the context of relaxation of local COVID-19 measures (from week 18), including re-opening of schools. Borders to interstate and international travellers have remained closed.

Conclusion: Following implementation of COVID-19 restrictions in WA, RSV and influenza viral activity remained low throughout winter, even following relaxation of internal restrictions. This is likely due to closure of external borders and the resultant prevention of viral introductions to a susceptible population. The impact of reduced local RSV and influenza activity on the Northern Hemisphere winter season and future local seasons remains uncertain and warrants ongoing surveillance.

Duration of viral shedding in patients with mild-moderate COVID-19 disease in Ballarat

Authors: Dr Mehrab E Hossain1, Dr David Lister1, Dr Caroline Bartolo2,2, Dr Paul Kinsella3, Dr James Knox1, Dr Rosemary Aldrich4, Dr Raquel Cowan1,2, Dr Robert Commons1,5

Affiliations: 1Internal Medical Services, Ballarat Health Services, Ballarat, Australia, 2Department of Infectious Diseases, University Hospital Geelong, Geelong, Australia, 3Dorevitch Pathology, Melbourne, Australia, 4Directorate of Chief Medical Officer, Ballarat Health Services, Ballarat, Australia, 5Charles Darwin University and Global Health Division, Menzies School of Health Research, Darwin, Australia

Abstract:

Background: The COVID-19 pandemic has led to an unprecedented global shutdown. Relatively little is known about the duration of viral RNA shedding in patients with mild-moderate disease, and the correlation between RNA detection and symptoms.

Aim: This retrospective cohort study aimed to explore the duration of viral shedding in COVID-19 patients with mild-moderate disease in a regional setting and to investigate associations with symptoms to inform when it is safe to release patients from isolation.

Methods: Twelve patients were diagnosed with COVID-19 disease using a positive RT-PCR SARS-CoV-2 assay from oropharyngeal and deep nasopharyngeal sampling and were managed through Ballarat Health Services between March 1 and May 1, 2020. Patients were retested if they were afebrile for >72 hours, asymptomatic and >14 days since symptom onset. If positive on retesting, patients were tested every 3 to 7 days thereafter.

Results: Patients underwent testing a median of 4 days (range 1-12) after initial symptom onset. Duration of symptoms ranged from 1 to 36 days. Positive tests were recorded up to a median of day 21 (range 6-38). Cycle thresholds were inversely correlated with time since symptom onset (p<0.0001). Median time to the first negative test was 25 days (range 12-32). Two patients had a first negative test before returning positive tests after this. Subsequent tests in these patients were negative. Two patients who had remained asymptomatic for >7 days after their initial symptom onset had recrudescence of very mild symptoms on day 13 and 14; both tested positive on follow-up tests at this time.
Conclusion: This study demonstrates prolonged shedding of COVID-19 in patients with mild disease. However, it remains unclear when patients can be removed safely from isolation. It suggests that some patients with mild disease can have recrudescence of symptoms a week or more after their initial symptoms resolved.

COVID-19 pandemic – A tertiary Melbourne hospital’s experience

Authors: Dr Brodie Farrow, Dr Megan Rees, Dr Asha Bonney, Professor Benjamin Cowie, Dr Alistair Miller

Affiliations: Melbourne Health, Parkville, Australia, Melbourne University, Parkville, Australia

Abstract:

Objectives: High case numbers of COVID-19 have been seen in Victoria, particularly during the second wave of the pandemic from June 2020. The Royal Melbourne Hospital provided care for hundreds of COVID-19 positive patients in a variety of settings.

We aimed to characterize demographics, management and outcomes of patients admitted to a major tertiary hospital during Victoria’s COVID-19 outbreak. We aim to provide a descriptive account of predisposing factors, medical management delivered, and clinical outcomes, highlighting the complexities of caring for this population.

Methods: We performed a single center retrospective review of COVID-19 positive patients admitted for a minimum of one night to the Royal Melbourne Hospital (City Campus) between March 1st and August 31st 2020. Data was collected from medical records, additional data for 30-day mortality was obtained from DHHS.

Results: Two hundred COVID positive patients were admitted over this 6-month period, median age was 65 (range 16 to 101 years), 50% were women. Most patients (76%) were older than 50, with 25% over 80 years. Residents of aged care facilities comprised 22% of patients, 13% were Health Care Workers and 6% were returned travellers. Severe disease was common with 59% patients requiring oxygen, for a median number of 3 days, 23% admitted to ICU, 14% required intubation. Dexamethasone was used for 47% of patients and Remdesivir for 21%. Average hospital length of stay was 9 days (range 1-64). The overall 30-day mortality (all-cause) was 19%, however for those aged over 80 the rate was 46%. Aged care residents accounted for a large proportion (48.6%) of deaths. We found no significant difference in prevalence of diabetes (30-31%) or pre-existing lung disease (22%) between all patients admitted and those who died.

Conclusions: This comprehensive cohort study describes a cohort with wide age range, frequently severe disease and significant mortality rate.

Does cardiorespiratory disease affect the risk of SARS-CoV-2 infection in children?

Authors: Mr. Cassidy Du Berry, Dr. Thomas Saunders, A/Prof Nigel Crawford, Dr. Shidan Tosif, Dr. Danielle Wurzel

Affiliations: Murdoch Children’s Research Institute, Parkville, Australia, The Royal Children’s Hospital, Parkville, Australia

Abstract:

Background: There is limited data in paediatric populations evaluating whether chronic cardiorespiratory conditions are associated with increased risk of COVID-19.

Aim: To compare the rates of chronic cardiorespiratory disease and other comorbidities in children testing positive (SARS-CoV-2+) compared to those testing negative (SARS-CoV-2-) at The Royal Children’s Hospital, Melbourne, during the COVID-19 global pandemic.

Methods: Prospective cohort with nested case-control study of all children tested for SARS-CoV-2 by nasopharyngeal/oropharyngeal sampling at The Royal Children’s Hospital between March and September 2020. Children were identified prospectively via laboratory notification with positive age and sex-matching of SARS-CoV-2+ to SARS-CoV-2- (1:2). Clinical data was extracted from the electronic medical record.

Results: In total, 171 SARS-CoV-2+ children (M:F ratio of 0.56, median age 3.6 yrs, range 0.1 to 19.0 yrs) were matched to 333 SARS-CoV-2- children (M:F ratio of 0.56, median age 3.5 years, range 0.1 to 18.0 yrs). The most commonly reported comorbidities included asthma, cardiac disease and obstructive sleep apnoea. Of the positive cases, 5.3% had asthma, 3.6% had cardiac disease and 2.3% had obstructive sleep apnoea. There was no significant difference between disease sub-groups in the negative group, 5.1% had asthma, 1.8% had cardiac disease and 2.7% had obstructive sleep apnoea. Overall, SARS-CoV-2+ children were no more likely than SARS-CoV-2- children to report a history of cardiorespiratory disease (p=0.472). Of the children who tested positive, 34.5% were asymptomatic and 18 (10.5%) were hospitalised. Within the SARS-CoV-2+ positive group, those with chronic cardiorespiratory disease were no more likely to exhibit symptoms of COVID-19 compared to those without pre-existing cardiorespiratory disease (p=0.921).

Conclusions: From this single site dataset, rates of pre-existing cardiorespiratory disease were similar in SARS-CoV-2+ and SARS-CoV-2- children and did not appear to predict presence of symptoms.
Concurrent Session 3D - Laboratory diagnostics
On Demand from 10:00am AEDT

Importance of risk-stratification for SARS-CoV-2 RT-PCR testing protocols

Authors: Dr Eloise Williams1, Dr Katherine Bond1, Prof Benjamin Cowie2, Prof Caroline Marshall2, Dr Stephen Muhi2, A/Prof Louis Irving3, A/Prof Mark Putland4, A/Prof Douglas Johnson5, Prof Kirsty Buising6, Prof Deborah Williamson1,7

Affiliations: 1Department of Microbiology, Royal Melbourne Hospital, Melbourne, Australia, 2Victorian Infectious Diseases Service, Royal Melbourne Hospital, Melbourne, Australia, 3Department of Respiratory, Royal Melbourne Hospital, Melbourne, Australia, 4Department of General Medicine, Royal Melbourne Hospital, Melbourne, Australia, 5Department of Emergency Medicine, Royal Melbourne Hospital, Melbourne, Australia, 6Department of Microbiology and Immunology, University of Melbourne, Melbourne, Melbourne, Melbourne, 7Microbiological Diagnostic Unit Public Health Laboratory, Peter Doherty Institute for Infection and Immunity, Melbourne, Australia

Abstract:
Background: SARS-CoV-2 reverse-transcription polymerase chain reaction (RT-PCR) tests are the gold standard diagnostic test for COVID-19 however clinical performance of RT-PCR may be impacted by many factors including variability in sample collection, sample site and timing of illness. Here we provide data on clinical test performance by analyzing discordant SARS-CoV-2 RT PCR results among individuals who initially tested negative and were subsequently rested within 7 days.

Methods: A risk-based approach to screening was undertaken in the Royal Melbourne Hospital healthcare setting. All patients requiring hospital admission who met criteria for suspected COVID-19 required two consecutive negative combined deep nasal and oropharyngeal swabs, or one negative respiratory tract sample prior to standing down transmission-based precautions.

Results: Between 1st June and 21st July 2020, a total of 15,358 SARS-CoV-2 RT-PCR tests were performed at Royal Melbourne Hospital, Melbourne on 12,569 unique patients. Overall, 2,251 / 12,569 patients (17.9%) had repeat testing performed within the study period. Repeat testing was performed within 7 days in 1,391 patients. Of these, 25/1,391 (1.8%) had initial negative results followed by subsequent positive result within 7 days. The median time to positive result after initial negative result was 3.3 days [IQR 3.0–4.1 days]. All 25 patients had at least one epidemiological risk factor for COVID-19 (healthcare worker; known contact with confirmed COVID-19 case; contact with confirmed residential or healthcare-associated outbreak). Importantly, 12/25 (48%) of these patients were asymptomatic at the time their initial sample was collected.

Discussion: Our observations suggest that false-negative results are uncommon and were not observed outside of well-defined epidemiological risk groups. These findings suggest a risk-based approach to repeat testing for SARS-CoV-2 based on epidemiological risk factors may safely reduce the need for repeat sampling in a large proportion of patients, resulting in improved hospital resource utilization.

Reclassifying Indeterminate SARS-CoV-2 PCR results for improved public health outcomes

Authors: Dr Katherine Garnham1, Dr James Newcombe2, Mr Alexander Carrera3, Mr Jaber Shaqailah1, Ms Linda Lee2, Mr Bruce Wong1, Dr Katerina Mitsakos1, Dr Bernard Hudson3

Affiliations: 1Department of Infectious Diseases and Microbiology; Royal North Shore Hospital, St Leonards, Australia, 2Department of Molecular Haematology, Royal North Shore Hospital, St Leonards, Australia

Abstract:
Introduction: Current Australian guidelines require the detection of two different targets in the SARS-CoV-2 viral genome for the diagnosis of COVID-19 by nucleic acid amplification testing (NAAT). The significance of one or two low positive (below the published limit of detection of the assay) remains uncertain. Current NSW Health Pathology guidelines declare such results ‘Indeterminate’ and mandate NAAT on a recollected specimen, delaying determination of the patient’s COVID-19 status, impeding Public Health Unit (PHU) response and increasing costs.

We aimed to determine the clinical sensitivity and specificity of Indeterminate results on the AusDiagnostics SARS-CoV-2 multiplex tandem RT-PCR (MT-PCR) assay.

Methods: 12 month mixed retrospective audit/prospective observational study using upper respiratory tract specimens and serum from patients >18 years old with Indeterminate MT-PCR results. Further testing will be undertaken using the Bio-Rad Droplet Digital PCR (ddPCR) assay to determine absolute quantification of sample viral load. The analytical and clinical sensitivity and specificity of the AusDiagnostics MT-PCR and BioRad ddPCR assays will be determined at different viral load thresholds using positive SARS-CoV-2 serology or subsequent positive NAAT as the gold standard.

Results: 178 specimens were identified from 128 patients. 109 results (62 patients) had ‘confirmed’ COVID-19 by further testing, representing a mix of early and late infection. 69 patients await serology at the time of writing, and ddPCR testing is underway. The ‘unconfirmed’ group were significantly younger (average age 45.56 v 53.87 years old, p=0.01) and more likely to have only a single target positive (38/69 vs 26/109, p<0.001). There was no statistically significant difference between ‘confirmed’ and ‘unconfirmed’ groups in i) which single target was positive, ii) fluorescence values or iii) cycle threshold values.
**How Quick is a Rapid Test for SARS-CoV-2?**

**Authors:** Dr Adam Jenney1,3, Ms Amanda Dennison2, Ms Lisa Liolios2, Ms Jess Nguyen2, Dr Katie Cronin1,3, A/Prof. Denis Spelman1,3

**Affiliations:** 1Department of Infectious Diseases, Monash University, The Alfred Hospital, Melbourne, Australia, 2Microbiology Unit, Alfred pathology Service, AlfredHealth, Melbourne, Australia

**Abstract:**

Some patients require urgent SARS-CoV-2 PCR testing to facilitate and expedite their care. However, these tests are often in short supply and need individual attention that is disruptive to laboratory workflow.

Our hospital undertakes a minimum of three batched ‘runs’ of SARS-CoV-2 PCR testing at 1100, 1800 and 2300 hours daily on a cobas 6800 (Roche) machine with a turn-around-time range of 6-24 hours. Requests for individual sample testing using the GeneXpert (Cepheid) may be made directly to a microbiology consultant if the patient has one of the reasons for an urgent result (see below).

Of the first 100 requests for rapid testing 73 were accepted and 27 were declined.

Accepted tests: 1) need for emergent surgery (n=23); 2) imminent receipt of a transplanted solid organ (n=4); 3) palliation - for relatives to visit (n=11); 4) complicated (often ICU) patients but do not need surgery (n=16); 5) Patients with behaviour that makes isolation very difficult (n=11) 6) Other - after discussion with consultant(s) (n=8).

The reasons for rejection were: 1) that the rapid test would not clear the patient from ‘suspected Covid’ status (n=13); 2) the test was not urgent (n=10); 3) the sample was already on a batched test run (n=1).

For the 41/73 patients, with samples not already in the laboratory (at the time of rapid testing request) and where time data was available, it took a median of 43 minutes (range 14-139) for the sample to arrive. For 66/72 patients, the in-laboratory testing and reporting median time was 69 minutes (including 48-50 minutes run time).

‘Rapid’ testing can greatly reduce the time for a result, though this could be quicker, and unnecessary testing can be reduced by a consultative service. (The next 200 requests will also be reported in this presentation).

**The role of repeat SARS-CoV-2 PCR testing to exclude COVID-19 infection**

**Authors:** Dr Ashmitha Thomas1, Dr Christian McGrath1, Assoc. Prof Craig Aboltons1, Dr Yvonne Hersusianto1, Dr Saliya Hewagama1

**Affiliations:** 1Northern Health, Epping, Australia

**Abstract:**

Diagnosis of SARS-CoV-2 infection is primarily made on the basis of RT-PCR testing, commonly utilizing a combined nasopharyngeal sampling strategy. Despite excellent in-vitro performance, estimates of nasopharyngeal RT-PCR sensitivity is between 63-73%.

Northern Health developed a testing algorithm for inpatients based on patient epidemiology and their presenting clinical features – stratifying high risk patients to require two swabs prior to clearance from COVID infection control precautions, and lower risk patients to require only one swab to exclude disease. We audited testing performed between 1st March and 10th August 2020.

Results were considered discordant if an initial negative test was followed by a positive result within the same clinical episode - within 14 days of each other, and if the stated clinical symptom onset preceded the dates both tests were performed. Patients whose first test was performed when asymptomatic (i.e. tested as part of a known exposure / outbreak) were excluded.

During the audit period, 112 patients had more than 1 test performed with discordant results within the same clinical episode. Twenty-three patients had discordant results were possibly attributed to false negative initial test. All but 1 patient was either a healthcare worker or, had a known close contact at the time of testing. Fifty-seven percent (13/23) of false negative tests were performed within 1 day of symptom onset. Only 2 of the 23 patients had a false negative test during an inpatient admission.

Despite the stated sensitivity of RT-PCR testing, false negative tests were extremely rare in a symptomatic hospitalized cohort. A single COVID swab performed on admission may be sufficient for patients without a known COVID-19 close contact.
Broadly Validated Immunoassays for COVID-19 are needed

Authors: Dr Gail Brenda Cross1, Dr Claire Naftalin1, Dr Natasha Bagdasarian2, Dr Shoban Kumar1, Dr Sai Meng Tham1, Dr Rawan Almuataz2, Dr Teng Hazel1, Prof Paul Thambyah3, Dr Chia Wan Ni3, Dr Chek Meng Poh1, Prof Dale Fisher4, Prof Wang Lin Fa4, Prof Lisa Ng3

Affiliations: 1National UHSingapore, Singapore, Singapore, 2National University of Singapore, Singapore, Singapore, 3Infectious Diseases Horizontal Technology Centre (ID HTC), Agency for Science, Technology and Research (A*STAR); Singapore Immunology Network, A*STAR, Singapore, Singapore, 4Emerging Infectious Disease Programme, DUKE-NUS, Singapore, Singapore

Abstract:
Well-validated serologic assays for SARS-CoV-2 are urgently needed.

We conducted a longitudinal study examining the seroconversion rates of 52 SARS-CoV-2 PCR-negative, low-epidemiologic-risk hospitalised patients in our institution. Patients had acute and convalescent sera tested using a surrogate neutralisation immunoassay which detects total antibody response against viral spike protein receptor-binding domain (cPass), and a SARS-CoV-2 specific epitope-based IgG ELISA assay. Whilst immunodominant antibodies were not detected by cPass, 5/52 (9.6%) patients demonstrated the presence (3 standard deviations above a healthy control mean) of SARS-CoV-2 epitope specific antibodies against spike and/or nucleocapsid proteins (S14P5, S20P2, N4P5). Two patients had proven bacterial infections, one had congestive heart failure, and two had undifferentiated acute respiratory tract infections. The SARS-CoV-2 epitope specific antibodies have a sensitivity and specificity ranging between 91 – 100% when validated against sera from seasonal human coronavirus, recovered SARS patients and healthy donors. Our finding of the presence of SARS-CoV-2 specific antibodies in PCR-negative, low-epidemiologic-risk patients without typical features of COVID-19, may suggest seroconversion and thus exposure to SARS-CoV-2, although the data from the validated, regulator-approved cPASS assay refutes this. Alternatively, the presence of antibodies by the sensitive and specific epitope assay, are in fact, false positives. This discrepancy highlights the need for immunoassays to be validated in hospitalised cohorts to better understand the clinical relevance and applicability of the multitude of COVID-19 immunoassays currently available.

How does the laboratory select a SARS-CoV-2 serological assay?

Authors: Stephanie Spring1,2, Amanda Dennison1, Vanessa Deane1, Sarah Glenn1, Emily Leung1, Brian Chong1, Suellen Nicholson1, Hans Schneider1, Denis Spelman1,2, Adam Jenney1,2

Affiliations: 1Alfred Pathology Service, Alfred Health, Melbourne, Australia, 2Department of Infectious Diseases, Alfred Hospital, Monash University, Melbourne, Australia, 3Victorian Infectious Diseases Reference Laboratory, Melbourne, Australia

Abstract:
Clinicians are increasingly requesting SARS-CoV-2 serology though the clinical utility of the test is yet to be established. A reliable and robust assay will be required but this is challenging given, currently, there is no gold standard.

We sought to compare five commercially available SARS-CoV-2 assays (from Roche, DiaSorin, Euroimmun, Diesse and Abbott). Three patient cohorts were assessed:
1) 55 ‘Pre-COVID’ era samples from 54 patients collected before December 2019 with respiratory symptoms
2) 34 ‘Pre-COVID’ era samples (from 34 patients without respiratory symptoms)
3) 64 samples from 34 patients with confirmed SARS-CoV-2 infection (positive PCR on upper respiratory specimen).

Discrepant results were further analysed using the Wantai total Ab assay and a virus neutralisation assay.

Of the ‘pre-COVID’ samples, all were negative on all SARS-CoV-2 assays except for one influenza-positive sample and one CMV-positive sample that gave (presumably false) positive results for SARS-CoV-2 on the Diesse and Euroimmun assays respectively. The 64 samples from known PCR positive samples were assessed at varying time points post-diagnosis (range 1-127 days).

58 specimens were tested on all five platforms, and six specimens on four platforms (Diasorin excluded). 52/64 (81.3%) gave consistent results across all platforms used, however 12 samples yielded discrepant results on at least one platform. All platforms gave discrepant results in more than one sample.

This variation is likely due to the different targets of the individual assays; the timing of the sample collection in relation to symptoms (i.e. timing of seroconversion), and the individual assay’s sensitivity in relation to seroconversion. Half of the discrepant samples were from immunocompromised hosts.

In conclusion, none of the five available platforms outperformed the others therefore other factors (eg. the degree of automation) will be important in a laboratory’s selection of an appropriate SARS CoV 2 serological assay.
The use of dried blood spots for evaluating SARS-CoV-2 antibodies

Authors: Dr Zheng Quan (Ryan) Toh1,2, Ms Rachel Higgins1, Mr Jeremy Anderson1,2, Ms Nadia Mazarakis1,2, Dr Lien Anh Ha Do1,2, Ms Karin Rautenbacher2, Mr Pedro Ramos1, Ms Kate Dohle1, Dr Shidan Tosi1,2,3, Prof Nigel Crawford1,2,3, Prof Kim Mulholland1,2, A/Prof Paul Licciardi1,2

Affiliations: 1Murdoch Children’s Research Institute, Parkville, Australia, 2The University of Melbourne, Parkville, Australia, 3The Royal Children’s Hospital, Parkville, Australia

Abstract:
Serosurveillance is important for estimating the true number of SARS-CoV-2 infections within a population so that appropriate public health responses can be implemented. This is because the true level of exposure to SARS-CoV-2 within a population or community is often underestimated by polymerase chain reaction (PCR) measurements alone, due to the large number of ‘asymptomatic’ COVID-19 cases (up to 40%), resulting in many cases being missed or not PCR tested. However, serosurveys can be costly and logistically challenging. Furthermore, collecting venous blood samples for serology testing has been more difficult during this pandemic due to infection control processes. The use of dried blood spot (DBS) specimens would provide a more feasible approach to serosurveillance studies of SARS-CoV-2 antibodies but requires evaluation.

To determine if DBS specimens can reliably detect SARS-CoV-2 antibodies, we compared antibody responses in serum and eluates from DBS specimens collected from venous blood sampling. Participants who had a SARS-CoV-2 positive test (nasal/throat swab PCR-positive) and their household close contacts were recruited for the study.

A total of 95 specimens were collected from 74 SARS-CoV-2 infected and uninfected participants (aged 2-63 years old). All infected participants were either asymptomatic or had mild symptoms. We found that the seropositivity rate was similar between serum and DBS specimens (18.9% (18/95) v 16.8% (16/95)), respectively. Similar IgG levels to the SARS-CoV-2 RBD and S1 proteins were detected between serum and DBS specimens, with a high degree of correlation observed (r=0.99, p<0.0001). Moreover, the storage time for DBS specimens (up to 112 days) did not affect measurement of SARS-CoV-2 IgG responses when compared with their respective serum samples.

Our findings suggest that DBS samples are a reliable approach for measurement of SARS-CoV-2 IgG levels. This will help facilitate large scale serosurveillance studies to inform public health responses during the COVID19 pandemic.

Validation of a well-accepted SARS-CoV-2 paediatric swabbing method through the DETECT Study

Authors: A/Prof Asha Bowen1,2,3, Dr Hannah Thomas1, Ms Marianne Mullane1, Ms Alexandra Whelan1, Ms Adele Leahy1, Ms Tina Barrow1, Ms Sherlynn Ang1, Ms Andrea Padley1, Ms Lynn Sprigg2, Professor David Speers3, Professor Donna Cross1, Professor Peter Gething1

Affiliations: 1Child and Adolescent Health Service, Nedlands, Australia, 2Telethon Kids Institute, Nedlands, Australia, 3Wesfarmers Centre of Vaccines and Infectious Diseases, Nedlands, Australia, 4PathWest, Nedlands, Australia

Abstract:
Background: In early 2020 the SARS-CoV-2 virus emerged and shortly thereafter, a global pandemic was declared. In mid-March, WA lockdown restrictions came into effect and schools were closed. The Minister for Health announced the DETECT Schools Study on 1st May to reassure the community as schools reopened for Term 2.

Methods: DETECT Schools aims to quantify and characterise any transmission of SARS-CoV-2 in WA schools by swabbing up to 6,000 students and staff monthly for three months. Concurrent surveys investigate the impact of the pandemic on the wellbeing of school communities. Uncomfortable nasopharyngeal swabs are commonly deployed at COVID testing clinics: these were not deemed appropriate for this study by consumers or study staff. Instead, a combined throat and anterior nares swab with slightly reduced test performance was chosen for comfort, compliance, high throughput, and ease of swabbing. DNA extraction from flexible FLOQ swabs in viral transport medium is followed by in-house SARS-CoV-2 polymerase chain reaction testing. Confirmatory testing of any positive swabs is performed on the GenXpert SARS-CoV-2 platform.

Results: To date, 13,988 swabs have been collected with 0 testing positive for SARS-CoV-2 and no false positive results found in the low prevalence setting of WA schools. Participants have reported high acceptability, with 71% experiencing no or minimal discomfort.

Conclusions: Our experience supports emerging data that various non-nasopharyngeal samples are appropriate, well received, and efficient for paediatric detection of SARS-CoV-2. The study method combines throat and anterior nose sampling, maximising sensitivity while causing minimal discomfort and thus combating noncompliance rates by significantly increasing the acceptability of testing. Whilst no comparative testing was performed, this testing approach could be repurposed in the event of increased community transmission in WA for rapid COVID-19 detection in other settings.
Concurrent Session 3E - Attitudes, Behaviours and Community Engagement
On Demand from 10:00am AEDT

The barriers and enablers to downloading the COVIDSafe app – a topic modelling analysis

Authors: Dr Nicolas Smoll¹, Mrs Jacina Walker², Professor Gulam Khandaker²

Affiliations: ¹University of Queensland, Rockhampton, Australia, ²Central Queensland Public Health Unit, Rockhampton, Australia

Abstract:

Introduction: We report a survey in regional Queensland to understand the reasons for suboptimal uptake of the COVIDSafe app.

Methods: A short 5 minute electronic survey disseminated to health care professionals, mining groups and school communities in the Central Queensland region. Free text responses and their topics were modelled using natural language processing and a latent diricholet model.

Results: We received a total of 723 responses of which 69% downloaded the app and 31% did not. The respondent’s reasons for not downloading the app discussed four topics; “privacy and personal information safety”, “app information safety”, “device and app function (e.g. battery life)”, and “other privacy concerns”. Among the 472 people who downloaded the app, the two topics most commonly listed were “to assist with contact tracing” and “to return to normal”.

Conclusions: This survey found that concern around privacy, device and app function are the major barriers to users downloading the application.

Implications for Public Health: Health promotion campaigns aimed at increasing the uptake of the COVIDSafe app should focus on promoting how the app will assist with contact tracing to help return to “normal”. Additionally, health promotors should discuss the app’s impacts on privacy, device and app function.

Community’s perceived high risk of coronavirus infections during early phase of epidemics

Authors: Mr Zelalem Nigussie¹

Affiliations: ¹University Of Gondar, Ethiopia, Gondar, Ethiopia

Abstract:

Background: Epidemiological studies during the early phase of the coronavirus (COVID-19) pandemics reported different level of people’s risk perception in different countries. There is a paucity of data on perceived high risk of COVID-19 and associated factors in Ethiopia. We sought to assess the prevalence of community’s perceived high risk about COVID-19 infections and associated factors among Gondar town community.

Methods: A cross-sectional study was carried out from April 20 to 27, 2020 in Gondar town community, Northwest Ethiopia. Multistage cluster sampling technique was used to recruit 635 participants. Structured and pre-tested questionnaire was used to collect the data. Descriptive statistics, bivariate and multivariable binary logistic regression were used to summarize the results.

Results: A total of 623 participants were considered in the analysis with a response rate of 98.1%. The prevalence of coronavirus high risk perceptions of the respondents was found to be 23.11% (95% CI; 19.80% - 26.43%). Age above 45 years (AOR=1.41, 95%CI; 1.19-2.66), college and above educational level (AOR=0.28, 95%CI; 0.21-0.98), and poor knowledge towards COVID-19 virus (AOR=1.57, 95%CI; 1.09-2.23) were significantly associated with perceived high risk about COVID-19.

Conclusions: The prevalence of perceived high risk of COVID-19 was found to be low. Factors such as age, educational status, and knowledge about COVID-19 virus were found to be independent predictors of perceived high risk towards COVID-19. Government and non-government organizations should use formal and informal means of educating the community.

Key words: COVID-19, Perceived high risk of coronavirus, Gondar City community.
A Discrete-Event, Simulated Social Agent-Based Network Transmission (DESSABNeT) for transmissible diseases

Authors: Dr Nicolas Smoll1, Professor Chris Stapelburg1, Professor Gulam Khandaker2

Affiliations: 1University of Queensland, Rockhampton, Australia, 2Central Queensland Public Health, Rockhampton, Australia, 3Gold Coast, Rockhampton, Australia

Abstract:

Introduction: Agent-based modeling (ABM) is an approach to simulating complex systems such as economic/financial, transport, ecological, sociological and here, a communicable disease network. Advantages of ABMs lie in their capability to model the complex behavioural and social network interactions that contribute to the spread of a communicable disease. Instead of using the parameter R0 to set the speed of spread of the illness through a population, the parameter R0 emerges as a function of the underlying societal structure and contact patterns.

Methods: This project describes the creation of an ABM or a “small-world simulator” known as Discrete-Event, Simulated Social Agent-Based Network Transmission (DESSABNeT). We will simulate the initial Sydney Outbreak as well as both of the Melbourne “waves” of COVID-19.

Results: We demonstrate that DESSABNeT is capable of modelling the R0 value as an emergent phenomenon. We demonstrate reasonably accurate incident and prevalent cases, as well as hospital bed occupancy data, and describes the spread across a social network.

Conclusions: The DESSABNeT simulator argues that the application of traveler quarantine, social distancing and other restrictions were crucial to the control of the COVID-19 pandemic in Australia. The rate of influx of positive cases into a simulated world is crucial to starting of sustained community-based transmission

Evaluation of a COVID-19 phone monitoring service

Authors: Andrea Clarke1

Affiliations: 1Northern Health, Bundoora, Australia

Abstract:

Background: The coronavirus (COVID-19) pandemic has required health services to be agile in responding to patients diagnosed with the virus. Northern Health (NH) rapidly established a COVID-19 Phone Monitoring Service in response to increasing COVID-19 cases in Melbourne’s northern suburbs, with frequent redesign occurring during implementation to respond and adapt to the changing landscape. The service was designed to monitor for clinical deterioration, provide education and support, and to escalate care where required.

Method: A mixed methods evaluation of the COVID-19 Phone Monitoring Service using the RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) framework. All participants in the service were included in the evaluation. Methods adopted for the evaluation included collection of demographic data, patient experience surveys, staff experience interviews, and file audits.

Results: 900 patients were referred to the service over the first 9 weeks. The mean age was 35 (range 0-93). 54% of patients were female and half were born outside Australia. 34% of patients were categorised as at risk of clinical deterioration. During the acute phase of their illness, 52% of patients reported no issues and 16% were uncertain about release from isolation. 16% of patients reported persistent symptoms 30 days after illness onset and fatigue was the most common persistent symptom (58%). 97% of respondents to the patient experience survey were satisfied with the service. Staff interviews emerging high level themes: Commissioning (staffing, policies and procedures), Co-ordination (DHHS, ambulance Victoria, NH ED), Information accessibility (consumer knowledge uncertainty), Service delivery (engagement and empowerment), Workforce (high satisfaction, contributing to the ‘war effort’).

Conclusion: The service shows promise as an effective model for monitoring COVID-19 patients. Despite a rapidly changing environment the service has met expectations of patients, the organisation and public health. The model has the potential to be adopted to monitor patients with other infectious diseases.
Community strength driving communications: NSW’s Aboriginal Health COVID-19 Communications campaign

Authors: Ms Helen Gardiner1, Ms Kate Holloway1, Ms Geraldine Wilson-Matenga1

Affiliations: 1NSW Health Ministry Of Health, 1 Reserve Road, Australia

Abstract:

The COVID-19 Pandemic has disproportionately impacted Indigenous populations internationally. Anticipating this risk to NSW’s Aboriginal people, NSW Health developed a rapid, culturally appropriate communications campaign to prepare Aboriginal people to keep themselves and their communities safe. NSW Health and the Aboriginal Health and Medical Research Council of NSW (AH&MRC) developed a two pronged approach, whereby the AH&MRC focussed on messaging for the Aboriginal Community Controlled Health Services and the NSW Health focused on public health messaging for individuals and communities.

The NSW Health Aboriginal Communications Strategy merged with the State-wide communication strategy to develop the Keep our Mob safe campaign with its own specific branding. The public health messaging addresses three critical themes: social and emotional wellbeing; maintaining good health and chronic disease management; and COVID-19 safe behaviours and getting tested. It operates across a range of platforms and aims to; share the facts in a culturally relevant way, be consistent across government, be flexible and adaptable to change and work with key partners for effective and relevant distribution and amplification.

Elements of the campaign’s continued success are: partnerships that have enabled shared insights, connections, expertise and perspectives and led to quick agreement on the strategic approach early on; engagement of an Aboriginal owned creative agency which ensured development from a place of cultural understanding based on relationships with key Aboriginal community representatives; and connection with the Aboriginal community controlled sector supported by participation of the AH&MRC in the campaign Working Group.

How do health consumers find and apply health information during a pandemic?

Authors: Dr Rebecca Jessup1,2,3, Ms Cassandra Bramston1, Mr Anthony Gust1, Mr Michael Kirk1, Mr Paul Conilione1, Professor Brian Oldenberg1, Associate Professor Adam Simcic2, Mr Mark Tacey1, Professor Don Campbell2, Mr Emiliano Zucchi1, Ms Stefania Zen1, Ms Natali Cvetanovska1, Ms Anita Trezona4, Dr Cilla Haywood1, Associate Professor Bev Copnell2, Dr Tina Cao1, Dr Tilahun Haregu1, Dr Alison Beauchamp9

Affiliations: 1Northern Health, Cooper Street, Australia, 2LaTrobe University, Bundoora, Australia, 3Melbourne University, Parkville, Australia, 4Trezona Consulting Group, Brunswick, Australia, 5Monash University, Clayton, Australia

Abstract:

Background: The coronavirus pandemic (COVID-19) has required individuals to find and apply health and behaviour information rapidly. There are many and varied sources of information, with differing levels of complexity and trustworthiness associated with this information. This project aims to understand how patients attending Northern Health, specifically those who have frequent ED presentations and admissions, are accessing, interpreting and applying information during COVID19, and how this impacts on their decision making about managing their health.

Method: Interviews using a series of categorical and open ended questions. We conducted a thematic analysis of the interview data providing an overview of key challenges for patients in understanding and using information to manage their health during the COVID19 pandemic. Medical histories of participants were audited to determine pre- and post- COVID-19 rates for hospital presentations, rates of unplanned hospitalisations.

Results: 200 patients participated (mean 66yrs, range 22 – 98). 115 interviews were conducted in a language other than English. Source, interpretation and application of information differs across age and population groups. Participants sourced information from two or more places (n=140, 70%), the most common was television (n=145) followed by internet (n=92 total, 62 from social media sources). Speaking a language other than English was associated with lower knowledge about preventative strategies and restriction requirements. There were themes of fear and misinformation leading to avoidance of hospital care, corresponding with a statistically significant reduction in hospital use by this population pre- versus during the pandemic.

Conclusions: Age and language influences how information is sources and how it is interpreted and applied. Misinformation and fear appear to have impacted on hospital use during the pandemic.
Spleen Australia’s response to an unforeseen peak in contact during COVID-19

Authors: Ms Natasha Agari1,2, Ms Penny Jones1,2, Associate Professor Ian Woolley1,2,3,4, Associate Professor Denis Spelman1,2

Affiliations: 1Spleen Australia, Alfred Hospital, Melbourne, Australia, 2Department of Infectious Diseases, Alfred Hospital, Melbourne, Australia, 3Monash Infectious Diseases, Monash Health, Clayton, Australia, 4Centre for Inflammatory, Monash University, Clayton, Australia

Abstract:

Introduction: Spleen Australia (SA) aims to reduce overwhelming post-splenectomy infections in people without a functioning spleen who reside in Victoria, Queensland and Tasmania through education, vaccination and antibiotic prophylaxis. The service has been operational for 17 years.

Objectives: To describe the observed increase in contact from patients and healthcare providers (HCP) during the COVID-19 pandemic, the increased patient concern regarding COVID-19 and SA’s response.

Methods: The number of contacts (phone, email, etc) and new registrations to SA was extracted and compared with the previous year. Key dates throughout the course of the pandemic including first confirmed case and lockdown stages were reviewed, in order to identify if there was correlation between the increase in contact, new registrations and COVID-19.

Results: Between January and July, SA had a 54% increase in contact with patients and HCP over the 2019 baseline, peaking in April at 137%. Total registrations in March 2020 increased by 121% compared with 2019. The first confirmed case of COVID-19 was recorded on January 25th and restrictions began being implemented from the 18th March, correlating with the peak in contacts and registrations. Because of these increases SA developed a flyer, reassuring patients of no increased risk of COVID. It was distributed to SA registrants, added to the website and modification of responses via telephone and e-mail was instigated. Within a month following these interventions, a 20% decrease in contact was observed and in the subsequent month this fell to 94%.

Conclusion: SA experienced a substantial increase in contact from patients and HCP during the COVID-19 pandemic. Dissemination of the flyer to SA patients resulted in a decrease in contact in the subsequent months, anecdotally reassuring patients. The upside of the pandemic was the increase of patient registrations to SA.

Impact of the COVID-19 pandemic on Australian people with multiple sclerosis

Authors: Dr Claudia H Marck1, Dr Brody Heritage2, Dr Assunta Hunter1, Prof Lisa Gibbs1, Dr Yvonne Learmonth4,5,6

Affiliations: 1The University Of Melbourne, Melbourne, Australia, 2Psychology, College of Science, Health, Education and Engineering, Murdoch University, Perth, Australia, 3Child & Community Wellbeing Unit, Centre for Health Equity, University of Melbourne, Melbourne, Australia, 4Discipline of Exercise Science, College of Science, Health, Engineering and Education, Murdoch University, Perth, Australia, 5Perron Institute for neurological and translational science, Perth, Australia, 6Centre for Molecular Medicine and Innovative Therapeutics, Murdoch University, Perth, Australia

Abstract:

Background: The Australian MS community experienced the cumulative impact of both the bushfires and the COVID19 pandemic. We aimed to understand the impact of the recent crises on access to health services and health behaviours.

Methods: Persons with MS completed an online survey during June/July 2020. Access to healthcare questions were rated on a sliding scale, and questions on health behaviours were rated on a three-point scale (increase, no change, decrease).

Results: During the pandemic persons with MS were most concerned about reduced access to their general practitioner (n=71, 35.1%) and physiotherapy services (n=60, 34.7%), and similarly during the bushfires. Regarding health behaviours approximately a third (n=28, 35.4%) of respondents reported their alcohol consumption had increased, and 43.6% (n=34) reported they had increased unhealthy food consumption during the pandemic. 27.5% (n=22) reported they had increased their physical activity participation during the pandemic, the majority (53.8%, n=43) said physical activity decreased. Finally, 40.5% (n=32) said their normal sleeping pattern was impacted and they were losing sleep. Similar patterns were reported for physical activity and sleep associated with bushfires. Free text responses detailed consequences for health, wellbeing and participation.

Conclusion: The ongoing and cumulative impact of recent crises on the healthcare needs of persons with MS impact on access to healthcare and health behaviours. Services need to ensure continuity of care, enabling participation in employment and social activities, and advise on maintaining health behaviours such as physical activity participation, to ensure optimal health outcomes.
Concurrent Session 4A - Lessons learnt
On Demand from 2:00pm AEDT

Lessons-learned from the first five months of COVIDSafe App implementation in NSW

Authors: Ms Jana Sisnowski1,2, Ms Kwendi Cavanagh1,2, Ms Suhasini Sumithra2,3, Ms Tracie Reinten2, Dr Anthea Katelaris4, Prof John Kaldor5, Dr Florian Vogt6, Dr Andrew Milat7, Dr Christine Selvey8, Ms Lina Persson9

Affiliations: 1Communicable Diseases Branch, Health Protection NSW, NSW Health, St Leonards, Australia, 2COVID-19 Public Health Response Branch, NSW Ministry of Health, St Leonards, Australia, 3Environmental Health Branch, Health Protection NSW, NSW Health, St Leonards, Australia, 4Western Sydney Public Health Unit, NSW Health, Westmead, Australia, 5The Kirby Institute, University of New South Wales, Kensington, Australia, 6Centre for Epidemiology and Evidence, NSW Ministry of Health, St Leonards, Australia

Abstract:

Background: In April 2020, the Commonwealth government introduced COVIDSafe, a Bluetooth-based application intended to supplement manual contact tracing of confirmed cases of COVID-19. Cases authorise release of contact data meeting a predetermined Bluetooth duration and proximity threshold to public health staff for reconciliation with known contacts and risk assessment according to national and local guidelines.

Methods: In NSW, use of the COVIDSafe App and informed consent are ascertained during case interview. Using data from the NSW Notifiable Conditions Information Management System and additional data on App-supported outcomes collected for evaluation purposes, we describe App uptake patterns and contact tracing outcomes among COVID-19 cases aged at least 13 years notified to NSW Health between 4 May and 25 September 2020 with acquisition in Australia.

Results: App use was reported by 21% (n=118) of cases, who were more likely to reside in major city local health districts (97% vs. 94%) and socioeconomically least disadvantaged areas (50% vs. 33%) than non-App-using cases. App data were obtained for 64% of App-using cases (n=76). The most frequent reason for not accessing data was that the case had been in quarantine while infectious (23%, n=27). The App identified 175 contacts (range 0-27 per case). Of these, 30% (n=53; range 0-16 per case) were assessed as close contacts, representing approximately 0.2% of all close contacts followed up during this time. Of the App-identified close contacts, 26% (n=14; range 0-8 per case) were not identified during manual contact tracing; however, these were related to known exposures for which information was incomplete.

Conclusion: In NSW, the COVIDSafe App has achieved limited uptake. The App’s moderate sensitivity and very limited additional yield suggest that more targeted use should be considered, including where a case is unable to give a comprehensive and reliable history or venue customer record keeping is lacking.

The Australasian COVID-19 Trial (ASCOT): reflections on clinical trials during a pandemic

Authors: Steven Tong1, Justin Denholm1, Joshua Davis2, Bala Venkatesh3, Susan Morpeth4, Jocelyn Mora1, Naomi Perry1, David Paterson5, David Price1, Matthew O’Sullivan5, Jason Roberts1, Megan Rees1, Vivek Jha1, Naomi Hammond5, Thomas Snelling6, Asha Bowen5, Zoe McQuilten7,8, Sharon Lewin1

Affiliations: 1Doherty Institute, Melbourne, Australia, 2Menzies School of Health Research, Darwin, Australia, 3The George Institute for Global Health, Sydney, Australia, 4Middlemore Hospital, Auckland, New Zealand, 5University of Queensland, Brisbane, Australia, 6Westmead Hospital, Sydney, Australia, 7Royal Melbourne Hospital, Melbourne, Australia, 8University of Sydney, Sydney, Australia, 9Telethon Kids Institute, Perth, Australia, 10Monash University, Melbourne, Australia

Abstract:

As a novel infectious disease syndrome, effective treatment for COVID-19 infection are urgently needed. Clinical trials can build the evidence base for the best treatments and allow access to emerging and experimental therapeutics.

The Australasian COVID-19 Trial (ASCOT) ADAPT is an international, multi-centre, adaptive platform trial with the aim of optimising treatments for patients with moderate severity COVID-19. Eligible patients are those within 14 days of symptom onset and hospitalised with COVID-19 but not requiring intensive respiratory or inotropic support. The primary outcome is mortality or the need for intensive respiratory or inotropic support within the first 28 days from randomisation. ASCOT ADAPT has developed from a classical frequentist trial design incorporating hydroxychloroquine and lopinavir/ritonavir to an adaptive platform trial with three intervention domains: antiviral, therapeutic antibody, and anticoagulation.

Challenges of and approaches taken to initiating and conducting a large-scale clinical trial during a pandemic will be discussed. Key issues have included: 1) identifying interventions for inclusion; 2) establishing and adapting trial protocols and infrastructure; 3) navigating ethics, governance, and site engagement; 4) funding; 5) rapidity of new external evidence of varying quality that may influence equipoise for trial interventions; 6) fluctuating patient numbers; 7) low patient numbers in comparison to overseas trials; 8) local competing trials with a limited patient pool; 9) infection control requirements; 10) conducting interventional clinical research in a pressured clinical environment; 11) internationalising the trial; 12) public engagement.
Learnings from ASCOT ADAPT and from observing overseas trials highlight the importance of: 1) national prioritisation, coordination and funding of critical clinical trials; 2) establishing a pandemic trials infrastructure at the local site level; 3) streamlined ethics and governance processes; 4) simple, pragmatic protocols that measure outcomes of importance to patients and health services; 5) translation of trial results to clinical practice.

Changes to workforce and optimisation of IT services: A public health unit experience

Authors: Dr Priya Darshene Janagaraj1, Christian James1, Dr Satyamurthy Anuradha2, Dr Bhakti Vasant2

Affiliations: 1Metro South Public Health Unit, Queensland Health, Brisbane, Australia

Abstract:

Context and aim: The COVID-19 pandemic has had an unprecedented impact on public health. The Metro South Public Health Unit (MSPHU) serves a population of 1.1 million. Prior to the pandemic, staff were based at a single site. In March 2020, epidemiological modelling predicted a rapid increase in local COVID-19 cases. In response, MSPHU decentralised their operations across three sites to cater for the rapid expansion of 45 contact tracing officers (CTOs), provide adequate social distancing and ensure staff availability for public health response in the event of a case in a single worksite.

Analysis: MSPHU uses Communicable Diseases Information System (CDIS) to record COVID-19 case and contact details, accessible across the three sites. Emails were initially used for workload divisions and communications with team members. This process worked well earlier in the pandemic when most cases were returned travellers with limited community contacts.

In July 2020, MSPHU was notified of locally acquired cases with high numbers of community contacts. Multiple contact lists were simultaneously sent to MSPHU and required priority action and reporting. Contact spreadsheets were created and stored on the secure local network to record management before uploading into CDIS. As multiple CTOs could not access and edit these documents simultaneously, there were delays in response and risks associated with multiple versions stored on the local network. High volume email traffic also presented challenges for division of work and communication. The existing IT systems and workflow process were rapidly overwhelmed and inhibited the ability of the unit to respond and report.

Translational outcomes: IT restructure: MSPHU reviewed existing Queensland Health programs to find a functional and secure software solution. SharePoint was a viable option which provided secure controlled access to MSPHU employees and importantly enabled multiple staff members across the three sites to update online contact lists in Microsoft Excel. Division of work was more streamlined. Progress of close contacts follow up could be rapidly assessed. The SharePoint site also led to an improved handover process between staff and improved workflow.

Future actions: A state-wide system that uses a single online platform for live update of information will be a great asset to managing large outbreaks involving multiple jurisdictions within the state.

Operational Surge Planning: An Overview of Western Australia’s Public Health Readiness Strategy

Authors: Dr David Hille1, Dr Christina Bertilone3, Ms Suzanne Cauble1, Dr Benjamin Scalley1

Affiliations: 1Public Health Emergency Operations Centre (PHEOC), East Perth, Australia

Abstract:

In Western Australia, the Public Health Emergency Operations Centre (PHEOC) is a centralised public health unit responsible for coordinating the state-wide surveillance of COVID-19. Western Australia has reported low numbers of COVID-19 for several months. The majority of cases have occurred in returned travellers in hotel quarantine. However, despite hard border controls and extensive public health monitoring of new arrivals, the risk of a community outbreak of COVID-19 remains ever present. To ensure that PHEOC can adequately respond to an increase in cases of COVID-19, operational surge planning has been undertaken.

Central to the surge plan is the recruitment of a reserve workforce of surveillance officers. The reserve workforce are employed on casual contracts with zero guaranteed hours. They are given an initial half-day in-person induction and undertake monthly elearning to ensure currency of skills. If additional surveillance officers are required, a mass communication will be sent to identify which members of the reserve workforce are available to commence work at short notice.

The PHEOC operational surge plan also contains provisions for accommodation and ICT to support a rapidly growing workforce. A set of complimentary contingency plans have been designed to allow PHEOC to respond efficiently to changing circumstances. The contingency plans allow for a remote contact tracing workforce, support from interstate contact tracing units, modifications to contact tracing activities to optimise limited resources, and field epidemiology.

This presentation outlines the PHEOC surge plan and discusses the challenges that have arisen throughout the planning phase. The content of the presentation will be of particular interest to disease surveillance organisations who are devising strategies for their own operational surge.
Rapid development and deployment of an adaptable COVID-19 contact management system

Authors: Dr Fiona May¹, Ms Deena Malloy², Dr Vicki Slinko¹, Dr Andre Wattiaux¹, Mr Ian Hunter¹

Affiliations: ¹Gold Coast Public Health Unit, Carrara, Australia, ²Metro North Public Health Unit, Windsor, Australia

Abstract:
On 27 January 2020, the first case of COVID-19 in Queensland was notified on the Gold Coast. A surveillance system for managing large numbers of close contacts was needed immediately.

A spreadsheet of contacts was created in Microsoft Excel to store the data needed for contact management and health monitoring. This spreadsheet has since been replaced by a web app.

The spreadsheet is imported into Stata/IC 15.1 (StataCorp) for cleaning and modifying and to produce lists of people requiring an SMS, email or phone call. People are encouraged to utilise SMS or email where possible. The SMS or email contains a link to an Epi Info for Web (CDC) survey on the Queensland Health server containing questions about symptoms and is sent using Microsoft Outlook. Stata is used again to match survey responses to those sent a survey in order to determine who has not responded. Lists of those who have reported symptoms or those who did not respond are sent to contact tracing officers for further follow up.

Use of this system has resulted in an overall response rate of 84% to SMS and email, alleviating the workload of contact tracing officers. The system is scalable, with the only limitation the number of contact tracing officers required for symptomatic and non-responder follow up.

As control of our COVID-19 surveillance system was held within the public health unit, we were able to modify and improve the process as required surveillance changed over the course of the pandemic response. It is currently being used to manage and monitor travellers in hotel quarantine as well as close contacts of cases. All components of the system are adaptable and commonly or freely available or able to be substituted. For example, Stata can be replaced with R (freeware) or Microsoft Excel Power Queries.

Academic leadership during the COVID-19 crisis

Authors: Associate Professor Adrienne Torda¹

Affiliations: ¹UNSW Sydney, Randwick, Australia

Abstract:
Context: The impact of the COVID-19 pandemic on healthcare education has been massive and difficult. We simultaneously had to balance the pressures of risk-assessment and safety issues for medical students from junior to senior, the need to keep students progressing towards graduation and the possibility of an early launch of students into the workplace to create a ‘surge’ workforce.

Within the first few weeks of the pandemic, we had adapted two thirds of the medical program to mainly online learning. This allowed delivery to students wherever they were in the period of lockdown. We adapted clinical teaching according to the ‘guidelines’ of the moment (which changed daily) and we upskilled staff (academic and professional) in the use of online technologies, for teaching, feedback and essentially all aspects of communication. We filled clinical gaps that emerged with the rapid development of high-quality online curricula and platforms. We liaised with local health areas and state health departments to ensure that medical students were considered in decision making about healthcare workers. We even adapted clinical assessments to online formats and are now leading and guiding vocational colleges in this domain.

Key learnings:
• Leadership in this context required massive co-ordination and engagement of academic staff, students and stakeholders and was vital to the success of rapid changes.
• Innovation and adaptability were (and continue to be) key leadership tools, as were shared goals (education and graduation of medical students into the healthcare workforce whilst keeping them safe) and honest and frequent communication.
• Many of the challenges we faced, have forced change which has resulted in better educational practices and approaches than previously in medicine.¹

References:
Rapid implementation of perioperative pandemic readiness

Authors: Dr. Kara Allen1,2, Dr. John Morris1, Dr. Rebecca Szabo3,4

Affiliations: 1Royal Melbourne Hospital, Parkville, Australia, 2University of Melbourne, Centre for Integrated Critical Care, Melbourne, Australia, 3Royal Womens Hospital Gandel Simulation Service, Melbourne, Australia, 4University of Melbourne Department of Medical Education, Department of Obstetrics and Gynaecology, Melbourne, Australia

Abstract:

Objective: To prepare the perioperative department of a major trauma hospital for management of patients with suspected and confirmed COVID-19.

Methods: A three-phase strategy was used based on Lewin’s Change Management Model. During phase 1 (unfreezing), rapid systems testing of perioperative workflows using a table-top simulation, analysed using failure mode effect analysis, resulted in identification of latent safety threats. In phase 2 (movement), resources were iteratively developed and introduced to large numbers of staff. Finally, in phase 3 (refreezing) we used an apprenticeship model to embed new workflows. Two main forms of simulation were used in this project, to evaluate current systems and to embed resources through education.

Results: In phase 1 (unfreezing), challenges identified included lack of knowledge about personal protective equipment (PPE), and a lack of standardised practice across the organization. This resulted in development of new workflows, changes to staffing and multimodal education development, applied in phase 2 (movement). Communication strategies, similar to the Nightingale model, kept staff engaged throughout all phases. Challenges remain for phase 3 (refreezing), particularly with frequently changing clinical guidelines.

Conclusion: Instituting change in an organisation relies on amplifying driving forces, such as clinician and organisational priorities, and minimising restraining forces, including time constraints. Simulation was used to identify potential safety threats, and aid implementation of new workflows. A change management framework enabled implementation of perioperative readiness for COVID-19 to embed workflows and resources with applicability to other organisations and contexts.
Factors associated with psychological distress, fear and coping during COVID-19 in Australia

Authors: Associate Professor Dr Muhammad Aziz Rahman1,2,3, Dr Nazmul Hoque4, Dr Sheikh M Ali5,6, Dr Masudus Salehin1, Dr Sheikh Mohammed Shariful Islam8, Dr Biswajit Banik1, Dr Ahmed Sharifi7,8, Dr Nashrin Binte Nazim1,9, Dr Farhana Sultana10, Professor Wendy Cross1

Affiliations: 1School of Health, Federation University Australia, Berwick, Australia, 2Australian Institute of Primary Care and Ageing, La Trobe University, Melbourne, Australia, 3Bangladesh Medical Society of Victoria (BMSV), Melbourne, Australia, 4Emerald Medical Centre, Emerald, Australia, 5School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia, 6Institute for Physical Activity and Nutrition, Deakin University, Burwood, Australia, 7Station Street Clinic, Pakenham, Australia, 8Bangladesh Institute of Family Medicine and Research, University of Science & Technology Chittagong, Chittagong, Bangladesh, 9Greenvale Medical Centre, Greenvale, Australia, 10Telstra Health, Melbourne, Australia

Abstract:

Background: This study aimed to identify factors associated with psychological distress, fear and coping strategies during the COVID-19 pandemic in Australia.

Methods: A cross-sectional online survey was conducted among residents in Australia, including patients, frontline health workers, other essential service workers, and community members during June 2020. Psychological distress was assessed using the Kessler Psychological Distress Scale (K10); level of fear was assessed using the Fear of COVID-19 Scale (FCV-19S); and coping strategies were assessed using the Brief Resilient Coping Scale (BRCS).

Results: Among 587 participants, the majority (73.2%) were 30-59 years old, female (61.8%), and from Victoria (88.2%). More than half (59.5%) were born outside Australia and 71.5% completed at least a Bachelor’s degree. The majority (71.5%) had a source of income, 243 (42.3%) self-identified as a frontline worker, and 335 (58.9%) reported financial impact due to COVID-19. Comorbidities such as pre-existing mental health conditions (AOR 3.13, 95% CI 1.12-8.75), increased smoking (8.66, 1:08-69.1) and alcohol drinking (2.39, 1:05-5:47) over the last four weeks, high levels of fear (2.93, 1:83-6:47) and being female (1.74, 1:15-2.65) were associated with higher levels of psychological distress. Perceived distress due to change of employment status (4.14, 1:39-12.4), alcohol drinking (3.64, 1:54-8:58), providing care to known or suspected cases (3.64, 1:54-8:58), being female (1.56, 1:00-2.45), being 30-59 years old (2.29, 1:21-4:35) and having medium to high levels of psychological distress (2.90, 1.82-5.62) were associated with a higher level of fear; while healthcare service use in the last four weeks was associated with medium to high resilience.

Conclusions: This study identified individuals who were at higher risk of distress and fear during the COVID-19 pandemic specifically in the State of Victoria, Australia. Specific interventions to support the mental wellbeing of these individuals should be considered in addition to the existing resources within primary healthcare settings.

The impact of COVID-19 on the mental health of adolescents: longitudinal study

Authors: Dr Lisa Mundy1, Ms Louise Canterford2, Mr Hanafi Husin3, Dr S Ghazaleh Dashti4, A/Prof Ben Edwards2, Prof George Patton1

Affiliations: 1Murdoch Children’s Research Institute, Parkville, Australia, 2Australian National University, Canberra, Australia

Abstract:

Young people are less directly affected by the resultant physical illnesses of COVID-19. But there are reasons to believe the effects of the pandemic on their mental health will be substantial given the public health measures adopted by many countries to reduce transmission limit social interaction at a time when it is central to emotional development. Yet to date there have been no definitive longitudinal studies conducted in adolescents with pre-pandemic data. Using data from the Childhood to Adolescence Transition Study (CATS), we aim to explore whether mental health problems have changed from pre-pandemic levels during COVID-19 and if individuals with a history of mental health problems are at increased risk of poor mental health during COVID-19.

Eight waves of annual data collection have been completed with 1239 young people recruited in Melbourne, Victoria, Australia. Wave 9 began in June 2020 with participants aged 16-17 years old. Mental health problems are measured at all waves (depressive symptoms: Short Moods and Feelings Questionnaire; anxiety symptoms: short Spence Children’s Anxiety Questionnaire).

Data on mental health outcomes at wave 9 are currently available for 55% of the participants (408 females, 279 males) with data collection still underway. For females, 49.8% (95%CI,44.9-54.6) reported depressive symptoms and 34.6% (95%CI,30.1-39.3) reported anxiety symptoms. These estimates were lower for males: 16.2% depressive symptoms (95%CI,12.3-21.1), 10.8% anxiety symptoms (95%CI,7.6-15.0). Of the females with depressive symptoms during the pandemic, 14.1% (95%CI,8.8-20.0) did not have a prior history of depressive symptoms (across waves 1-8). For males, this proportion was 26.3% (95%CI,14.7-42.5).

For anxiety, 16.0% (95%CI,10.7-23.4) of females and 25.0% (95%CI,12.4-44.1) of males with symptoms during the pandemic did not have a prior history.
These findings highlight the importance of monitoring the long-term impacts of COVID-19 on the mental health of adolescents and providing preventative interventions to support their mental health.

45 and Up COVID Insights

Authors: Dr Martin McNamara¹, Dr Kerrin Bleicher², Dr Greer Dawson³, Ms Tina Navin Cristina³, Ms Sarah Baynes³, Mr Hans Luc³, Ms Alison Cowle³, Ms Lisa Ren³, Ms Vicky Aouad³

Affiliations: ¹Sax Institute, Sydney, Australia

Abstract:

Introduction: In the context of COVID-19, there is concern and uncertainty regarding the health and social impacts of the disease and associated policies and restrictions. Preliminary studies suggest the pandemic and responses to it have resulted in barriers to accessing health services, financial and psychological distress, and decreased social support. However, the impact on different populations is unclear. The aim of the current research is to understand variation in impacts across the population including on vulnerable groups, with a focus on delivering relevant and timely information that can inform policy and decision making.

Methods: In August 2020, over 85,000 participants in the 45 and Up Study—the largest longitudinal Study in Australasia—were invited to complete their latest follow up questionnaire and questions relating to COVID-19. Furthermore, an additional 60,000 participants have been invited to contribute to a series of rolling COVID-19 surveys. These surveys will respond to the changing pandemic and will evolve to include new policy relevant themes during 2021. Initial themes included COVID-19 exposures and testing, risk reduction behaviours, health, mental health, changes in financial situations, health service use including missed or delayed appointments, use and experience of telehealth, knowledge about COVID-19 and prevention, health literacy, sources of information and trust in these sources. COVID-19 questions continue to be developed in consultation with NSW Health clinical and operational committees, and scientific collaborators to ensure rigour and policy relevance. Future linkage to administrative data will ensure short medium and long-term outcomes can be studied.

Results: Preliminary results will be presented. Analyses will be undertaken to understand the influence of demographics and the impacts on vulnerable groups.

Discussion: the findings will be considered in the context of the changing policy landscape with a focus on insights that can be used to inform policy and practice.

Social-emotional wellbeing during CoVID-19: Initial findings from the DETECT Schools’ Wellbeing Survey

Authors: A/prof Asha Bowen¹, Professor Peter Gething², Professor Steve Zubrick³, A/Prof Francis Mitrou², Dr Karen Lombardi³, Ms Melanie Epstein⁴, Ms Joelle Mandzufas³, Professor Donna Cross²

Affiliations: ¹Child and Adolescent Health Services, Nedlands, Australia, ²Telethon Kids Institute, Nedlands, Australia, ³Cancer Council of Western Australia, Subiaco, Australia

Abstract:

Background and aim: The DETECT Schools Study is a prospective observational cohort surveillance study being undertaken in Western Australian (WA) schools. DETECT is designed to investigate the incidence, transmission, and impact of SARS-CoV-2 in schools and is a partnership between the Telethon Kids Institute and the WA Departments of Health and Education. Combined with school-based asymptomatic SARS-CoV-2 testing, a survey intended to provide insight into the wellbeing of students, parents and staff in light of the ongoing COVID-19 pandemic was administered.

Research method: DETECT Schools Wellbeing surveys were completed by students (n=23,196, 59% response rate), school staff (n=1,193), and parents (n=3,462) in participating schools (n=79) during June and July 2020, and will be re-administered in October 2020. Student Wellbeing Surveys comprised items from validated surveys including the Students’ Life Satisfaction Scale, designed to measure the global life satisfaction of children aged 8 to 18 years of age and the Child Health Utility Scale, a measure of emotional distress in children aged 12 to 18 years. Parent and staff surveys included questions from the WHO-5 Wellbeing Survey and the CoRonavirus Health Impact Survey (CRISIS) V0.3.

Results: Results from this research are currently embargoed. Results of the two surveys will be available for presentation and discussion at the conference in December 2020.

Conclusions: The DETECT study findings suggest the need for school and community interventions to support the wellbeing of children, parents and school staff.
The impact of work loss on mental health during the COVID-19 pandemic

Authors: Dr Daniel Griffiths, Mr Luke Sheehan, Dr Caryn van Vreden, Associate Professor Dennis Petrie, Professor Malcolm Sim, Professor Alex Collie

Affiliations: 1School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia, 2Centre for Health Economics, Monash University, Melbourne, Australia

Abstract:

The burden of mental ill health has increased during the COVID-19 pandemic in Australia. Public health measures to reduce viral transmission have restricted social interactions and resulted in high levels of work loss. During the early stages of the pandemic, elevated levels of poor mental health (OR=1.92-4.53), and high psychological distress (OR=5.43-8.36), were observed in those that experienced loss of work compared to those whose working hours were unaffected. The odds of poor mental health were higher for the newly unemployed than for those that remained employed but had lost work (stood-down or had reduced work hours), where social interactions and access to material finances reduced negative health impacts of pandemic-related work loss. Consequently, the temporary increase in social security payments and wage subsidies may have decreased financial stress, and reduced the negative effects of work loss on mental health.

The longitudinal COVID-19 Work and Health Cohort Study examines the health and employment of Australians during the COVID-19 pandemic. A 1-month follow-up survey identified a large gap between those experiencing high levels of psychological distress during the pandemic, and those seeking mental health support. Of those with high levels of distress in the early stages of the pandemic, only 38.2% had spoken to a health professional. In general, talking to a health professional about mental health was 2.75 times less common than talking with a friend or family member about mental health. Actions that promote successful engagements with formal mental health services, focusing on those most in need such as the newly unemployed, will help to close the gap of those experiencing distress during the pandemic but are not seeking professional help.

We will report findings from the 3-month follow-up survey on the cohort mental health status and help-seeking actions.

From April to October: Women’s health and wellbeing during COVID-19.

Authors: Professor Deborah Loxton, Ms Peta Forder, Ms Natalie Townsend

Affiliations: 1University Of Newcastle, Callaghan, Australia

Abstract:

In April 2020, the Australian Longitudinal Study on Women’s Health launched online fortnightly surveys to women enrolled in the cohorts born 1989-95, 1973-78 and 1946-51. Quantitative and qualitative data have been collected to measure COVID-19 test uptake, as well as the impact of COVID-19 on women’s health and wellbeing.

Response rates across the 13 surveys have varied, with between 5000 and 9000 women responding to each survey. Demographic data from the first COVID-19 survey were compared with census data and showed some differences but weighting for these had little impact on results. Each fortnightly survey included core questions that measured symptoms of COVID-19, COVID-19 testing, and general health, and also offered a free text response option. The surveys also included questions relating to a different focus topic each fortnight. This presentation will focus on methodological issues when rapidly responding to research needs during a public health crisis, the uptake of COVID-19 testing, and mental health over the pandemic.

At every survey, more participants reported that they had experienced symptoms of COVID-19 than had undergone a COVID-19 test. At Survey 9, 1044 women reported COVID-19 symptoms within the past two weeks but only 541 had undergone testing. Qualitative results indicated fear of contracting COVID-19 at testing facilities and not knowing how to go about getting tested prevented women from seeking tests. More than 37% of women aged 25-31 and 18% of women aged 42-47 had high or very high levels of psychological distress as measured by the K-10, compared to 6% of women aged 69-74. Qualitative data indicated distinct differences between cohorts in stress burdens and the factors that exacerbated or reduced stress.

Results offer valuable insights into increasing the uptake of COVID-19 testing and into the factors that are impacting on women’s mental health during the COVID-19 pandemic.
**Concurrent Session 4C - Viral Genomics**

**On Demand from 2:00pm AEDT**

**Using genomics to investigate COVID-19 in Victoria: a tale of two waves**

**Authors:** Courtney R Lane1, Norelle L Sherry1, Torsten Seemann1,2, Michelle Sait, Mathilda Wilmot1, Kristy Horan1, Annabelle J Turner4, Leon Cały1, Susan A Ballard1, Patyian Andersson1, Sebastian Duchene5, Sally Dougall1, Anders Gonçalves da Silva1, Mark B Schulte1, Tuyet Hoang1, Mike Catton1, Brett Sutton1, Charles Alpren1, Deborah A Williamson1,2,3, Benjamin P Howden1,2,3

**Affiliations:** 1Microbiological Diagnostic Unit Public Health Laboratory, Department of Microbiology and Immunology, The University of Melbourne at The Peter Doherty Institute for Infection and Immunity, Melbourne, Australia, 2Doherty Applied Microbial Genomics, Department of Microbiology and Immunology, The University of Melbourne at The Peter Doherty Institute for Infection and Immunity, Melbourne, Australia, 3Victorian Department of Health and Human Services, Melbourne, Australia, 4Victorian Infectious Diseases Reference Laboratory at The Peter Doherty Institute for Infection and Immunity, Melbourne, Australia, 5Department of Microbiology and Immunology, The University of Melbourne at The Peter Doherty Institute for Infection and Immunity, Melbourne, Australia

**Abstract:**

Pathogen genomics has been introduced in several Australian jurisdictions to enhance the surveillance of a wide range of pathogens of public health importance. In response to the COVID-19 pandemic, the Microbiological Diagnostic Unit Public Health Laboratory (MDU-PHL), in partnership with the Victorian Department of Health and Human Services and the Victorian Infectious Diseases Laboratory, commenced prospective genomic surveillance and investigation of SARS-CoV-2 in Victoria to inform public health action.

From March 2020, all SARS-CoV-2 positive samples identified in Victoria were referred for sequencing. Rapid implementation of new laboratory methods, bioinformatics pipelines and analysis methods was undertaken. A multidisciplinary team was formed, with rapid integration of genomic and epidemiological data required for interpretation, and to inform public health action.

As of writing, sequence data was available for ~50% of Victoria’s 20,145 COVID-19 cases; Updated data will be presented.

Analysis revealed many small genomic clusters resulting from travel-related introductions of SARS-CoV-2 between March and early-May. Transmission appears to have ceased in almost all by early-May, with the exception of prolonged transmission of a genomic cluster initially associated with a meat-works facility which persisted until early-June.

Throughout June and July, Victoria experienced a rapid increase in COVID-19 cases. Combined genomic and epidemiological analysis revealed that almost all locally-acquired cases diagnosed since this time were genometrically related to three separate importations of SARS-CoV-2 through hotel quarantine breaches; with ~98% of such cases related to a single importation event, including many which could not be epidemiologically linked directly.

Genomics has also been used to guide investigation into unknown source cases and assist in investigation of healthcare worker infections.

Here we reflect on the role and benefits of genomics for SARS-CoV-2 in Victoria; required elements for analysis and interpretation; and its challenges and uncertainties, particularly with rapid clonal expansion experienced in our “second wave”.

**COVID-19 in Tasmania: using genomics to describe the epidemiology of cases**

**Authors:** Associate Professor Nicola Stephens1,2,3,4, Ms Michelle McPherson1,2, Dr Norelle Sherry3, Professor Benjamin Howden3, Ms Mathilda Wilmot3, Ms Courtney Lane3, Dr Michelle Sait3, Associate Professor Torsten Seemann3, Dr Louise Cooley2,5, Dr Sanchia Warren5, Dr Rob Vanhaeften5, Dr Natasha Castree1,6, Ms Kerryn Lodo1, Ms Michelle Harlock1, Dr Mark Veitch1, Associate Professor Fay Johnston1,4

**Affiliations:** 1Public Health Services, Tasmanian Government Department of Health, Hobart, Australia, 2School of Medicine, University of Tasmania, Hobart, Australia, 3Microbiological Diagnostic Unit Public Health Laboratory, Department of Microbiology and Immunology, University of Melbourne at the Doherty Institute, Melbourne, Australia, 4Menzies Institute for Medical Research, University of Tasmania, Hobart, Australia, 5Tasmanian Health Services, Hobart, Australia, 6Victorian Department of Health and Human Services, Melbourne, Australia

**Abstract:**

Integrated analysis of genomic and epidemiologic data can be a useful tool for public health investigations and has recently been used for COVID-19. The Tasmanian Department of Health and the Microbiological Diagnostic Unit Public Health Laboratory investigated the utility of integrated analysis of genomic and epidemiologic data for COVID-19 cases from Tasmania.

Tasmanian COVID-19 samples were referred to the Microbiological Diagnostic Unit and underwent tiled amplicon PCR and Illumina sequencing. Consensus genomes were generated and underwent quality control checks before inclusion. Phylogenetic analysis was performed, genomic clusters were defined by ClusterPicker, and initially compared to epidemiological data. Further epidemiologic investigations were undertaken to confirm transmission networks considering genomic data.
Phylogenetics and genomics to investigate transmission dynamics of SARS-CoV-2

Authors: Dr Sebastian Duchene1,2, Dr Anders Goncalves da Silva1, A/Prof Torsten Seemann1,2, Ms Courtney Lane1, Dr Norelle Sherry1, Dr Kristy Horan1, Dr Michelle Sait1, Dr Susan Ballard1, Prof Benjamin Howden1,2

Affiliations: 1Microbiological Diagnostic Unit Public Health Laboratory, University of Melbourne at the Peter Doherty Institute for Infection & Immunity, Melbourne, Australia, 2Department of Microbiology & Immunology, University of Melbourne at the Peter Doherty Institute for Infection & Immunology, Melbourne, Australia

Abstract:

When combined with comprehensive genomic sequencing, phylogenetic analyses can be used to investigate transmission dynamics of pathogens in populations. These analyses can make inferences of the molecular evolutionary rate, the date of emergence of a particular outbreak and assess the effect of interventions on the effective reproductive rate (Re) and the proportion of genomes sequenced relative to diagnostic testing within a population.

Here we describe our application of these methods to SARS-CoV-2 to investigate the transmission dynamics of COVID-19 disease in Victoria. Our analysis used a range of Bayesian birth-death models that leverage epidemiological and genomic information to estimate Re and detect changes in this parameter over time and within outbreak clusters.

In the first ‘wave’ of COVID-19 infections in Victoria, we found a change in Re from 1.63 to 0.48 around the 27th of March, supporting the effects of social distancing measures to decrease case numbers. We were also able to estimate the sampling proportion parameter (or probability of successfully sequencing an infected case), which remained high through the first ‘wave’.

We will further discuss the applications of phylogenetics to SARS-CoV-2 in the second ‘wave’. The limited genetic diversity of this ‘wave’ prompted the development of a hierarchical phylogenetic model structure that can exploit data from different outbreaks to improve precision in our estimates. These models allowed us to pinpoint changes in Re, sampling proportions, and detect of differences in transmission rates in different clusters, that may be the result of ‘superspreader’ events. Our study will demonstrate a key application of genome sequence data for understanding epidemic spread and will provide a phylogenetic framework for analysing other outbreaks.

AusTrakka – Working towards integrated pathogen genomics for SARS-CoV-2

Authors: Miss Tuyet Hoang1, Dr Patiyan Andersson1, Prof Benjamin Howden1, A/Prof Amy Jennison2, Prof Vitali Sintchenko3, Professor Torsten Seemann1

Affiliations: 1Microbiological Diagnostic Unit Public Health Laboratory (MDU), the University of Melbourne, Melbourne, Australia, 2Queensland Health Forensic and Scientific Services (FSS), Coopers Plains, Australia, 3Institute of Clinical Pathology and Medical Research (ICPMR), Westmead, Australia

Abstract:

The COVID-19 pandemic has highlighted the need for SARS-CoV-2 genomics sequencing and analysis to track transmission and identify emerging clusters and outbreaks. Simultaneously, the need to share genomic data between jurisdictions has become apparent to highlight inter-jurisdictional spread of SARS-CoV-2. Here we describe the development and early implementation of the AusTrakka genomic data sharing platform and describe its utility for nationally integrated SARS-CoV-2 genomics.

The development of the AusTrakka platform by the Communicable Diseases Genomics Network (CDGN) was accelerated to address the urgent need for timely SARS-CoV-2 genomic data sharing between public health laboratories to contribute meaningfully to public health intervention. Over six months, AusTrakka has built in capacity for public health laboratories to upload SARS-CoV-2 consensus genome sequences that are analysed by bioinformatic pipelines and tools integrated into the platform, as well as capability to generate and visualise national phylogenetic trees that identify and notify relevant jurisdictional public health laboratories of genomic ‘matches’ that may infer interstate transmission or emerging clusters for further investigation.
Since its endorsement as the national SARS-CoV-2 genomic data sharing platform, over 13,000 SARS-CoV-2 genomic sequences have been uploaded to the platform from every state and territory, as well as New Zealand and has been used for national reporting against the Australian National Disease Surveillance Plan for COVID-19. The next phase of its development sees the integration of genomic and epidemiological data, required for SARS-CoV-2 to enable optimal high-resolution genomic clustering and determination of putative transmission events. The development of AusTrakka continues to be a highly consultative process, leveraging on Australia’s genomic and epidemiological expertise to remove the barrier of entry into SARS-CoV-2 genomics for public health units and policy decision-makers by bridging the gap between genomic data and interpretable outputs to inform public health investigation and response.

Evaluating pathogen genomics in public health: A SARS-CoV-2 case study

Authors: Dr Angeline Ferdinand1,2, Prof Margaret Kelaher2, Prof Benjamin Howden1, Prof Deborah Williamson1

Affiliations: 1Microbiological Diagnostic Unit Public Health Laboratory, Department of Microbiology and Immunology, The University of Melbourne at The Peter Doherty Institute for Infection and Immunity, Melbourne, Australia, 2School of Population Health, University of Melbourne, Melbourne, Australia

Abstract:

The COVID-19 pandemic has brought into sharp focus the necessity of national and international surveillance systems that are adequately equipped to understand and respond to emerging and previously unknown pathogens. While pathogen genomics has been increasingly incorporated into national public health systems to strengthen capacity in the detection, prevention and control of infectious diseases, much of the literature in this field comes from a research, rather than a public health or evaluative perspective.

Here, we propose an evaluation framework underpinned by the principles of implementation science as a conceptual model to consider the integration of microbial genomics into public health practice. Using SARS-CoV-2 as a case study, we illustrate a whole-of-system approach to evaluating the use of whole genome sequencing in public health surveillance and disease control. The framework is built on the recognition that benefits arising from the utilisation of pathogen genomics in public health surveillance are highly context dependent and rely on interconnected parts of an iterative process working in conjunction. Operational laboratory data, interviews with laboratory personnel and end users and public health data are utilised across three evaluation phases. This enables a comprehensive understanding of how pathogen genomic data are generated and used in the identification and investigation of outbreaks and resulting public health effects.

Rigorous evaluation is critical for continued improvement in public health implementation of pathogen genomics. The flexibility of the framework supports application across a variety of pathogens relevant to public health, in addition to SARS-CoV-2. Ultimately, the framework aims to strengthen the evidence base to guide strategic investment and interventions to improve utilisation of whole genome sequencing in public health, leading to improved resource allocation, more responsive surveillance systems and improved public health outcomes.
Concurrent Session 4D - Immunity and immunopathology
On Demand from 2:00pm AEDT

Immune responses in an infant with severe COVID-19

Authors: Dr Danielle Wurzel1,2,3, Dr Melanie Neeland1, A/Prof Paul Licciardi1, Ms Alissa McMinn1,2, Ms Kate Dohle1,2, A/Prof Nigel Crawford1,2,3

Affiliations: 1Murdoch Children’s Research Institute, Parkville, Australia, 2The Royal Children’s Hospital, Parkville, Australia, 3The University of Melbourne (Dept of Paediatrics), Parkville, Australia

Abstract:
Background: Age-related differences in immune responses to COVID-19 have been described, however their evaluation in infants with acute severe disease is limited.

Aims: To report the kinetics of immune responses in relation to clinical course in a 4-month old infant with underlying congenital heart disease, admitted to the intensive care unit at The Royal Children’s Hospital, Melbourne, with severe COVID-19.

Methods: Intensive bio-sampling was undertaken as part of the Murdoch Children’s Research Institute COVID-Kids inpatient protocol. Flow cytometry and cytokine analyses were performed on blood samples collected 3, 5, 10, and 28-days following admission and correlated with clinical and virological features.

Results: We observed dramatic changes in the immune cell profile over the first 10 days, including marked reductions in all lymphoid cell types CD4 T, CD8 T, B cell and natural killer (NK) cells and a profound increase in classical monocytes (CD14+CD16-). Interestingly, non-classical monocytes (CD14+CD16+) were essentially absent over the first 10 days, returning to the circulation in low numbers by day 28. Neutrophil and eosinophil counts were steady during the acute phase, followed by a 3.5-fold and 12.8-fold increase in the recovery phase (day 28), respectively. Plasma cytokine levels correlated with cellular changes with the acute phase dominated by inflammatory and monocyte-recruiting factors including TNFα, IL-8, IP-10, MIP-1α and MCP-1 and later shift towards adaptive cell cytokines IL-2, IL-5, IL-10, IL-14 and IL-17. IL-6 was raised at D3, reducing dramatically by D5 after tocilizumab (anti-IL6) therapy. Viral load [inferred from cycle threshold (Ct) values] was initially high (Ct=18.45), reducing by day 10 and correlating with SARS-CoV2 IgG/IgM positivity and clinical recovery.

Conclusion: We have described the multi-faceted immune responses in an infant with severe COVID-19 and immunological correlates of recovery. Next steps include correlation of these findings with larger cohorts of infants with severe COVID-19.

Understand the nasal susceptibility to SARS-CoV-2 of children

Authors: Yanshan Zhu1, Keng Yih Chew1, Asha C. Bowen2, Kirsty Short1

Affiliations: 1The University of Queensland, Brisbane, 2Wesfarmers Centre for Vaccines and Infectious Diseases, Perth

Abstract:
By the 27th of September 2020, SARS-CoV-2 has infected >330 million people, resulting in nearly 1 million deaths. Large data analyses have shown that the elderly are particularly susceptible to severe forms of COVID-19. However, COVID-19 in children appears to be relatively mild and the role of children in the transmission of SARS-CoV-2 remains controversial. There is currently concern that children could be an important source of SARS-CoV-2. To assess the nasal susceptibility to COVID-19 of children compared to adult, we used a novel in vitro model consist of adult and pediatric airway epithelial cells to investigate viral titers of the SARS-CoV-2 replicates and the immune response to SARS-CoV-2. A lower titer of SARS-CoV-2 was recorded in pediatric cells at 24 hour, 48 hour and 72 hour post-infection. However, interferon response (IFN-b1, IFN-λ, IFN-27) was higher expressed in pediatric nasal epithelial cells compare to adult. These findings highlight the nasal susceptibility to SARS-CoV-2 among children is lower than in adults. These results also provide an understanding into age-effect of protective immunity, host susceptibility, and virus pathogenesis when infected with SARS-CoV-2.
Comprehensive follow-up of COVID-19 in children: preliminary findings

Authors: Dr Daniela Say1,2, Miss Belle Overmars1, Miss Kate Dohle1, Miss Alissa McMinn1, Dr Nigel Crawford1,2, Dr Shidan Tosif1,3

Affiliations: 1Royal Children’s Hospital Melbourne, Parkville, Australia, 2 Murdoch Children’s Research Institute, Parkville, Australia

Abstract:

There is limited data on the clinical outcomes of children with COVID-19. Early adult studies suggest that long-term sequelae and complications affecting multiple systems must be anticipated, even with mild acute disease, and hence, should also be monitored for in children.

This descriptive observational study describes medium and potential long-term clinical outcomes for children diagnosed with COVID-19. We aim to identify sequelae and adverse health outcomes following acute infection. The secondary aim is to describe patterns of SARS-CoV-2 IgG antibody detection following acute infection in these children and their household members.

The Royal Children’s Hospital in Melbourne provides acute and long-term clinical review at a dedicated follow-up clinic. This large paediatric COVID-19 cohort includes children who are immuno-compromised or have pre-existing complex medical conditions. Clinical data on parameters including respiratory, cardiovascular, fatigue, mental health and inflammatory conditions, as well as re-exposure, are obtained from standardised questionnaires and medical records. Data are collected at baseline and end-of-illness (acute), 3 and 6-months (medium-term), and at 12-months and beyond (long-term). Serology is offered to all household members at 4-weeks and 3, 6 and 12-months post onset of infection.

171 paediatric COVID-19 cases have been identified since March 2020. Mean age was 5.1-years (median 3-years, interquartile range 1–8 years) but the majority (112, 65.5%) are 5 years-old or younger. 161 cases (94.2%) had mild to moderate disease and did not require hospitalisation. 158 cases (92.4%) were identified between June to August. Early findings at 3 and 6-months did not identify significant sequelae. Few reports of prolonged fatigue, cough and dyspnoea are being monitored. Serology testing is underway.

In this preliminary report of follow-up post COVID-19 in children, few sequelae were identified. As follow-up continues, this data will provide early insights into medium and potential long-term clinical outcomes for children with COVID-19.

Loss of smell as an early marker of COVID-19: the SMELLY study

Authors: A/prof Roderick Clifton-Bligh1,2,3, Dr Melanie Figtree1,4, Dr Bernard Hudson1,4, Dr Christian Girgis1,3, Ms Liza Nery1, Dr Karen Byth1,5, Prof Carolyn Sue1,3

Affiliations: 1Royal North Shore Hospital, Sydney, Australia, 2Kolling Institute, Sydney, Australia, 3University of Sydney, Sydney, Australia, 4NSW Health Pathology, Sydney, Australia, 5Western Sydney Local Health District, Sydney, Australia

Abstract:

Asymptomatic SARS-CoV-2 infection occurs in >40% of all cases, creating a major gap in current testing strategies. Inadvertent transmission from asymptomatic infections can lead to devastating outcomes, particularly in vulnerable areas such as health or aged care facilities. Loss of smell (anosmia) is the most sensitive self-reported symptom in COVID-19. We tested the hypothesis that, using objective smell identification, anosmia would be identified in early COVID-19.

We recruited 21 patients (M:F 11:10, mean age 48.3 y) with a positive SARS-CoV-2 nucleic acid test (NAT) who were being monitored in the Northern Sydney Local Health District Virtual Hospital (time from positive NAT 4.2 ± 1.8 d [mean ± standard deviation]). Thirteen control subjects (M:F 5:8, mean age 54.4 y) were recruited from a COVID Clinic with negative SARS-CoV-2 NAT. Seven additional control subjects (M:F 3:4, mean age 37.8 y) had recovered from COVID-19 (time from positive NAT 92.9 ± 9.4 d). Following informed consent, each subject performed a telephone questionnaire for demographic details, medical history and symptoms, followed by the forty odour Smell Identification Test (SIT™), with answers recorded by the study investigator into an electronic database.

Our primary outcome of a SIT score <26/40 (anosmia or severe hyposmia) was seen in 13/21 (62%) cases, 2/13 (15%) controls and 0/7 COVID-recovered controls (χ2 p = 0.0006). Mean (± SD) SIT scores in cases were 21.5 ± 8.6, in controls 31.3 ± 4.8 and in COVID-recovered controls 32.9 ± 3.9 (p <0.0001 by t-test). Five cases (38%) with objectively severe anosmia reported their sense of smell was ‘not changed’ or ‘mildly reduced’.

We conclude that anosmia is a common sign of early COVID-19. Objective smell assessment was more sensitive than self-reported anosmia, raising the possibility a rapid screening test could be developed and applied in vulnerable facilities.
First person experience of a health care worker’s recovery from COVID-19

Authors: **Ms Naomi Pratt**, Dr Emma Tippett¹,², Dr Manuja Premaratne¹,², Dr Peter Kelley¹, Professor Damon Eisen¹,³,⁴

Affiliations: ¹Peninsula Health, Frankston, Australia, ²The Peter Doherty Institute, Melbourne, Australia, ³Monash University, Melbourne, Australia, ⁴James Cook University, Townsville, Australia

Abstract:

It is becoming increasingly accepted that a large proportion of patients who contract COVID-19 will go on to develop a diverse range of chronic symptoms with debilitating fatigue and shortness of breath being cardinal, but other symptoms such as rashes, myalgias and hair loss being frequently and consistently reported. Whilst the initial fear for healthcare workers was of developing severe COVID-19 pneumonia we now must grapple with these long-term effects in otherwise healthy people. We present here the first-person experience of an ICU nurse practitioner who contracted COVID-19 in the work place during the first wave. She suffered relatively mild illness initially but went on to develop a complex range of symptoms including tachycardia and shortness of breath that still impact on her level of function and her ability to return to full time work six months after initial infection.

She will present her an account of her illness and her recovery, and her experience as both a front-line health care worker and as a patient so we as clinicians can better understand the long-term impacts COVID-19 infection.
Concurrent Session 4E - Mental health
On Demand from 2:00pm AEDT

Parent and child health-related quality of life assessed during testing for COVID-19

Authors: **Ms Tria Williams**, Dr Jessica Kaufman1, 2, A/Prof Margie Danchin1, 2, 3, Ms Carol Jos1, Ms Keana Loschiavo1, Mr Myles Loughnan1, Dr Shidan Tosif1, 3, Professor Craig Olsson1, 2, Associate Professor Jennifer Watts4, Dr Tash Brusco5, 6

Affiliations: 1Murdoch Children’s Research Institute, Parkville, Australia, 2Royal Children’s Hospital, Parkville, Australia, 3University of Melbourne, Parkville, Australia, 4School of Health and Social Development, Deakin University, Burwood, Australia, 5Alpha Crucis Group, Health Economics, Langwarrin, Australia, 6Rehabilitation, Ageing and Independent Living (RAIL) Research Centre, Monash University, Frankston, Australia

Abstract:

Background: While adults comprise the majority of COVID-19 cases in Australia, cases in children have increased during Victoria’s second wave of infection (July-September 2020). COVID-19 testing is central to the public health response, with some individuals tested repeatedly. As the pandemic progresses, so too has concern regarding the impact of testing in addition to the pandemic itself, on both parent and child health-related quality of life (QOL). We aimed to explore parent and child QOL at the time of testing, compared with pre-pandemic norms.

Methods: Parents of children attending the Royal Children’s Hospital (RCH), Melbourne, Australia for COVID-19 testing between July and September 2020 were invited to complete a QOL questionnaire. Parents of children aged ≥6 years completed the validated CHU-9D scale on their child’s behalf, whilst parents of children 0-5 years completed the EQ-5D-5L on their own behalf. QOL raw scores were converted into a utility index for each scale, and mean values were compared to previously published Australian normative data for children and adolescents (CHU-9D) and adults (EQ-5D-5L).

Results: QOL surveys were collected from 973 families (248 CHU-9D and 725 EQ-5D-5L). The CHU-9D utility index was 0.74 (SD 0.22), 0.91-1.2 lower than population norms for children aged 6-7 (index value of 0.86 (CI 0.84 to 0.89)) and adolescents (index value of 0.83 (SD 0.12)). The parent EQ-5D-5L utility index was 0.89 (SD 0.14), 0.03-0.06 lower than population norms for adults aged 25-44 (0.95 (SD 0.10) to 0.92 (SD 0.13)).

Discussion: The utility indices for parents and children at the time of testing were lower than population norms. This is potentially clinically meaningful. This study is part of a larger longitudinal wellbeing study which will explore if these differences are due to the pandemic in general, subsequent public health restrictions, financial or educational challenges, or the testing process itself.

Reliability of the tools to examine distress, fear of COVID-19 and coping

Authors: **Associate Professor Dr Muhammad Aziz Rahman**1, 2, 3, Dr Biswajit Banik1, Dr Masudus Salehin1, Dr Sheikh Mohammed Shariful Islam4, Dr Sheikh M Alif5, 6, Dr Farhana Sultana6, Dr Ahmed Sharif6, 7, 8, Dr Nazmul Hoque3, 9, Dr Rashrin Binte Nazim3, 10, Professor Wendy Cross1

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Abstract:

Background: Study tools examining psychological distress, fear of COVID-19 and coping amongst migrants and non-migrants in Australia are very limited.

Objectives: To assess the psychometric properties and correlation of the English version of Kessler Psychological Distress Scale (K-10), Fear of COVID-19 Scale (FCSV-19S), and Brief Resilient Coping Scale (BRCS) tools during the COVID-19 pandemic situation in the State of Victoria, Australia.

Methods: A cross-sectional online survey utilised the English version of the 10-item K-10, 7-item FCSV-19S, and 4-item BRCS tools, all of which were validated previously. Reliability was measured using data distribution, variability, item performance and dimensionality. Exploratory factor analysis (EFA) was used to explore dimensionality and correlation of the tool was examined using Pearson correlation and multiple linear regression.
Assessment of healthcare workers’ mental health during COVID-19 at a tertiary hospital

Authors: Dr Jane McKenzie1, Dr Alistair Tinson1, Dr Edwina Holbeach1, Dr Barbara Hayes1, Mr Will Halpin1, Dr Jaclyn Yoong1

Affiliations: 1 Northern Health, Epping, Victoria

Abstract:

Background: Healthcare workers have been significantly impacted by the COVID-19 pandemic. This study, part of a larger longitudinal study, aims to assess levels of psychological distress in healthcare workers at a Melbourne tertiary hospital over 12 months.

Methods: This study utilises a mixed-methods research design. All hospital staff (clinical and non-clinical) are invited to participate in a survey comprising the Kessler Psychological Distress tool (K10) and two free-text response questions regarding stressors and supports. The survey repeats at six-week intervals for six months, then three-monthly thereafter. Descriptive statistics are compiled, and qualitative description is used to analyse free-text responses to identify themes related to reported stressors and potential supports for healthcare workers.

Results: There were 685 total responses from the first two surveys: 285 in June 2020 and 368 in August 2020. Melbourne’s second wave of COVID-19 commenced in June and peaked in August with state-wide lockdown. Preliminary findings showed respondents experienced increasing and significant levels of psychological distress, with 28% in June and 42% in August scoring “high” or “very high” on the K10 (versus 15% in a 2016 hospital survey). Across the two surveys, stressors identified included feeling undervalued, changing work-load and work-type, fear of contracting/spreading COVID-19, communication and uncertainty. In August, new stressors included anxiety around supporting others and loneliness/isolation. Suggestions for how the hospital could provide further support included staff acknowledgement, increased staffing, and facilitating working from home. In August, additional themes emerged around access to break-out spaces and increased wellbeing resources.

Conclusions: Findings identified very high levels of psychological distress in healthcare workers during the COVID-19 pandemic, with increasing levels potentially tracking to the second wave. Healthcare workers identified a range of stressors in the work environment. They also suggested a number of supports expected to be helpful at both the individual and system levels.

Providing wellbeing interventions reduces the psychological impact of quarantine

Authors: Dr Sarah Miller1

Affiliations: 1 ACT Health, Australia

Abstract:

Being held in quarantine due to COVID-19 public health measures can have an impact on psychological health. Reviews of international research suggest these impacts can vary from boredom, loneliness, confusion, and anger, to post-traumatic stress symptoms, anxiety, mood disturbance and exacerbations of mental illness. There is however no literature to date assessing the impact of specific psychosocial interventions provided to people in quarantine for COVID-19. In response, ACT Health introduced a mental health and wellbeing screening tool and developed a Wellbeing Team inside the Communicable Disease Control, Health Emergency Control Centre. This team provides a multidisciplinary model of care to support peoples’ needs in quarantine. The team includes, psychologists, social workers, Aboriginal Liaison Officers, peer recovery workers, occupational therapists and counsellors with specialty in parenting, domestic violence support, and grief and bereavement. This presentation will outline key learnings and outcomes related to the conference theme of mental health and wellbeing. Data analysis from this study will show the predictors of psychological health and ill-health of people in quarantine and isolation in the ACT as well as identify the interventions which can mitigate these impacts. The presentation will include recommendations for other jurisdictions to consider to help inoculate the community from the impact of quarantine on mental health.
The “Wounded Healer” – Anxiety and Sleep Disturbance Amongst Healthcare Workers Facing COVID-19 Pandemic in India; A Generalised Anxiety Disorder (GAD-7) Scale Based Online Survey

Authors: Dr Bhawna Gupta

Affiliations: 1 Torrens University, Melbourne, Australia

Abstract:

Purpose: The pandemic of COVID-19 infection has resulted in an unprecedented psychological impact on HCWs, already working under high stress levels. We aimed to identify and measure the effects of this pandemic on anxiety levels and sleep disturbance among the HCWs, brought upon by this pandemic.

Method: We conducted a 19-question online survey based upon 7-item GAD-7 (Generalised Anxiety Disorder) scale to measure anxiety levels and associated factors among HCWs in India during this pandemic.

Results: A total of 368 HCWs responded to the survey with a higher number (54.3%) being females; maximum (34.2%) respondents in 45-60 years age group with 52.2% doctors and 38% nurses. Severe anxiety scores were observed in 27 (7.3%); moderate, mild and minimal anxiety was observed in 12.5%, 29.3% and 50.8% HCWs respectively and 31.5% had poor to fair sleep scores. Univariate analysis showed female gender and inadequate availability of PPE significantly associated with higher anxiety levels (p = 0.014 and 0.007). Sleep disturbance was significantly associated with age<30 years (p=0.04) and inadequate PPE (p=0.001). Multivariate analysis showed correlation of anxiety scores and quality of sleep scores with a significant inverse relation reflecting poorer quality of sleep as the GAD7 score increased (p< 0.001).

Conclusion: COVID-19 pandemic has caused a significant level of anxiety and sleep disturbance amongst HCWs, associated with female gender, younger age group, inadequate PPE, constant risk of contracting the infection themselves or transmitting it to their families. Early detection of at-risk HCWs and institution of situation-tailored mitigation measures will enable alleviate the risk of long term, serious psychological sequelae as well as reduce HCWs’ current anxiety.
Telehealth outpatient COVID-19 case management at a tertiary hospital in Sydney

Authors: Dr Milton Micallef1,2, Dr Siobhan Hurley1, Dr Jeffrey Post1,2, Dr Kristen Overton1

Affiliations: 1The Prince of Wales Hospital, Randwick, Australia, 2Prince of Wales Clinical School, University of New South Wales, Sydney, Australia

Abstract:

Coronavirus disease 2019 (COVID-19) is a contagious droplet-spread disease with risk of mortality in those aged over 65 years or with multiple co-morbidities, while in otherwise healthy young adults is often minimally symptomatic and rarely requires hospitalisation. We sought to assess outcomes of a new tele-health assessment model for domiciliary monitoring of patients diagnosed with COVID-19, not requiring in-hospital care, and undergoing home isolation. This was a retrospective, single-centre, observational cohort study, performed over a 6-week period commencing 12 March, 2020. The setting was of patients at home or in facilitated isolation, managed remotely from a tertiary hospital tele-health assessment clinic under the supervision of a staff specialist infectious diseases physician. Participants were 158 adult patients with confirmed COVID-19 (from 5,223 SARS-CoV-2 tests performed) who had presented to a tertiary hospital COVID-19/influenza assessment clinic or the emergency department. Main outcomes analysed were: duration of active case follow-up; average number of telephone calls per patient; average number of hours spent managing each patient; patient characteristics. Results: median age 31 years, 47.5% male sex, nil indigenous, 69.6% Medicare-eligible, 8.2% healthcare worker; median symptom duration 13 days (range 2 – 34); 1,151 telephone calls made in the monitoring of these patients, amassing an estimated 384 hours of telephone consultations (average 2 h 26 min per patient); 10 required repeat review in clinic, one of whom was admitted; 6 presented to the emergency department of whom 3 were admitted; 2 were admitted direct from home (one for end-of-life care); 4 required supplemental oxygen. We conclude that a tele-health model of care is safe, efficient and cost-effective for the management of mild-moderate COVID-19; it facilitates home isolation; there is a consequent reduced burden on emergency departments and primary care services, and allows valuable hospital beds and personal protective equipment to be conserved for severe cases.

COVID-Kids Inpatients at The Royal Children’s Hospital, Melbourne

Authors: Alissa McMinn1, Dr Danielle Wurzel1,2,3, Kate Dohle1, A/Professor Nigel Crawford1,2,3

Affiliations: 1Murdoch Children’s Research Institute, Parkville, Australia, 2The Royal Children’s Hospital, Parkville, Australia, 3The University of Melbourne (Department of Paediatrics), Parkville, Australia

Abstract:

Aims: To describe clinical, demographic and laboratory characteristics of hospitalised children with SARS CoV2 infection, utilising the ‘COVID-Kids’ inpatient platform at The Royal Children’s Hospital (RCH), Melbourne.

Methods: Prospective cohort study of all hospitalised children at RCH with COVID-19. Children were identified prospectively via laboratory notification. Data was extracted from electronic medical records for all patients with e-consent and biospecimens collected in a subset of this population.

Results: As of 22nd of September 2020, RCH had performed 19,336 nasopharyngeal/throat swabs, with only 20, or 0.001 % of those tested, hospitalised due to COVID-19 disease.

Sixty-five percent (n=13) were male, median age of 2 years (range 23 days to 16 years). Only 1 patient identified as Aboriginal or Torres Strait Islander.

Ten (50%) patients had pre-existing comorbidity, of which 6 (30%) had cardiac disease; 1 was receiving chemotherapy for malignancy.

In total, 18 (90%) were symptomatic, with fever (n=13; 65%) being the most common feature followed by rhinorrhoea (n=10; 50%) and cough (n=9; 45%).

Of the 3 who were admitted to paediatric intensive care unit (PICU), 1 had severe COVID-19, 1 had Paediatric Inflammatory Multi-system Syndrome Temporarily Associated with SARS-CoV2 (PIMS-TS) and 1 patient with Kawasaki Disease temporarily associated with SARS-CoV-2 (KD-TS). Maximal treatment in PICU was extra corporeal membrane oxygenation (ECMO) in 1 child. The median stay in PICU was 21 days. Intravenous immunoglobulin (IVIG) was given to all PICU patients, 2 received Tocilizumab, 1 received remdesivir. Antibiotics were given to almost half of all patients (n=8/20; 40%).

All patients improved and were discharged home. Median duration of stay was 2.5 days (range 0-52).

Conclusion: A minority of hospitalised children with COVID-19 have had severe disease, and of those, all have recovered. However, long term outcomes of children with COVID-19 remain unknown and we will continue to monitor this important paediatric cohort closely.
Maternity and perioperative preparedness for COVID-19 using translational simulation.

Authors: Dr Rebecca Szabo1,2,5,6, Nova Barrios2,5, Dr Matthew Daly2,4, Tracey Hynes2,5, Aishwarya Mohan2,5, Dr Marta Thio2,5,6, Dr Kara Allen1,3,4

Affiliations: 1The University of Melbourne - Department of Medical Education, Parkville, Australia, 2The Royal Women’s Hospital - Gandel Simulation Service, Melbourne, Australia, 3The University of Melbourne - Centre for Integrated Critical Care, Parkville, Australia, 4Royal Melbourne Hospital, Parkville, Australia, 5Maternity Services Education Program, Carlton, Australia, 6The University of Melbourne - Department of Obstetrics and Gynaecology, Parkville, Australia

Abstract:
Introduction: There have been rapid and significant changes to perioperative and maternity service delivery in Australia in response to the COVID-19 pandemic. Pandemic and disaster response is a new area for most working in Australian maternity care. Our organisation, the Royal Women’s Hospital is the largest and oldest tertiary maternity hospital in Australia and was at the epicentre of the second wave of COVID-19 cases during the second wave in Victoria.

Methods: A translational simulation approach with human factors was used in 3 phases. This was 1. Diagnosis of new changes needed using table-top and in situ simulation, 2. Development and testing of new processes and care pathways using in situ simulation and human factors 3. Embedding new processes, pathways and knowledge. An iterative improvement cycle was used. Multimodal education, training and in situ simulation with teams in the clinical environment occurred. Just-in-time in situ simulation was used with actual teams prior to planned COVID-19 cases. Simulation and education was also conducted at the Royal Melbourne Hospital for anticipated cases of pregnant COVID-19 patients in ICU, theatre and the COVID-19 wards.

Results: Multiple new processes and materials were developed, tested and iteratively improved. Over 80 simulations were done across NICU, antenatal, birth centre and theatre. 60% of staff in these areas participated prior to the peak of the Victorian second wave including cleaning, administrative and clinical staff from multiple professions. Evaluation and simulation is ongoing. Vital to effect change has been in situ methods and engagement of all in the organisation to ensure guidelines were implemented as work done, not work as imagined.

Conclusion: Our approach has allowed for rapid COVID-19 preparedness and change to be embedded in a large maternity service. The lessons learned can inform preparation for the next COVID-19 wave or next large health crisis.

COVID-19 Work and Health Study: A prospective cohort study on work loss

Authors: Professor Alex Collie1, Dr Daniel Griffiths1, Mr Luke Sheehan1, Dr Caryn van Vreden1, Associate Professor Dennis Petrie1, Associate Professor Genevieve Grant1, Professor Peter Whiteford2, Professor Malcolm Sim1

Affiliations: 1Monash University, Melbourne, Australia, 2Australian National University, Canberra, Australia

Abstract:
Changes in work, including widescale unemployment and reductions in working hours, have been one of the major consequences of measures introduced to limit the spread of COVID-19. Globally there has been an estimated 14% reduction in working hours during the first half of 2020 compared to the last quarter of 2019, equivalent to a loss of 400 million full-time jobs [1]. Work loss disrupts social connections and reduces material financial resources, both of which are important determinants of health. There is a gradient of exposure to work loss during the COVID-19 pandemic, with some workers more affected than others.

The overarching aim of the COVID-19 Work and Health study is to examine the health and employment of Australians who have lost their jobs or lost work during the COVID-19 pandemic, and to track changes in health and work over time. The study seeks to understand what impact job and work loss is having on mental and physical wellbeing, who is at greatest risk, and how and when people recover. We also want to know if and when people are returning to work, and how their health changes over time. For those still working, we want to know how well they have handled any changes to their work environment and how their workplaces have adapted.

The study uses a prospective cohort design, with N=2603 participants completing a baseline survey and then further surveys administered at one, three and six month follow-ups. Surveys use standardised, validated outcome measures such as the Short-Form 12 (SF-12) health questionnaire, and the Kessler-6 psychological distress questionnaire. Study-specific questions have been developed where standardised scales do not exist (e.g., questions about working from home).

References
Lessons learnt at the Northern Hospital responding to COVID-19

Authors: Dr Saliya Hewagama1, Dr Liam Hannan2, Assoc. Prof Craig Aboltins1

Affiliations: 1Northern Health, Epping, Australia

Abstract:

The Northern Hospital is a 400 bed tertiary hospital situated in Melbourne's northern suburbs and serviced a number of 'hotspot' suburbs during Victoria's second wave of COVID-19 pandemic cases. As of the 27th September 2020, a total of 217 COVID-19 patients had been admitted, with a peak of 44 COVID-19 inpatients at any one time point. We describe the lessons we learnt in clinical management, both on an individual patient and an organisational level when coping with the pandemic.

The rapid influx in cases involved several changes to the traditional model of medical care. On an individual patient level, it quickly became apparent that the critical time for patients was the end of the first week of symptoms - with dyspnoea the most relevant symptom. Antibiotic therapy probably only benefited a handful of patients, early escalation of respiratory support was vital for patients in respiratory distress, and avoidance of intravenous fluids in all but nursing home patients.

In a bid to reduce healthcare worker (HCW) exposure, only the immediate clinical team and nursing staff were involved in patient care. Staff were rostered in teams, to avoid cross-contamination and excess furloughing in the event of a HCW exposure. Daily virtual 'paper rounds' were instituted to discuss all current COVID inpatients with an Infectious Diseases, Respiratory and Palliative Care physician which allowed for oversight of each patient's clinical trajectory. These rounds allowed for discussion of the appropriate use of therapeutics including antibiotics, steroids, access to remdesivir in the relevant cohort, and palliative care if required. In addition, the novel use of tocilizumab in selected for patients with evidence of hyperinflammation (using a modified H-score), clinical trajectory and consensus amongst Infectious Diseases, Intensive Care and Rheumatology units.

COVID-19 and Cancer: Risk mitigation for vulnerable hospitalised patients

Authors: Mrs Belinda Lambros1,2, Ms Gemma Reynolds1,2, Ms Demi Diaz1, Ms Elizabeth Gillespie1, Mr Gerry Hanna1, Ms Linda Mileshkin1, Ms Monica Slavin1,2, Ms Karin Thursky1,2, Mr Leon J Worth1,2

Affiliations: 1Peter MacCallum Cancer Centre, Parkville, Australia, 2National Centre for Infections in Cancer, Parkville, Australia

Abstract:

Introduction: Patients with cancer are potentially at risk of increased morbidity and mortality related to COVID-19 infection. Australian hospital pandemic responses have focussed upon personal protective equipment, contact tracing, timely testing and adjustment of cancer treatment regimens where appropriate. We report experience at a quaternary cancer centre, where additional measures have been implemented for vulnerable populations.

Methods: Statewide guidelines for infection prevention and control were developed and updated during the period March-August 2020, including pre-admission checklists and pre-operative screening. Stakeholder engagement and literature review were performed to identify the need for additional measures, and these were applied in tandem with delivery of specialised care for cancer populations, but additional measures are required to reduce COVID-19 risk in ambulatory care settings.
Delivering safe health information and advice on the National Coronavirus Helpline

Authors: Dr. Swapna Kiran, Dr. Osanda Wijeratne, Dr. Marie-Louise Stokes

Affiliations: Healthdirect, Australia, Sydney, Australia

Abstract:
Healthdirect Australia operates the National Coronavirus Helpline on behalf of the Australian Government Department of Health. The service provides information about COVID-19, over-the-phone symptom assessment consistent with current case definitions, support for healthcare professionals and information regarding restrictions. Health information and advice, provided by the helpline is sourced from the Commonwealth Department of Health, State and Territory Governments (for jurisdiction specific information, the Australian Health Protection Principal Committee and the Communicable Diseases Network Australia.

From the start of the service in March, more than 1.2 million calls were handled by agents of the helpline. The focus is on improving health literacy of the consumer with regards to the current pandemic. The Knowledge base has 351 consumer questions and 78 Health Care Professional questions. Apart from this, information is provided through the consumer website. The questions posed to the helpline range from quarantine, isolation, clinical queries right through to non-clinical topics such as travel, restrictions, education, childcare and workplace information. The content is managed by the clinical and digital content teams who regularly conduct updates in line with rapidly evolving advice from government sources and press releases.

The helpline is operated within a bespoke clinical governance framework designed to ensure that the service, while remaining consumer focussed, is safe, effective and appropriate.

During the pandemic, consumer interest has significantly shifted from clinical to non-clinical questions which are mainly focused on the restrictions. This presentation will give insights into the evolving consumer attitudes and concerns during the pandemic based on information extracted from the helpline’s data repository.

The recommendation from managing the national helpline is to keep timely, clear and consistent communication for consumers especially regarding the disease. This includes consistent messaging regarding symptoms, public health terminology used as well as testing criteria across states and jurisdictions.

Demographic and clinical features of SARS-CoV-2 diagnosed at a COVID-19/Flu Assessment clinic.

Authors: Dr Siobhan Hurley, A/Prof Jeffrey Post, Dr Kristen Overton, Dr Milton Micallef, Dr Nadiya Brell, Dr Taylor Cullen, Dr Rebekah Cook

Affiliations: Prince Of Wales Hospital, Randwick, Australia

Abstract:
Background: Since the emergence of Coronavirus disease 2019 (COVID-19) in Wuhan City, China in December 2019, there has been a rapid global spread of infection now constituting a global pandemic. Much remains unknown about this disease, with information regarding the natural history and outcomes of COVID-19 largely limited to international studies. This study aims to improve our understanding of patient characteristics, clinical features, severity and outcomes of those with COVID-19 in the Australian outpatient setting.

Methods: Retrospective review of the first five weeks of a COVID-19/Flu assessment clinic affiliated with a Sydney Tertiary Hospital. A total of 3956 patients were tested, including 151 confirmed COVID-19 cases between March 12 to April 16 2020. The electronic medical records of confirmed cases were reviewed for epidemiological, demographic, clinical features and patient outcomes.

Results: The median age of those infected was 31 years with equal distribution between males (52%) and females (48%). The majority of patients had a known contact (59%) or contracted the disease whilst overseas (32%). Of those infected, the majority (47%) were born in Australia. Infection most commonly manifested as mild disease (94%), with the majority of patients (78%) having no medical comorbidities. The most frequent symptom was cough (74%) followed by fever (60%), headache (59%) and sore throat (54%). A small proportion (3%) required hospital admission, however there were no fatalities during the study period.

Conclusions: This study provides data that contributes to our understanding of the natural history of COVID-19 providing valuable information that will assist with the approach and management of patients tested in the outpatient setting.
Sars-CoV-2 PCR persistence and review of population swabbing in QLD’s first wave

Authors: Dr Kylie Alcorn¹, Dr Paulina Stehlik², Dr Andre Wattiaux³, Dr Sanmarie Schlebusch⁴, Ms Anna Jones⁵, Dr David Henry²,⁶

Affiliations: ¹GCHHS, Southport, Australia, ²Institute for Evidence Based Practice, Bond University, Robina, Australia, ³Gold Coast Public Health Unit, Carrara, Australia, ⁴QLD Health Forensic and Scientific Services, Brisbane, Australia, ⁵Pathology QLD (Gold Coast Microbiology Laboratory), Southport, Australia, ⁶Evidence-Based Professorial unit, GCHHS, Southport, Australia

Abstract:

Introduction: A cornerstone of the public health response to Sars-CoV-2 has been isolation of positive patients. Initially, criteria for release from isolation required two negative swabs in addition to symptom criteria; however, this phased out by June 4 as viral RNA can persist as ‘viral litter’ with little implication on infectivity.¹,²

The large collection of repeat tests prior to June 4 enabled a review of local demographic characteristics for swabbed individuals and duration of RNA persistence.

Methods: We conducted an exploratory analysis of Queensland’s (QLD) pathology SARS-CoV-2 reverse transcriptase polymerase chain reaction (RT-PCR) test results. Kaplan Meier analysis was used to estimate time to viral clearance and Cox regression to explore effects of age and sex.

Results: We analysed 97,476 individuals’ results between January 19 and June 4 2020. Median age was 41y (range <1-105y), 57.2% (95% CI 57.2, 57.2) were female, and 958 individuals (0.98%; 95% CI 0.92,1.05) tested positive for SARS-CoV-2.

Positivity rates were lower in regional areas than cities, in females (OR 0.80, 95% CI 0.70, 0.91), and in those aged 16y and below (p<0.01, test for trend).

Of the 958 positive individuals, 243 had two or more (max 17) additional tests, and 92% (95% CI 88.1, 95.2) remained positive after 10 days (max 76 days) after the initial result.

Median time to apparent viral clearance was longer in those 65y and over compared to those under 65y (29 v 43 days, HR 1.85; 95% CI 1.17, 2.90), and was unaffected by sex (HR 0.93; 95% CI 0.66, 1.30).

Conclusion: Detectable RNA can persist for long periods of time, particularly in the elderly.


Social and biological dimensions of COVID-19 in Victoria

Authors: Dr Chris Lemoh¹

Affiliations: ¹Monash Health, Mont Albert North, Australia

Abstract:

The COVID-19 pandemic has exposed existing social inequities in many countries around the world. The racial and ethnic disparities in the US and the UK are clear indicators that structural discrimination driving both chronic disease and SARS-CoV-2 transmission will need to be addressed if the health and social impacts of the pandemic are to be mitigated.

In the Victorian COVID-19 epidemic, people from culturally and linguistically diverse backgrounds were over-represented amongst diagnosed cases. There has been much public debate about this, but there is still no robust conceptual framework within which to describe or measure intersecting aspects of social inequality that might permit the framing of questions of importance to research or public health, or to measure outcomes of clinical or public health interventions.

In this paper I propose an approach to describing social and biological diversity in relation to health and illness that is relevant to the COVID-19 pandemic and to the chronic diseases that exacerbate its impact on the health and wellbeing of society. This approach should allow consistent evaluation of the impact of social inequities and both individual and population outcomes in a way that challenges structural discrimination, rather than reinforcing it.
Thursday 10 December 2020

Concurrent Session 5A - HCWs and COVID-19 infections
On Demand from 10:00am AEDT

Investigating healthcare worker infections in NSW: new approaches and lessons learned

Authors: Dr Louise Cauer1, Dr Yuanfei Huang2, Dr Chaturangi Yapa2, Paula Spokes2, Kate Ward2, Professor John Hall1,2, Dr Jeremy McAnulty2, Professor John Kaldor1, Dr Greg Stewart2

Affiliations: 1Kirby Institute, UNSW Sydney, Sydney, Australia, 2NSW Health, St Leonards, Australia

Abstract:
Healthcare workers (HCW) are likely to be at risk of exposures to COVID-19 in their workplace, regardless of whether or not they provide direct care for people with COVID-19. Once infected, there may be ongoing transmission to co-workers and patients undermining confidence and capacity in the health system. Risk of infection can be minimised with the application of comprehensive infection prevention and control practices. Systematic reporting and analysis of infection in HCW may provide insight into breakdown in these practices or other unrecognised factors.

NSW Health has established processes to investigate, review and document infections in HCW as part of its public health response. A protocol and enhanced HCW case questionnaire were developed to ensure a consistent approach and systematic data collection during investigations led by local health districts. An expert panel was convened to review select cases, provide advice on the response and actions at the local and state level, and to facilitate dissemination of key learnings.

As a result, NSW Health has been able to conduct a comprehensive retrospective analysis of infections in HCW during the first wave [February-July: 86 potentially health facility-acquired; 39 (45%) likely, with 26 patient-to-HCW and 10 HCW-to-HCW transmitted, 28 (33%) unlikely, and 19 (22%) possible] and is well positioned to provide ongoing, timely data and analyses at the state and national level. Further, this approach provides a platform from which to explore in more depth recognised and unrecognised factors associated with infections in HCW and health facility transmission.

The NSW Health response has enhanced our understanding of HCW infections, particularly those acquired in the workplace, and streamlined reporting and dissemination of lessons learned for HCW infection. Complementary work to explore factors associated with infection is underway to provide additional evidence to inform policies and guidelines to protect HCW, patients and communities.

Cohort study of COVID-19 outbreak amongst healthcare workers in North West Tasmania

Authors: Frances Sheehan1, Meru Sheel1, Tara Anderson2, Louise Cauer3, John Kaldor4, Martyn Kirk1,4, Kerryn Lodo5, Costan Magnussen6, Therese Marfori1,6, Michelle McPherson6, Louise Parry2, Kylie Smith5,6, Rose Wright4, Nicola Stephens1,6,7,8, Fay Johnston5,6

Affiliations: 1National Centre for Epidemiology and Population Health, Australian National University, Canberra, Australia, 2Tasmanian Health Services, , Australia, 3Kirby Institute, University of New South Wales, Sydney, Australia, 4Australian Government Department of Health, Canberra, Australia, 5Tasmanian Government Department of Health, Hobart, Australia, 6Menzies Institute for Medical Research, University of Tasmania, Hobart, Australia, 7Microbiological Diagnostic Unit Public Health Laboratory, Department of Microbiology & Immunology, University of Melbourne at the Doherty Institute, Melbourne, Australia, 8School of Medicine, University of Tasmania, Hobart, Australia

Abstract:
An outbreak of COVID-19 among healthcare workers in North West Tasmania occurred in April 2020, involving 80 cases from the North West Regional Hospital, North West Private Hospital, and associated healthcare services. It was the largest outbreak in a healthcare setting during Australia’s first COVID-19 wave resulting in 14-days compulsory quarantine for healthcare workers who attended work across these facilities and their immediate household contacts. We conducted a retrospective cohort study to investigate factors contributing to SARS-CoV-2 transmission among these healthcare workers.

We invited all healthcare workers (N=1779) who had the potential to have attended work at the relevant facilities during the exposure period of 20 March to 13 April 2020 to complete a self-administered online survey. The survey collected data on demographics, symptoms, professional characteristics, and knowledge and practices related to infection prevention and control within the healthcare settings before and after the outbreak.

Of the 1779 healthcare workers invited, 301 (17%) who reported having attended work during the exposure period, competed the survey. Professional groups responding included nursing and midwifery staff (159, 53%), allied health (33, 11%), doctors (29, 10%) and administration (26, 9%). The majority of respondents (223, 74%) worked at North West Regional Hospital. A total of 46 (15%) respondents reported testing positive for SARS-CoV-2. Among 84 healthcare workers who reported direct care of patients with COVID-19, 20 (24%) reported infection with SARS-CoV-2 compared to 9 (11%) not reporting direct patient care.
Further analyses are underway to examine infection prevention and control training, use of personal protective equipment, hand hygiene, and physical distancing practices within the healthcare settings.

Determining hospital-based exposures and factors that contributed to acquisition of SARS-CoV-2 among healthcare workers is critical for improving operational planning and infection prevention and control policies to prevent and manage future outbreaks in healthcare settings.

Serological study of healthcare workers following a hospital-based outbreak of COVID-19

Authors: Dr Therese Marfori1,2, Dr Sanchia Warren3, Dr Louise Cooley1,4, Ms Belinda McEwan3, Dr Kylie Smith1,2, Dr Louise Parry3, Ms

Affiliations: 1Public Health Services, Tasmanian Government Department of Health, Hobart, Australia, 2Menzies Institute for Medical Research, University of Tasmania, Hobart, Australia, 3Tasmanian Health Services, Tasmanian Government Department of Health, Hobart, Australia, 4School of Medicine, University of Tasmania, Hobart, Australia, 5National Centre for Epidemiology and Population Health, Research School of Population Health, ANU College of Health and Medicine, Australian National University, Canberra, Australia

Abstract:

An outbreak of COVID-19 in North-West Tasmania during April 2020 resulted in 80 confirmed cases among healthcare workers (HCW) from a single healthcare campus incorporating two hospitals and associated outpatient services. HCW were quarantined to prevent ongoing transmission and underwent nucleic acid testing (NAT) for SARS-CoV-2 prior to return to work. We aimed to examine antibody responses to SARS-CoV-2 among these HCW including those with asymptomatic and undiagnosed infection.

We invited 1779 HCW from this campus who worked between 20 March to 13 April to participate in the study. Participants completed a survey that included demographic and symptom profiles during the study period. Serum was collected from participants over a 6-week period from July 2020, approximately 12 weeks after the exposure period. Serological testing was performed using the Abbott Architect SARS-CoV2 IgG Assay. Survey results were linked with serology and NAT results.

Of the invited 1779 HCW, 262 (15%) provided serum; 44 (17%) of whom were previously known COVID-19 cases from this outbreak. Thirty-eight (14%) were seropositive, consistent with having past infection. Of these, six (16%) had negative NAT results when previously tested for SARS-CoV-2. Another 12 (5%) known COVID-19 cases had detectable SARS-CoV-2 antibodies that were below the 1.4 threshold for a positive result (index values ranged from 0.27 to 1.2). An additional eight (3%) participants with negative NAT results also had detectable antibodies that were below the threshold for an antibody positive result.

Serological testing identified six previously undiagnosed cases of SARS-CoV-2 infection in HCWs from the outbreak. Although not considered seropositive, an additional eight participants had detectable antibodies, suggesting a higher number of undiagnosed infections may have occurred. Repeat serological testing of participants is planned to assess potential antibody decay and changes in immune response over time.

Controlling COVID-19 Health Care Worker outbreaks: lessons learnt from 3 different outbreaks.

Authors: Dr Christian McGrath1, Ms Madelaine Flynn1, Associate Professor Craig Aboltins1

Affiliations: 1Northern Health, Epping, Australia

Abstract:

Up until August 2020 there have been 108 health care worker (HCW) infections identified amongst health care workers at Northern Health. Most of these infections occurred during July and August 2020 where Northern Health experienced a significant surge in COVID-19 patient presentations and were related to 3 main outbreaks, with one each in the Emergency Department (ED), The Intensive Care Unit (ICU) and on a dedicated COVID inpatient medical ward. As well as being associated with staff morbidity, these outbreaks resulted in significant impact to the operation of the health service.

Investigations into each outbreak identified different contributory issues, including community transmission between staff and transmission in break rooms and education meetings. Screening, furloughing and cohorting of staff, as well as interventions directed at contact and droplet spread such as universal PPE, distancing in break rooms and increased cleaning frequency resulted in the termination of the ED and ICU outbreaks. On the COVID inpatient medical ward HCW infections continued despite these measures and some evidence suggested possible airborne transmission. As well as intensifying standard preventative measures, addressing factors related to airborne transmission and reducing the concentration of patients within the ward halted ongoing HCW infections.

In this presentation, the epidemiology of these HCW COVID infection outbreaks is described, along with interventions used and practical lessons learnt during their implementation. The issues and theory around possible airborne transmission of COVID in specific environments is explored as well as the implications for preventing further HCW outbreaks.
Concurrent Session 5B - Indigenous people's preparedness and responses
On Demand from 10:00am AEDT

Novel connectivity to support health system integration of remote COVID-19 point-of-care testing

Authors: Dr Louise Causer1, Kelly Andrewartha2, Steven Badman3, Dr Ami Saha1, on behalf of the Aboriginal and Torres Strait Islander COVID-19 Point of Care Testing Program

Affiliations: 1The Kirby Institute, UNSW Sydney, Sydney, Australia, 2Flinders University International Centre for Point of Care Testing, Adelaide, Australia

Abstract:
As part of the national COVID-19 response the Australian government funded the Aboriginal and Torres Strait Islander COVID-19 Point of Care Testing Program in April 2020. This program leveraged an existing molecular point-of-care (POC) testing network for sexually transmitted infections in remote health services across Australia. Rapid adaptation was required to accommodate the new COVID-19 test and scale-up of operator training, quality management, supply chain logistics, system software, data and results management to fully integrate testing into existing health systems while simultaneously meeting the unique clinical and public health needs for COVID-19.

Underpinning program scale-up and integration is a novel, robust, flexible connectivity system, able to be established and managed remotely. It capitalises on digital result generation from proprietary POC testing software using third party middleware and databases, complementary remote access software, and electronic messaging which meets Australian Digital Health Agency standards. The system delivers tailored real-time testing data to multiple recipients, with or without identifying information as required.

This system has supported the integration of COVID-19 testing into 86 remote clinical practices returning POC test results directly to patient management systems and pathology result repositories; ensured compliance with COVID-19 test reporting for surveillance under the Public Health Act in six jurisdictions; enabled rapid, coordinated public health response to positive tests; and facilitated real-time program monitoring and reporting at all levels of the health system through program dashboards and secure web-based data access.

The urgency of the response and stakeholder commitment created an environment in which previously encountered barriers to integration were overcome and rapid scale-up of COVID-19 POC testing could be achieved as part of the comprehensive public health response. The connectivity system implemented has demonstrated added value on numerous fronts and creates a robust health system framework on which to expand POC testing for other infectious diseases into the future.

Novel model to enhance access to SARS-CoV-2 test results in remote communities.

Authors: Dr Belinda Hengel1, Dr Lorraine Anderson2, Dr Kirsty Smith1, Dr Susan Matthews3, Professor Mark Shephard4, Professor Rebecca Guy2

Affiliations: 1Kirby Institute, Unsw Sydney, Australia, 2Kimberley Aboriginal Medical Services, Broome, Australia, 3Flinders University, International Centre for Point-of-Care Testing, Adelaide, Australia

Abstract:
Testing is a key component of the public health response to COVID-19; however, many remote Aboriginal communities lack access to timely laboratory results. Aboriginal people living in remote communities are vulnerable to the impact of COVID-19 due to high rates of chronic disease, overcrowding and limited access to hospitals. As such local guidelines recommend evacuations of suspect cases while waiting for COVID-19 test results. To help protect remote communities, the Australian Government funded the rapid scale-up of COVID-19 molecular point-of-care (POC) testing to ensure access to rapid test results and more timely public health responses.

The Aboriginal and Torres Strait Islander COVID-19 POC testing program leveraged expertise and infrastructure from an existing network of 31 remote primary services conducting sexually transmitted infection testing using the GeneXpert PCR platform. The program built upon existing relationships over a decade and rapidly developed new protocols and a quality framework, appropriate clinical governance, deployed equipment and trained >300 health staff at 86 health services to conduct SARS-CoV-2 POC testing on the GeneXpert PCR platform, which provides results in 45 minutes. Hub and spoke models were established to expand access to rapid SARS-CoV-2 POC testing to over 150 Aboriginal communities.

From early May to late September, over 4000 tests have been performed, with a testing rate of 5 per 1000 population, and a low (<2%) error rate. The POC tests have prevented over 16,000 days of unnecessary patient self-isolation, which would have occurred if waiting for lab tests results (~4 days). At health services affiliated with the Kimberley Aboriginal Medical Services, 73 aero evacuations have been avoided, along with 59 road evacuations (savings of $1,646,880) and significant psychosocial stress among patients and their families.

Remote communities now have much stronger capabilities to respond to COVID-19 as the risk of community spread increases with borders opening.
The Kimberley COVID-19 pause: Aboriginal health service preparation for a second wave

Authors: Dr Caitlyn White1, Ms Katy Crawford1, Dr Lorraine Anderson1, Dr Pippa May2, Dr Casey Barnes1, Ms Ashley Eastwood2

Affiliations: 1Kimberley Aboriginal Medical Services, Broome, Australia, 2Kimberley Population Health Unit, WA Country Health Service, Broome, Australia

Abstract:

The Kimberley region in Western Australia experienced the highest number of cases outside of Perth in the state’s first wave of COVID-19, with 18 confirmed cases. There were no cases of COVID-19 in an Aboriginal person. Given the vulnerability of Aboriginal people in the Kimberley to severe disease and rapid COVID-19 transmission¹, Aboriginal Community Controlled Health Services (ACCHS) focussed on developing culturally secure and regionally appropriate prevention and preparedness strategies for a second wave.

Kimberley Aboriginal Medical Services, in collaboration with the regional public health unit, planned and conducted simulation exercises with 14 remote and town-based primary health care services. Exercises aimed to test potential responses to a case of COVID-19 from case notification to evacuation of the patient and their close contacts. They iteratively refined and evaluated clinical responses, processes and protocols. Exercises were particularly important with the introduction of point-of-care PCR COVID-19 testing in several clinics from May 2020.

Exercises presented a realistic scenario and clinic staff were instructed to treat the scenario as they would in real life, including donning and doffing PPE, clinical decision-making, and seeking appropriate assistance from outside organisations.

These exercises demonstrated Kimberley primary health care services quick adaptation to the evolving situation. This included evidence of strong teamwork, utilisation of local staff and knowledge, and delivery of empathetic patient care. Other key findings included observed infection control breaches, identified knowledge gaps in contact tracing processes, and the need for revision of health service policy and plans to ensure streamlined approaches to communication and clinic patient flow.

Feedback provided to clinic staff and managers resulted in revision of policy, provision of resources, refinements to clinical processes and further staff education.


Partnership, trust, and respect: NSW’s Response to COVID-19 among Aboriginal People

Authors: Ms Geri Wilson-Matenga1, Mr Robert Skeen2, Dr Megan Campbell1, Ms Rachel Katterl1, Dr Elizabeth Ellis1, Dr Anthony Zheng2

Affiliations: 1NSW Ministry Of Health, 1 Registry Road, Australia, 2Aboriginal Health and Medical Research Council of NSW, Sydney, Australia

Abstract:

Indigenous peoples and minority populations have been disproportionately burdened by COVID-19 worldwide. In Australia, there have been relatively few cases of COVID-19 in Aboriginal and Torres Strait Islander people, including in New South Wales (NSW): the state with the greatest population of Aboriginal people.

The Aboriginal Health and Medical Research Council of NSW and the Centre for Aboriginal Health at the NSW Ministry of Health worked in partnership to deliver a comprehensive strategy to reduce the incidence and impact of COVID-19 on Aboriginal communities.

The partnership approach to responding to the COVID-19 Pandemic is built on the foundations of a 20-year plus relationship between the two organisations. Central to this partnership is trust and respect, which enabled the rapid establishment of frequent meetings, regular communication, information sharing and joint priorities for action.

A broad range of activities has been implemented in NSW, including a targeted communications campaign, support for Aboriginal Community Controlled Health Organisations to pivot to ‘COVID-safe’ ways of working, building testing capacity and access, responses to mass gathering events including state funerals, and working collectively with other stakeholders national advisory groups and local service providers. These efforts, alongside the efforts of Aboriginal people, communities and community organisations, have contributed to consistently high testing rates, low case numbers and zero mortality from COVID-19 for Aboriginal people in NSW to date.
Concurrent Session 5B - Indigenous people's preparedness and responses
On Demand from 10:00am AEDT

Exploring Healthcare Workers’ Perceptions, Attitudes, and Experiences of PPE during COVID-19

Authors: Dr Michelle Ananda-Rajah1, Ms Danielle Berkovic1, Ms Catriona Parker1, Professor Raina C Macintyre2, Dr Ramesh Manocha3, Professor Kerryn Phelps4, Dr Darshini Ayton1

Affiliations: 1Monash University, Melbourne, Australia, 2Kirby Institute, Sydney, Australia, 1Healthed, Sydney, Australia, 4Cooper Street Clinic, Sydney, Australia

Abstract:
Introduction: More than 3,514 healthcare workers (HCWs) in Victoria have been diagnosed with COVID-19 with the majority of infections acquired at work. HCWs have harboured concerns over the adequacy of personal protective equipment (PPE). The aim of this study was to explore the perceptions, attitudes, and experiences of PPE during the COVID-19 pandemic among Australian HCWs.

Methods: A cross-sectional survey was co-developed between frontline HCWs, public health researchers, and clinician consumers. Participants were recruited via professional colleges, email blast, societies, and social media. The survey was released electronically on 02 September, 2020. Data collection is ongoing.

Results: The survey has been completed by 1,157 HCWs (53% physicians, 38% nurses, 2% allied health, and 9% other (e.g. paramedics, pharmacists, aged care workers) from hospitals (47%) and community (46%) settings. Perception of risk of exposure to COVID-19 was rated as ‘some risk’ or ‘high risk’ by 63%. A small number of respondents (14%) reported being denied access to PPE when examining a patient. Only 21% of respondents were ‘very confident’ in the use and fitting of PPE. Whilst more than half had not received PPE advice from a work health and safety (WHS) professional (59%), a further 38% had not had infection control assess their workplace risk of COVID-19, or had provided PPE advice (53%). Concerningly, almost half (45%) of participants reported reusing or extending use of their PPE. Similarly, almost half reported having moderate or severe anxiety on a validated scale (45%).

Conclusion: HCW expectations of access to PPE, its appropriateness and training are not being met to a high degree nine months into the COVID-19 pandemic. These shortcomings have been associated with high levels of anxiety. System improvements in PPE are required including stronger consultation between infection control, WHS experts and HCWs themselves.

In-flight transmission of SARS-CoV-2 during a long-haul flight in Vietnam

Authors: Ms Ha-Linh Quach2

Affiliations: 1National Centre for Epidemiology and Population Health, Research School of Population Health, College of Health and Medicine, Australian National University, Canberra, Australia, 2National Institute of Hygiene and Epidemiology, Vietnam

Abstract:
Background: In early March 2020, we detected a large COVID-19 cluster associated with a commercial 10-hour flight from London, the UK to Hanoi, Vietnam. We aimed to investigate the potential in-flight transmission of SARS-CoV-2 on that flight.

Methods: We conducted detailed epidemiological investigations that involved contact tracing, PCR testing, quarantine, and structured interviews among 217 passengers and crew members, plus their close contacts. We calculated risk ratios (RR) and 95 percent confidence interval (95% CI) to identify factors associated with the risk of in-flight transmission risks.

Results: We detected a total of 16 flight-associated cases. The probable index case was a 27-year-old woman who was symptomatic while on the plane and tested positive three days after arrival. Twelve (75%) cases were seated in business class together with the probable index case (attack rate 62%) and developed symptoms within a median of 8.8 days (IQR 5.8 – 13.5) after arrival. Seating proximity in business class of two seats or less from the index case was strongly associated with an increased risk of infection (RR 7.3, 95% CI 1.2-46.2, p-value 0.03). There was no evidence supporting alternative transmission scenarios other than in-flight transmission. We detected five secondary cases among 1,311 close contacts from the flight-associated cases.

Conclusion: Our findings strongly suggest that a large COVID-19 cluster was caused by transmission on board a long haul flight from a single symptomatic passenger. SARS-CoV-2 has the potential to spread effectively even in business class-like settings with spacious seating arrangements and well beyond the established distance used to define close contacts on airplanes and other public transport. Guidelines for the prevention of COVID-19 among flight passengers should take into consideration the pre-flight infection risk for individual passengers, the number of passengers traveling, and the duration of the flight.
Epidemiological evidence of airborne SARS-CoV-2 transmission from singing during a church outbreak.

Authors: Dr Anthea Katelaris¹, Dr Jessica Wells¹, Ms Penelope Clark¹, Ms Sophie Norton¹, Prof Stephen Corbett¹, Dr Shopna Bag¹

Affiliations: ¹Western Sydney Public Health Unit, North Parramatta, Australia

Abstract:

Background: Globally, COVID-19 outbreaks in choirs have provided epidemiological evidence of airborne transmission. However, previous clusters have occurred in high-incidence settings or also involved close-proximity contact, potentially obscuring transmission patterns.

Method: On 18th July, Western Sydney Public Health Unit was notified of a COVID-19 case in a church choirist. Between 15-17th July, the case had sung at 4 services while infectious.

Following notification of a second case within the congregation, all attendees were considered close contacts, required to quarantine and requested to seek COVID-19 testing regardless of symptoms.

We examined the index case’s movements within the church. Seating positions of secondary cases were determined from interviews and video recordings of the services. Distances between the index and secondary cases were measured during a site visit and from building plans.

Results: The index case sung from an elevated balcony, and remained there throughout the services. The case did not mix with the congregation before or after the service, and did not touch ceremonial objects.

Of 730 close contacts, 12 secondary cases were detected, across two services.

The round church had pews located circumferentially around a central alter. All secondary cases sat within a 70° section, between 1-15m below and to the left of the index case. Cases were not detected in attendees who sat in other sections.

The index case and 9 secondary cases were able to have whole-genome sequencing performed, and formed a single genomic cluster.

Conclusion: Epidemiological evidence from this cluster supports airborne transmission of COVID-19.

This cluster occurred despite adherence to contemporaneous guidelines requiring microphone-use and 3m distance around a singer. Guidelines for places of worship were tightened following this cluster, including increasing the distance required around a single singer to 5m. However, this cluster suggests that further measures may be required to prevent aerosol spread during singing.

General practice’s early response to the COVID-19 pandemic

Authors: Dr Maganja Damian¹

Affiliations: ¹Royal Australian College of General Practitioners, Sydney, Australia

Abstract:

General practice is the most accessed, and most accessible, component of the Australian healthcare system. It is therefore essential to protecting population health. However, efforts to meet the many existing, developing and future challenges facing the health system often neglect the sector and limit the ability of general practice to provide effective, efficient and equitable care (particularly through prevention and early intervention).

The COVID-19 pandemic has resulted in multiple and rapid changes in the delivery of general practice services. In response to the threat of the pandemic and in order to keep their staff and communities safe, general practices have rapidly moved to new models of care, embraced Medicare-funded telehealth and responded to uncertain availability of personal protective equipment with innovation. These changes have shown the adaptability of general practice, helped keep patients and practice staff safe, and undoubtedly reduced community transmission and mortality.

At the same time, general practice has been sidelined in planning and GPs/practices have not received coordinated and coherent guidance, or timely information for and about patients. There are also increasing concerns with patients not seeking care, potentially causing or exacerbating health issues in the future.

The pandemic, and the response to it, has demonstrated the critical importance of general practice to public health in Australia, emphasised the potential dangers of existing fragmentation within the Australian health system, and accentuated long-standing issues regarding support for general practice. These impacts on primary care highlight the need for improved integration of health services, should inform future pandemic planning, and guide the development of Australia’s long-term national health plan. COVID-19 has also demonstrated that reform which better supports the community, promotes high-quality services and ensures the sustainability of the healthcare system can be readily implemented.
Concurrent Session 5D - Informatics and modelling
On Demand from 10:00am AEDT

CRISPER: COVID-19 Real-time Information System for Preparedness and Epidemic Response

Authors: Assoc Prof Colleen Lau1, Dr Emma J Field2-3, Mr Michael Hewett3, Dr Priyanka Pillai3, Mr Kieran Ricardo5, Dr Luis Furuya-Kanamori1, Ms Stephanie J Curtis1, Dr Nelson Lau6, Dr Meru Sheri5, Dr Lisa McHugh2, Dr Olivia Williams1, Dr Charlee J Law1, Mr Paul Konings3, Prof Ross Andrews1,2, Prof Nigel Stocks3, Dr Michael Purcell6, Dr Jess C Moore5, Prof Graham J Williams5

Affiliations: 1Research School of Population Health, Australian National University, Canberra, Australia, 2Global and Tropical Health Division, Menzies School of Health Research, Brisbane, Australia, 3The National Centre for Geographic Resources & Analysis in Primary Health Care (GRAPHC), Australian National University, Canberra, Australia, 4Doherty Institute, The University of Melbourne, Melbourne, Australia, 5Software Innovation Institute, Australian National University, Canberra, Australia, 6Medibank Health Solutions, Sydney, Australia, 7Adelaide Medical School, University of Adelaide, Adelaide, Australia

Abstract:
Sharing real-time surveillance data is a core component of Australia’s Health Sector Emergency Response Plan for COVID-19. A major challenge has been the need to share data and information in a timely manner with clinicians and the public while protecting data privacy. Although General Practitioners (GPs) and other primary care providers are Australia’s frontline health workers, they currently face major challenges in accessing timely information. As most GPs provide care to patients near their clinics, geographically explicit data would be critical for risk assessment for both patients and staff.Engaging communities by providing clear and concise information is critical for effective outbreak control, and the public may also benefit from more geographically relevant and visual communication.

Real-time COVID-19 dashboards have become important platforms for information sharing, e.g. Johns Hopkins University dashboard (1). We are developing CRISPER (COVID-19 Real-time Information System for Preparedness and Epidemic Response) as a nationwide information and visualisation system for Australia. CRISPER will focus on improving information access for GPs, other primary care providers, and the community. The system aims to provide the “go-to source” of official, accurate, reliable, and spatially explicit COVID-19 data.

CRISPER will include: 1) web-based interactive data visualisation and mapping tools, 2) an automatic alert system that provides users with alerts tailored to their information needs, and 3) a data engine that securely hosts and protects the privacy of the underlying data, using cutting edge differential privacy algorithms.

Our prototype National Summaries dashboard (2) and Interactive Mapping Tool (3) currently use publicly available de-identified data. Functionality of CRISPER can be expanded as more detailed data, both public and private, become available. We will evaluate the system’s usability and usefulness through survey/interviews with key user groups and stakeholders, and identify strategies for improving privacy-preserving information sharing during future public health emergencies.

1.https://coronavirus.jhu.edu/map.html
3.https://graphc.maps.arcgis.com/apps/opsdashboard/index.html#/74e69c2ab40f41c892a652e95373622c

Modelling response strategies for potential COVID-19 outbreaks in remote Australian Aboriginal communities

Authors: Dr Ben B Hui1, Dr Damien Brown2-3, Dr Rebecca H Chisholm3,4, Dr Nicolas Geard1-5, Professor Jodie McVernon2,3,6, Associate Professor David G Regan1

Affiliations: 1The Kirby Institute, UNSW Sydney, Sydney, Australia, 2The Peter Doherty Institute for Infection and Immunity, The Royal Melbourne Hospital and The University of Melbourne, Melbourne, Australia, 3Centre for Epidemiology and Biostatistics, Melbourne School of Population and Global Health, The University of Melbourne, Melbourne, Australia, 4Department of Mathematics and Statistics, School of Engineering and Mathematical Sciences, La Trobe University, Bundoora, Australia, 5School of Computing and Information Systems, The University of Melbourne, Melbourne, Australia, 6Infection and Immunity Theme, Murdoch Children’s Research Institute, The Royal Children’s Hospital, Parkville, Australia

Abstract:
Remote Australian Aboriginal and Torres Strait Islander communities have potential to be severely impacted by COVID-19, in areas where access to medical services is limited. Accordingly, the Aboriginal and Torres Strait Islander Advisory Group on COVID-19, co-chaired by the Australian Government Department of Health and the National Aboriginal Community Controlled Health Organisation has led development of specific guidance to support initial response to identified infections in these settings, and commissioned modelling to help inform this advice. We developed an individual-based simulation model to represent remote communities of different sizes to consider alternative public health responses following the silent introduction of a case. The model included data-informed representation of extended family connections spanning multiple, often crowded dwellings.
A range of strategies for case finding, quarantining of contacts, testing, and lockdown were examined. Our results suggest that multiple secondary infections are likely present by the time the first case is identified, reinforcing the importance of timely initial case detection. Case isolation, quarantine and testing of extended households of the identified case were able to reduce peak infection prevalence from 60-70% to around 10%. Including exit testing from quarantine further reduced the risk of reseeding community transmission. Concurrent implementation of a 14-day lockdown of non-quarantined households was highly effective for epidemic control and reduced overall testing requirements, with peak prevalence of the initial outbreak constrained to less than 5%, and the final community attack rate to less than 10%. Compliance is crucial, underscoring the need for community-supported, culturally safe responses. Our model suggests a SARS-CoV-2 outbreak will develop and spread rapidly in remote communities if an undetected infection is introduced. Prompt case detection with quarantining of extended-household contacts and a 14-day lockdown for all other residents, combined with exit testing for all, is the strategy most likely to achieve definitive initial containment.

Can we prevent COVID-19 epidemic in Prison setting: a modelling study

Authors: Dr Amy Jisoo Kwon1, Dr N.A. Breñañathe, Luke Grant3, Jennifer Galouzis3, Wendy Hoey4, James Blogge5, A.R. Lloyd1, R.T. Gray1

Affiliations: 1The Kirby Institute, UNSW, Sydney, Australia, 2UniSA Online, University of South Australia, Australia, 3Corrective Services NSW, Australia, 4Justice Health Forensic Mental Health Network NSW, Australia

Abstract:

Background: Prisons are traditional epicentres for infectious disease due to largely inevitable close contacts in the environment. Infectious disease can be transmitted between prisoners, correctional and healthcare staff, and to and from the community. Prisons are therefore a high priority setting in the public health response to COVID-19.

Methods: We developed a compartmental model of COVID-19 transmission within prison settings and applied to specific prisons within NSW. In the model, epidemics can be initiated via inmates, correctional or healthcare staff, or family visitors. We ran a counterfactual scenario (where no interventions were in place) versus a combination of intervention strategies for COVID-19 for 120 days. Interventions include reducing the inmate population, quarantine of incoming inmates at reception, isolating inmates with suspected or proven infection, using personal protective equipment, and thermal screening of staff and visitors. The model also incorporated a higher risk of mortality among the Indigenous Australians and other vulnerable people.

Results: Without interventions, we estimated that if one infected inmate enters prison, most inmates will be infected by one month. Compared to the counterfactual scenario, reductions in the inmate population with the quarantining of incoming inmates in reception and isolation of infected inmates can reduce cumulative infections by 26-70% and cumulative deaths by 29-51%. Additional measures such as reducing the number of visitors, ensuring all infected staff stay at home, and widespread mask usage could virtually eliminate COVID-19 in prison settings. These effects, however, depends on the characteristics of each setting and the feasibility of effective implementation.

Conclusion: Our model shows the prison-specific interventions at the start of the COVID pandemic are likely to have been effective in preventing COVID-19 outbreaks. These interventions are applicable to other settings and need to be considered as prisons are likely to represent an important contributor to the propagation of the epidemic.

Making best use of testing resources to support the public health response

Authors: Dr Christopher Baker1,2,3, Dr Howard Bondell1,2,3, Dr Jodie McVernon4,5,6, Dr Andrew Robinson1,3

Affiliations: 1School of Mathematics and Statistics, The University Of Melbourne, Melbourne, Australia, 2Melbourne Centre for Data Science, The University Of Melbourne, Melbourne, Australia, 3Centre of Excellence for Biosecurity Risk Analysis, The University Of Melbourne, Melbourne, Australia, 4Peter Doherty Institute for Infection and Immunity, The University Of Melbourne, Melbourne, Australia, 5Melbourne School of Population and Global Health, The University Of Melbourne, Melbourne, Australia, 6Murdoch Children’s Research Institute, Melbourne, Australia, 7Land and Water, CSIRO, Brisbane, Australia

Abstract:

Testing is a critical aspect of the response to COVID-19, as tests are important for controlling outbreaks and for informing policy around restrictions. A positive test initiates a public health response, where the person is isolated, and their contacts are identified and quarantined to reduce disease spread. However, for isolation and quarantine to be effective, the system needs to be fast. This creates a trade-off, where testing more people can identify more cases, but pushing the testing system beyond routine capacity can lead to delays and undercut our ability to manage outbreaks. Further complicating the problem is the need for surveillance data to inform jurisdictional restrictions.

We develop a mathematical framework to inform the test allocation strategy, where calculating the ‘value of a test’ is central to the problem. In our framework, the value of a test is defined by the expected reduction in future transmission achieved by doing a test. The value depends on the likelihood of a positive result and the reduction in transmission, if the test is positive. The value of the test depends on disease prevalence in the community and on who is tested. For example, a person in hotel quarantine is relatively more likely to test positive, but their onward transmission is low. By quantifying different cohorts of the population, we are then able to identify strategies that best reduce disease transmission.
Concurrent Session 5E - Jurisdictional Epidemiology
On Demand from 10:00am AEDT

COVID-19 in North Brisbane: the first wave

Authors: Dr Shani Rupasinghe1, Dr Megan Young1, Mr Daniel Francis1

Affiliations: 1Metro North Public Health Unit, Metro North Hospital and Health Service, Windsor, Australia

Abstract:

Background: Metro North Public Health Unit (MNPHU) is one of the largest public health units in Queensland, serving international and domestic airports, a cruise ship terminal and a population of >1,000,000 people. This study describes the epidemiology of COVID-19 in the MNPHU jurisdiction during the first wave of COVID-19.

Methods: This was a single center, retrospective, epidemiological study. All confirmed cases of COVID-19 notified to and managed by Metro North Public Health Unit (MNPHU) to 30 April 2020 were included.

Demographics, exposure source, transmission dynamics, clinical information and the health care utilisation of these cases were described and compared to similar published national and international case data.

Results: Of 318 cases, the median age was 45 years [IQR: 28-61] with even sex distribution. 0.6% of cases identified as Indigenous and/or Torres Strait Islander. Most cases were overseas acquired (78.3%), mainly from Europe, America and on cruise ships. The median incubation period was 4 days [IQR: 2-6]. 97.2% were symptomatic with the most common symptoms being cough and fever. The secondary attack rate was 3.1%. Nineteen clusters/outbreaks were identified. 15.4% of cases were severe of which, 12.2% required intensive care. The median length of admission was 9 days [IQR: 6-15]. The median time to clearance was higher for health care workers (HCWs). The case fatality rate was 0.9%. For severe cases the median age was 65 years [IQR: 45-71] and most had co-morbidities (57.1%). Local epidemiology over the study period seemed comparable to similarly-resourced settings. Locally acquired cases were more likely to be involved in clusters/outbreaks and generate secondary cases.

Conclusion: The influence of travel patterns, public health responses including border policy, and health care system capacity was evident in the epidemiology of first wave COVID-19 in North Brisbane. Findings have informed ongoing response.

Epidemiology of the first 600 confirmed COVID-19 cases in Western Australia

Authors: Dr Barry Combs1, Dr Dylan Barth1,2, Dr Parveen Fathima1, Dr David Hendrickx1,2, Mr Byron Minas1, Ms Kellie Mitchell1, Ms Candice Patterson1, Dr Nevada Pingault1, Dr Liana Varrone1, Ms Tracie Chong1, Ms Jenny Vo1, Ms Hannah Vogt1,3, Ms Carolien Giele1, Dr Andrew Jardine1, Dr Ben Scalley1, Dr Paul Effler1, Dr Paul Armstrong1

Affiliations: 1Department Of Health Western Australia, East Perth, Australia, 2Telethon Kids Institute, Nedlands, Australia, 3Australian National University, Canberra, Australia

Abstract:

Data from on the first 600 confirmed COVID-19 cases were extracted from the Western Australian Notifiable Infectious Diseases Database and the Department’sWA’s COVID-19 contact tracing database. Data were analysed using MS-Excel, STATA and R. We conducted a descriptive analysis of cases, close contacts and associated outbreaks in WA from February-July 2020.

The first 550 cases were reported between 24 February and 16 April 2020, (peak, 20 March), and the last 50 cases were reported by 1 July 2020. Most infections were acquired overseas or at sea (n=513, 86%) followed by locally acquired-contact of confirmed case (n=65, 11%); n=2215, 32% locally acquired had an -unknown source. The incidence rate was highest among those aged 70-79-year-olds patients (55.6 per 100,000); 56% were male. By region, the Kimberley had the highest incidence rate (41.9 per 100,000) followed by the Perth mMetropolitan region which includes overseas returned travellers (16.9 per 100,000). In total, there were a total of 120 COVID-19-related hospitalisations and 9 deaths. A total of 23 COVID-19 outbreaks were investigated. The mean number of close contacts per case was 1.9 for household and 8.1 for non-household contacts.Risk of becoming a secondary case was higher for household (5.7%) versus non-household contacts (5.7% and 1.7% respectively). A total of 24 COVID-19 outbreaks were investigated identified with . The most common outbreak setting was being cruise ships which accounted for 77% of cases (n=230, 77%), 91(63%)% of hospitalisations (n=75/120?), and 89% of associated deaths (n=8) in WA.

To date, there has been limited community transmission of SARS-CoV-2 in WA. This may be a result of a combination of public health measures which include travel bans, mandatory hotel quarantine, social distancing, contact tracing, as well as the unique geographical remoteness of WA.
Changing epidemiology of coronavirus disease 2019 (COVID-19) in Queensland

Authors: Mr Craig Davies1, Ms Cushla Coffey3, Dr Heidi Carroll1, Dr Andre Wattiaux1, Dr Satyamurthy Anuradha3, Dr James K Smith1, Dr Sanmarié Schlebusch3, Dr Jenny Robson2, Dr Catherine A Quagliotto1, Dr Bhakti Vasant4, Dr Vicki Slinko1, Dr Sonya Bennett1, Dr Candice Holland1, Professor Ross Andrews1

Affiliations: 1Queensland Health, Brisbane, Australia, 2Sullivan Nicholasides Pathology, Brisbane, Australia

Abstract:
Statewide collaboration in finding cases and stopping transmission has been a strength of Queensland’s COVID-19 response. Case isolation, rapid mobilisation of contact tracing, quarantine, enhanced and early testing of contacts in high-risk settings and early inclusiveness of the private sector to extend testing capacity have contributed to containment of multiple outbreaks in complex settings to relatively low numbers. By 25 September 2020, there had been 1,153 cases detected, including six deaths, from 901,852 people tested (1,089,865 samples).

The first case (28 January 2020) was in a cluster of five travellers from mainland China. Case numbers grew rapidly in March, doubling every four days, to a peak of 86 (19 March) based on symptom onset/specimen collection as a proxy for when first infectious. Then from 10 April to 30 June, following broader mitigation measures, there were no more than three cases on any one day (average 0.4). Total cases by 30 June were 1,077, with 78% overseas-acquired and 31% (335) linked to one of 39 outbreaks/clusters.

Following the initial lifting of mitigation measures the first six cases in July were overseas-acquired. Then two COVID-19-infected travellers returned from Victoria (21 July) in a cluster of 5 cases including two unrelated persons exposed at a restaurant. By late August, 50 further cases were detected in interconnected clusters in multiple high-risk settings. An index case with onset in early August did not have a confirmed link to the cluster from July but thereafter all subsequent cases were linked. As of 25 September, it has been 14 days since the last person was known to be infectious in the community.

The risk of importation of infectious cases into Queensland will continue for the foreseeable future, requiring ongoing epidemiological surveillance and a range of strong public health measures to sustain control of community transmission.

Containment of SARS-CoV-2 in the Northern Territory: so far so good

Authors: Dr Jane Davies1, Dr Nicholas Douglas1,2, Dr Ella Meumann1,2, Dr Vicki Krause1, Northern Territory COVID-19 Response Group1,2,3,4,5,6,7,8

Affiliations: 1Royal Darwin Hospital, Darwin, Australia, 2Menzies School of Health Research, Darwin, Australia, 3Centre for Diseases Control-Environmental Health, Top End Health Service, Darwin, Australia, 4Territory Pathology, Darwin, Australia, 5Alice Springs Hospital, Alice Springs, Australia, 6Katherine Hospital, Katherine, Australia, 7The Doherty Institute, Melbourne, Australia, 8Department of Health, Darwin, Australia

Abstract:
Objectives: To describe the epidemiologic, clinical and virologic aspects of the first 28 cases of COVID-19 in the Northern Territory (NT) of Australia.

Design: Retrospective case series

Setting, participants: Consecutive patients diagnosed with COVID-19 in the NT. All patients were placed in mandated isolation with frequent clinical and virologic assessments until virologic clearance.

Main outcome measures: Location of acquisition, symptom distribution and natural history, markers of severity, duration and trajectory of viral RNA detection and viral phylogenetics.

Results: Twenty-eight patients were diagnosed with SARS-CoV-2 infection between 4 March and 4 April 2020. All cases were linked to overseas or interstate travel. The median age of patients was 45.0 years (range 1.5-75.1 years) and 57.1% were female. The most common symptoms were fever (50.0%), coryza (50%), cough (46.4%) and sore throat (46.4%). Two patients (7.1%) required supplemental oxygen, one of whom required intubation. There were no deaths. Symptoms were present for a median of 3 days before oro-nasopharyngeal swab collection (range 16-0 days) and lasted a median of 9.5 days (range 4-18 days). Viral RNA was detectable for a median of 25 days from symptom onset (range 14-41 days, interquartile range 21-31.5 days). Consequently, patients were in isolation for a prolonged period causing significant emotional distress for some. Genomic and epidemiological surveillance demonstrated no evidence of community transmission.

Conclusions: SARS-CoV-2 RNA carriage in oro-nasopharyngeal secretions substantially outlasts symptoms. An aggressive public health response to the SARS-CoV-2 pandemic in the NT has thus far helped to prevent detectable community transmission.
Concurrent Session 6A - Clinical epidemiology
On Demand from 10:00am AEDT

Just a flu? Comparing COVID-19 and influenza mortality

Authors: Dr David Muscatello1, Professor Peter McIntyre2

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Abstract:

Benchmarks are needed for the severity of the COVID-19 pandemic. However, comparisons can be misleading unless marked differences in age-specific mortality and differences in population age structure are taken into account.

Using COVID-19 death rates for New York City as at 2 June 2020, we used indirect age standardization to estimate standardized mortality ratios (SMR) for the first winter waves of the 1918 'Spanish' and 2009 'swine' influenza pandemics and the severe 2017-2018 influenza season in the United States (US). Data were obtained from published statistics.

We estimated that in New York City, the death rate during the 1918-1919 winter wave of Spanish influenza was 6.7 times higher overall compared with COVID-19, but in ≥45 year-olds, the death rate was 0.56 that of COVID-19. In <45 year-olds, the Spanish influenza death rate was 42 times higher than COVID-19.

Compared with the more recent 2009 swine influenza pandemic in the US, New York City's COVID-19 death rate was estimated to be 59 times higher overall. In ≥65 year-olds, the COVID-19 death rate was 320 times higher, in 18-64 year-olds it was 22 times higher, while in children it was one half that of the 2009 pandemic.

Compared with the 2017-2018 influenza season in the US, New York City's COVID-19 death rates were estimated to be 14 times higher overall. In ≥65 year-olds, it was 12 times higher, in 18-64 year-olds it was 23 times higher, and was similar in children.

This study did not take into account differences in control measures or health-care occurring during each epidemic and COVID-19 deaths may have been under-estimated. Nevertheless, age-specific differences in mortality rates between major pandemics and epidemics should be considered in decisions about age-targeted vaccination strategies for COVID-19.

Hospitalisations following the first wave of COVID-19 in NSW

Authors: Bette Liu1,2, Paula Spokes3, Maria Alfaro-Ramirez1, Kate Ward2, John Kaldor3

Affiliations: 1School Of Population Health UNSW, Kensington, 2Public Health Response Branch, NSW Ministry of Health, St Leonards, 3The Kirby Institute, UNSW, Kensington

Abstract:

Objective: There is limited Australian data describing in detail hospitalisation rates following COVID-19 and risk factors for more serious disease. We aimed to quantify hospitalisation rates and identify predictors of hospitalisation and death.

Methods: The analysis involved all confirmed COVID-19 cases diagnosed in NSW from 1 January to 31 May 2020 extracted from the NSW Notifiable Conditions Information Management System and linked to routinely collected hospitalisation data and deaths. Proportion of cases admitted to hospital and hospital utilisation was described overall and by age. We used multivariate regression to estimate risks of hospitalisation or death from COVID-19 according to age, sex and co-morbidities.

Results: Of 3101 COVID-19 cases diagnosed to 31 May 2020 in NSW (mean age 46.7 years, 50.5% females), 12.5% (N=389) had a record of inpatient hospitalisation, 4.2% (N=130) an ICU admission, and 1.9% (N=58) received ventilation. Among adults, hospital and ICU admission rates increased with age: 2.9% of those 20-29 years were hospitalised increasing to 46.6% of those 80-89 years; 0.6% of those 20-29 years were admitted to ICU increasing to 11.2% of those 70-79 years. The median time from symptoms to hospitalisation was 7 days (IQR 4-11). The median time in hospital was 9 days (IQR 4-20) and in ICU, 6 days (IQR 2-15); the median time in hospital also increased with age. Almost half (49.4%) of those hospitalised had a diagnostic code for pneumonia/lower respiratory tract infection. Relative risks of hospitalisation and death from COVID-19 by risk groups, including sex and pre-existing comorbidities, will also be described.

Conclusion: COVID-19 is a serious infection and the risks are particularly high in older adults. With 1 in 8 of those diagnosed in NSW from March-May hospitalised, the potential impact on Australian health services is high and continuing mitigation is needed to prevent it overwhelming our health services.
Outcomes in patients with overweight/obesity hospitalised with COVID-19: an international multi-centre analysis

Authors: Danielle K. Longmore1,2,3, Dr. Jessica E. Miller1,4, Dr. Siroon Bekkering1,5, Dr. Christoph Saner1,5, Dr. Edin Mifsud1,5,7, Dr. Yanshan Zhu6, Dr. Richard Saffery1,4, Dr. Alistair Nichol8,10,11, Dr. Graham Colditz12, Dr. Kirsty R. Short6, Dr. David P. Burgner1,3,4,13

Affiliations: 1Murdoch Children’s Research Institute, The Royal Children’s Hospital, Parkville, Australia, 2Menzies School of Health, Charles Darwin University, Darwin, Australia, 3Department of Medicine, The Royal Children’s Hospital, Parkville, Australia, 4Department of Paediatrics, Melbourne University, Parkville, Australia, 5Radboud University Medical Center, Nijmegen, the Netherlands, 6Department of Paediatrics, University Hospital Inselspital, Bern, Switzerland, 7WHO Collaborating Centre for Reference and Research on Influenza, Doherty Institute, Melbourne, Australia, 8School of Chemistry and Molecular Biosciences, The University of Queensland, Brisbane, Australia, 9Department of Intensive Care, Alfred Health, Melbourne, Australia, 10Australian and New Zealand Intensive Care Research Centre, Monash University, Melbourne, Australia, 11University College Dublin Clinical Research Centre, St Vincent’s Hospital, Dublin, Ireland, 12Washington University, St Louis, United States of America, 13Department of Paediatrics, Monash University, Clayton, Australia

Abstract:

Background: Obesity and commonly associated comorbidities, including diabetes and cardiovascular disease, have been associated with COVID-19 severity and mortality. Many studies have been single jurisdiction and the association of obesity with in-hospital respiratory therapies and mortality remains unclear.

Methods: We retrospectively extracted data from health care records and regional databases of hospitalised SARS-CoV-2 patients from 69 hospitals from 18 sites in 11 countries. Standardised definitions and analyses were used to generate site-specific estimates, modelling the odds of each outcome (supplemental oxygen/non-invasive ventilation, invasive mechanical ventilation, and in-hospital mortality) by body mass index (BMI) category (underweight, reference, overweight, obese) adjusting for age, sex, and pre-specified co-morbidities. Site-specific estimates were combined in a meta-analysis.

Results: Among 7244 patients (65.6% overweight or obese), those with obesity were more likely to require oxygen/non-invasive ventilation (random effects adjusted odds ratio (AOR) 1.75; 95% confidence interval [CI], 1.33 to 2.30; P<0.001) and invasive mechanical ventilation (AOR 1.73; 95%CI, 1.29 to 2.32; P<0.001). Similar but less pronounced effects were observed for those overweight. The association between obesity and in-hospital mortality was not statistically significant (AOR 1.23; 95%CI, 0.92 to 1.64; P=0.17). Among the co-variables, males had increased risk of all outcomes, and age >65 years was associated with increased oxygen/non-invasive ventilation requirement and in-hospital mortality. Cardiovascular disease and diabetes were associated with COVID-19 severity, independent of BMI.

Conclusions: Overweight and obesity were independently associated with need for respiratory support in COVID-19 patients. These findings inform individual-level risk stratification, management and health system planning for these high-risk groups.

Clinical characteristics and outcomes of COVID-19 in a low-prevalence, well-resourced setting, Sydney

Authors: Dr Emily Shiel1, Dr Spiros Miyakis2,3, Dr Elaine Tennant1, Dr Shelanah Fernando1, Dr Alice Kizny-Gordon1, Dr Bryant Koh1, Dr Michael Findlay1, Dr Katherine Garnham1, Dr Shrawya Pilli1, Mr Hayden Segboer4, Ms Jo Tallon1, Dr Joanna Kao5, Dr Anne Miller4, Mr Mark Telford1, Dr Kate Barclay5, Dr Benjamin Harris1,4, Dr James Newcombe1, Dr Bernard Hudson1,4, Dr Melanie Figtree1

Affiliations: 1Royal North Shore Hospital, St Leonards, Australia, 2Wollongong Hospital, Wollongong, Australia, 3University of Wollongong, Wollongong, Australia, 4University of Sydney, Camperdown, Australia, 5Northern Beaches Hospital, Frenchs Forest, Australia

Abstract:

Background: Northern Sydney Local Health District (NSLHD) was one of the earliest Australian areas affected by COVID-19. Data on clinical characteristics and outcomes in a low-prevalence Australian population is described with the aim of identifying risk factors and impact for our population.

Methods: A retrospective analysis of 517 laboratory-confirmed COVID-19 cases was conducted in NSLHD between January and June, 2020. Patients were referred to the Infectious Diseases and Microbiology Department from public and private laboratories, and the public health unit, and were followed up by the COVID-19 Virtual Hospital. Patient information was collected as part of routine care and included patient demographics, comorbidities, symptoms, management, progress and outcome. Four patients were excluded due to insufficient data. The primary composite outcome was admission to an intensive care unit (ICU) or death.
Results: Our cohort had a median age of 48 years (IQR 31-62 years). The majority of cases acquired COVID-19 through international travel (50.9%) or cruise ship travel (9.1%). 12.8% were health care workers, who comprised a disproportionately high percentage of the "unknown" source group (27.6% versus non-healthcare workers 72.4%). The median incubation period was 5 days (IQR 3-8 days) with only one patient having an apparent incubation period of 15 days. The most common symptoms were cough (60.5%), fatigue (59.4%), subjective fever (49.1%), myalgia or arthralgia (49.1%) and anosmia (36.4) or ageusia (34.2%). Men were significantly more likely to report subjective fever, while women were more likely to report all other symptoms. Patient age, number of comorbidities and increased body mass index (BMI) were significantly associated with death or ICU admission. The overall mortality rate was 1.7%.

Conclusions: In this relatively low prevalence, well-resourced Australian setting, we report an overall low mortality rate. Factors associated with death or intensive care admission were increased age, presence of comorbidities and increased BMI.
Concurrent Session 6B - Emerging challenges
On Demand from 10:00am AEDT

Characterization of outcomes following community and hospital-managed SARS-CoV-2 infection

Authors: Dr David Darley1-4, Prof Gregory Dore3,4, Dr Lucette Cysique2,3, Prof Kay Wilhelm5,10, Dr David Andresen2, Dr Katrina Tonga1, Dr Emily Stone1,2, Dr Anthony Byrne1-3, Prof Marshall Plit1-3, Dr Jeffrey Masters1, Dr Helen Tang1, Prof Bruce Brew1, Dr Philip Cunningham7, Prof Anthony Kelleher4,8, A/Prof Gail Matthews2,4

Affiliations: 1Department of Thoracic Medicine, St Vincent’s Hospital Darlinghurst, Sydney, Australia, 2Department of Infectious Diseases, St Vincent’s Hospital, Sydney, Australia, 3UNSW Medicine, St Vincent’s Clinical School, University of New South Wales, Sydney, Australia, 4Kirby Institute, University of New South Wales, Sydney, Australia, 5Department of Neurology, St Vincent’s Hospital Darlinghurst, Sydney, Australia, 6Department of Psychiatry, St Vincent’s Hospital Darlinghurst, Sydney, Australia, 7St Vincent’s Institute for Applied Medical Research, Sydney, Australia, 8Department of Immunology, St Vincent’s Hospital Darlinghurst, Sydney, Australia, 9Department of Psychology, The University of New South Wales, Sydney, Australia, 10University of Notre Dame Australia, Sydney, Australia

Abstract:
The spectrum of recovery following community-managed and hospitalized SARS-CoV-2 infection remains uncertain. Aim: To determine prevalence and nature of persistent symptoms after SARS-CoV-2 infection; to evaluate lung function; health-related quality of life (HRQOL); neurocognitive abnormalities, and to characterize antibody responses. Methods: A prospective observational cohort study was performed at St Vincent’s Hospital Australia. All adult patients with positive SARS-CoV-2 ribonucleic acid polymerase chain reaction (RNA PCR) test between Mar-2020 and Apr-2020 including mild, moderate, and severe acute infection were included. Clinical outcomes included symptom prevalence at initial infection and follow-up, HRQOL measures, pulmonary function, neurocognition and COVID-19 antibody responses. Study assessments were performed < 4 months after first detection of SARS-CoV-2. Results: Ninety-six patients were recruited following community-managed mild (39%) and moderate (50%), and hospitalized severe (11%) COVID-19 infection. Forty percent patients had persistent symptoms at median 72 days after diagnosis (IQR 65-87), including those in severe (78%), moderate (33%), and mild (37%) sub-populations. The most common persistent symptoms were fatigue (28%), shortness of breath (25%), and cough (21%). Total lung capacity (TLC) was significantly lower after severe, compared with community-managed, COVID-19, p<0.05. Abnormal diffusion capacity for carbon monoxide values were observed in 16% patients unrelated to acute illness severity. Twenty-four percent patients demonstrated anxiety/depression, as measured by SPHERE-34 item, with the highest proportion in the moderate sub-population (37%). Neurocognitive impairment was low (9%) but associated with abnormal olfaction (p<0.02). A high proportion of patients (77-85%) demonstrated positive antibody responses, on four commercial assays, at follow-up and titles were related to acute illness severity. Conclusions: A considerable proportion of patients experience persistent symptoms after SARS-CoV-2 infection irrespective of initial disease severity. Commercial antibody responses are associated with acute COVID-19 illness severity. Early outpatient follow-up for persistent symptoms after COVID-19 is important to allow multi-disciplinary input, further investigation, and appropriate management.

Neurocognitive and olfaction findings in COVID-19: The St. Vincent’s Hospital ADAPT study

Authors: Dr Lucette Cysique1,2,3, Ms Yasmin Allen-Davidian2,3, Dr David Darley4,6, Prof. Gregory Dore3,4,5,8, A/Prof Gail Matthews3,5,6, Prof. Bruce Brew1,4,6

Affiliations: 1UNSW Psychology, Sydney, Australia, 2St. Vincent’s Centre for Applied Medical Research, Darlinghurst, Australia, 3Macquarie University Psychology, Sydney, Australia, 4Sydney St. Vincent's Hospital, Darlinghurst, Australia, 5The Kirby Institute, UNSW, Sydney, Australia, 6UNSW Medicine, Sydney, Australia, 7The Alfred Melbourne, Melbourne, Australia

Abstract:
Background: A series of retrospective studies have shown that SARS-CoV-2 infection in hospitalised patients is associated with a wide spectrum of neurological syndromes affecting the whole neuraxis. However, prospective studies using standard testing methods in both hospitalised and community patients are lacking.

Methods: 95 adults with a positive SARS-CoV-2 RNA PCR were enrolled between Mar-2020 and April-2020. Severity was rated: mild (0-1 COVID-19 symptoms), moderate (≥ 2 symptoms) and severe (hospitalised). As part of a comprehensive health assessment, all participants completed the 15-min neurocognitive Cogstate Computerised Battery assessing psychomotor speed, working memory and continuous learning. Olfaction was assessed using the NIH Toolbox Odor Identification Test. Scores were corrected for age, education, sex and ethnicity/race.
Results: 36 patients had mild disease, 49 moderate, and 9 severe. 85% had a tertiary education, 34% had comorbidities. Hospitalised patients were more likely to be older and male, and report altered consciousness/confusion during acute infection (p=.007). A median of 2 months (IQR=2.9-3.3) post-infection, 10% showed mild to moderate neurocognitive impairment, which was significantly associated with acute altered consciousness level (p<.02). 23.5% had mild to moderate olfaction abnormalities. Neurocognitive and olfaction abnormalities were not associated with comorbidities. Olfaction abnormalities but not neurocognitive impairment was associated with COVID-19 disease severity (hospitalised=55%; mild=26%; moderate=18%). Self-reported anosmia at COVID-19 diagnosis was not associated with persistent olfaction abnormalities. Olfaction abnormalities were associated with neurocognitive impairment (p=.009).

Conclusions: Brain involvement is likely during the acute phase of SARS-CoV-2 infection (independent of strokes in all cases and of hypoxia in most cases) and persists for some patients 2 months post-infection. Olfaction abnormalities also persist, possibly indicating brain involvement in those with poorer neurocognitive results. Infectious and immune mechanisms may contribute to brain changes in this cohort of highly educated people with low or well treated comorbidities. Six and 12-months follow-ups are planned.

Analysing the impact of the COVID-19 pandemic on people living with HIV

Authors: Dr Mihiri Weerasuria1, Ms Christy Ko2, Mr Adam Ehm3, Ms Jessica O’Brien1,4, Dr James McMahon1,2,4, A/Prof Ian Woolley1,2, Prof Jennifer Hoy1,2, Dr Jillian Lau1,2

Affiliations: 1Department of Infectious Diseases, Alfred Health, Melbourne, Australia, 2Faculty of Medicine, Nursing and Health Sciences, Monash University, Clayton, Australia, 3Living Positive Victoria, Melbourne, Australia, 4Department of Infectious Diseases, Monash Health, Clayton, Australia

Abstract:
The COVID-19 pandemic has placed unprecedented demands on healthcare and social support systems in Victoria. It is unknown what impact this has had upon people living with HIV (PLHIV), a cohort that already experiences higher than population levels of substance abuse, accommodation and food insecurity, mental health issues, and stigma.

We developed an online survey in collaboration with stakeholder groups addressing the impact of the COVID-19 pandemic on PLHIV in Victoria, Australia. The survey focuses on access to HIV-specific care and anti-retroviral therapy (ART), access to care for co-morbid conditions, overall quality of life and wellbeing, employment, housing, and food. The study was approved by the Alfred Health Human Research Ethics Committee (Ref: 65769). Participants were recruited through social media advertising and the Alfred Health and Monash Health infectious diseases clinics.

Since August 26th, 108 PLHIV have completed the survey. Most respondents identified as male (75%) and 51% were aged between 30 and 50 years. Twenty-five percent answered that the pandemic has negatively impacted their life, with 46% and 29% reporting negative impacts specifically regarding personal relationships and employment respectively. The survey demonstrated that PLHIV are worried about the potential impacts of the pandemic with 71%, 72%, and 54% of respondents reporting worrying about their physical health, mental health and finances respectively.

With regards to HIV-specific care, 93% reported that they were able to access HIV providers/specialists during the pandemic with 90% reporting use of telehealth appointments. Ninety-eight percent reported they were able to access ART. Increased alcohol intake was reported by 27% and weight gain was reported by 50%.

This study has identified several domains in which PLHIV have been negatively impacted during the pandemic. We believe this analysis will assist service providers in ensuring adequate provision of care and support is maintained to PLHIV.
Concurrent Session 6C - Laboratory diagnostics
On Demand from 10:00am AEDT

Spit Study: Can saliva testing diagnose COVID-19 in children and general practice?

Authors: Dr Jane Oliver1, Dr Shidan Tosi2, Ms Niamh Meagher3, Ms Anna-Maria Costa1, Ms Chelsea Bartel2, Ms Katherine Last1, Dr Samantha Bannister1, Dr Lai-yang Lee1, Dr Catherine Orr1, Dr Ashley Nind1, A. Prof. Nigel Crawford1, Dr Vanessa Cliffo1, A. Prof. Andrew Daley2, Dr Nicole Allard1, Dr Susan Ballard2, Dr Katherine Gibney1

Affiliations: 1University Of Melbourne, Melbourne, Australia, 2Royal Children’s Hospital, Melbourne, Australia, 3cohealth, Melbourne, Australia, 4Microbiological Diagnostic Unit Public Health Laboratory, Melbourne, Australia

Abstract:

Rationale: To minimise SARS-CoV-2 transmission, timely diagnosis, isolation of positive cases, and contact tracing is critical. Currently, nasal and throat swabs are routinely used for SARS-CoV-2 PCR testing. A saliva sample has advantages as an alternative biospecimen because it is less invasive, cheaper, and safer to test across a range of settings. The ‘SPIT Study’ aims to determine the concordance of SARS-CoV-2 PCR tests on paired saliva specimens and nasal/throat swabs in paediatric and primary care settings.

Methods: Recruitment, targeting known cases and close contacts, occurred at the Royal Children’s Hospital, Melbourne (RCH) Respiratory Infection Clinic (RIC) from 21/07/2020-18/09/2020 and at a Melbourne primary care respiratory clinic from 27/07/2020-18/09/2020. Saliva specimens and swabs were tested for SARS-CoV-2 using RT-PCR at two laboratories using different testing platforms. The concordance of paired sample results was compared. The target sample size was 38 pairs with ≥1 positive sample. Confirmatory testing for discordant pairs at a third laboratory is pending.

Results (Interim): 694 people had paired swab and saliva samples collected; 38 people (5.5%) had ≥1 sample test positive. At RCH an overall positivity rate of 7.6% was observed, with a lower positivity rate of 1.2% observed in primary care. Of the 694 people tested; 23 people had a positive swab (3.3%) and 29 had positive saliva (4.2%); including 14 people (2.0%) who tested positive on both samples. A total of 24 (3.5%) people had one sample test positive and the other negative. At RCH, all people whose saliva tested positive and nasal/throat swab tested negative were close contacts of cases. Interim testing indicates that 656 people (94.5%) had discordant negative paired samples.

Conclusion: The interim results suggest that saliva testing is equivalent to nose/throat swabs for diagnosing COVID-19 in paediatric and primary care, and may detect additional cases in close contacts.

Saliva as a non-invasive specimen for detection of SARS-CoV-2

Authors: Dr Eloise Williams1, Dr Katherine Bond1, Mr Bowen Zhang1, Dr Mark Putland2, Ms Nicole Isles3, Dr Brian Chong4, Dr Julian Druce4, Ms Tuyet Hoang1, Dr Susan Ballard2, Dr Mike Cattom4, Prof Benjamin Howard1, Prof Deborah Williamson1,2,3,4

Affiliations: 1Department of Microbiology, Royal Melbourne Hospital, Parkville, Australia, 2Department of Emergency Medicine, Royal Melbourne Hospital, Melbourne, Australia, 3Microbiological Diagnostic Unit, Department of Microbiology and Immunology, The University of Melbourne at The Peter Doherty Institute for Infection and Immunity, , Melbourne, Australia, 4Victorian Infectious Diseases Reference Laboratory, The Peter Doherty Institute for Infection and Immunity, , Melbourne, Australia

Abstract:

Background: Diagnostic testing for SARS-CoV-2 plays a critical role in detecting COVID-19 and ultimately in reducing viral transmission. The use of saliva as a diagnostic specimen has several advantages including i) reduced patient discomfort, ii) potential reduction in risks to healthcare workers resulting from swab collection, and iii) reduced use of specialised laboratory consumables.

Methods: Between 25th March and 1st April 2020, patients tested through a dedicated COVID-19 screening clinic were requested to self-collect a saliva sample in addition to a combined oral and nasopharyngeal swab (NPS). In addition, an in vitro study was performed using contrived saliva samples comprising 10ml pooled saliva, spiked with gamma-irradiated SARS-CoV-2. These samples were divided into 2mL aliquots comprising: (i) neat saliva; and a 1:1 dilution with (ii) normal saline; (iii) viral transport media, and (iv) liquid Amies medium. Samples were made in quadruplicate, with two samples of each stored at either: (i) room temperature or (ii) 4°C. All samples were tested for SARS-CoV-2 by reverse-transcription polymerase chain reaction (RT-PCR).

Results: Overall, 522/622 (83.9%) of patients provided a saliva sample in addition to a NPS. Of these patients, 39/622 (6.3%; 95% confidence interval (CI) 4.6-8.5%) patients had PCR-positive NPS and 33/39 (84.6%; 95% CI 70.0%-93.1%) had SARS-CoV-2 detected in saliva. To assess specificity, a subset of saliva specimens from 50 patients with PCR-negative swabs was also tested. Of note, SARS-CoV-2 was detected in 1/50 (2%; 95% CI 0.1%-11.5%) of these samples. In addition, SARS-CoV-2 was detected in all SARS-CoV-2-spiked contrived samples at time point 0, day 1, 3 and 7 at both storage temperatures.
Conclusions: Here we demonstrate the performance, feasibility and acceptability of collecting saliva from ambulatory patients. The ability to detect SARS-CoV-2 in saliva over a one week period presents further opportunities for saliva testing as a diagnostic specimen for SARS-CoV-2.

Opportunistic COVID-19 testing at South Australian Pharmacies: Pilot Project July 2020

Authors: Dr Sonali Meena1, Ms Naomi Burgess1, Dr Tuong Vi Phan1, Ms Joel Chan2, Michael Broadbent1, Lisa Upton2, Professor Nicola Spurrier2

Affiliations: 1SA Health, Adelaide, 2University of Adelaide, Adelaide, 3Department for Health and Wellbeing, Government of South Australia, Adelaide

Abstract:

Members of the public are likely to present to a community pharmacy when experiencing mild cold and flu-like symptoms to receive advice from a pharmacist or to obtain treatments for symptom relief. They may not perceive their symptoms to be severe enough to prompt seeking of medical attention or testing. To encourage South Australian’s with mild respiratory symptoms to seek testing, SA Health developed a pilot project of COVID-19 testing in South Australian pharmacies in July 2020. The aim of the pilot test was to assess the feasibility of community pharmacy-based testing. A small number of pharmacies were selected to participate in a pilot project, enabling participating pharmacies to perform COVID-19 swabs for symptomatic clients. The planning of the pilot project included selection of appropriate pharmacies; training the pharmacists from participating pharmacies in collection of COVID-19 swabs and developing Infection Prevention and Control guidelines for the participating pharmacies. The preliminary results show that it is feasible to conduct COVID-19 testing at selected Pharmacies. The pilot serves an opportunistic COVID-19 testing to enhance the active surveillance of COVID-19 for the community in South Australia. Results from pharmacist administered survey of all clients (with any COVID-19 compatible symptoms) presenting to the pharmacies, during the pilot, will be presented at the conference.

SARS-CoV-2 viral load dynamics and Ct interpretation: a multicentre cross-sectional observational study.

Authors: Dr Andrew Fox-Lewis1, Dr Shivani Fox-Lewis1, Dr Jenna Beaumont1, Dr Dragana Drinkovic1, Dr Jay Harrower1, Dr Kevin Howe1, Dr Catherine Jackson1, Fahimeh Rahnama1, Blair Shilton1, Helen Qiao1, Kevin Smith1, Dr Susan C Morpeth1, Dr Susan Taylor1, Dr Matthew Blakiston1,2, Dr Sally Roberts1, Dr Gary McAuliffe1,2

Affiliations: 1Microbiology Department, LabPLUS, Auckland City Hospital, Auckland District Health Board, Auckland, New Zealand, 2Virology-Immunology Department, LabPLUS, Auckland City Hospital, Auckland District Health Board, Auckland, New Zealand, 3Microbiology Department, Middlemore Hospital, Counties Manukau District Health Board, Auckland, New Zealand, 4Microbiology Department, North Shore Hospital, Waiwera District Health Board, Auckland, New Zealand, 5Auckland Regional Public Health Service, Auckland District Health Board, Auckland, New Zealand, 6Public Health Northland, Northland District Health Board, Whangarei, New Zealand, 7Labtests, Auckland, New Zealand

Abstract:

Aims: To describe population-level SARS-CoV-2 upper respiratory tract (URT) viral load dynamics by stratifying positivity rates and polymerase chain reaction cycle threshold (Ct) values of URT samples from COVID-19 cases by days since symptom onset, and to explore utility of Ct values in determining length of time post-infection and thus potential infectivity.

Methods: Multicentre cross-sectional observational study of laboratory, public health and hospitalisation data for all PCR-confirmed COVID-19 cases within the New Zealand Northern Region, 12th February to 8th June 2020.

Results: Of 123,124 samples tested for SARS-CoV-2 by PCR, 579 samples (407 positive and 172 negative) from 368 symptomatic non-hospitalised individuals with PCR-confirmed infection were included. Sample positivity rate was 61.5% (8/13) for pre-symptomatic samples, rising to 93.2% (317/340) for samples collected during the symptomatic infectious period (days 0-10 post-symptom onset), and dropping to 36.3% (82/226) for post-infectious period samples (day 11 onwards). URT viral load peaked shortly after symptom onset, with median Ct values ranging 20.00-29.99 until 15 days post-symptom onset, and >30.00 after this time. Of positive samples with a Ct value of <20.00, 96.1% were collected during the symptomatic infectious period. However, of positive samples with a Ct value ≥30.00 and ≥35.00, 46.9% and 18.5% respectively were also collected during the symptomatic infectious period.

Conclusion: At, or soon after symptom onset represents the optimum time to test for SARS-CoV-2 in the URT, with median Ct values suggesting the useful testing window extends until around 15 days post-symptom onset. In asymptomatic individuals or those with unknown dates of symptom onset, Ct values <20.00 imply recent onset/potential infectivity, but Ct values ≥30.00 or ≥35.00 do not exclude recent onset/potential infectivity. Individual sample Ct values should not be used as an absolute marker of length of time post-infection or to exclude infectivity where date of symptom onset is unavailable.
**Concurrent Session 6D - Pandemic management - schools**

On Demand from 10:00am AEDT

**Factors contributing to SARS-CoV-2 outbreaks in four New South Wales educational settings**

**Authors:** Noni Winkler1,2, Dr Helen Quinn1, Dr Archana Koirala1, Dr Katelaris Anthea2, Dr Adelaide Nyinawingeri3, Dr Lucy Deng1, A/Prof Nicholas Wood1, A/Prof Stephen Lambert2, Dr Michael Staff3, Dr Shopna Bag2, Prof Kristine Macartney1

**Affiliations:** 1National Centre For Immunisation Research And Surveillance, Westmead, Australia, 2Western Sydney Public Health Unit, Parramatta, Australia, 3Northern Sydney Public Health Unit, Hornsby, Australia, 4Australian National University, Canberra, Australia

**Abstract:**

**Background:** The role of schools and early childhood education and care settings (ECECs) in COVID-19 outbreak propagation and factors associated with SARS-CoV-2 transmission in these settings is not well understood. In New South Wales (NSW), schools and ECECs have remained open with high attendance rates for the majority of the year, with outbreaks (≥23 secondary cases from a case) occurring only rarely. Understanding risk factors associated with outbreaks in schools and ECECs is required to keep these settings safe and prevent future outbreaks.

**Methods:** All contacts of an adult or child COVID-19 case were followed using routine public health control measures and laboratory testing, and all secondary cases were interviewed regarding their risk factors and possible exposures. Where outbreaks occurred in an educational setting, a thorough investigation of the outbreak was carried out to understand transmission within the setting.

**Findings:** Out of 65 educational facilities with a primary case in NSW since the start of the pandemic, outbreaks occurred in four. There were 993 contacts of the primary cases identified within the four settings, and 37 secondary or tertiary cases were detected. These accounted for 73% of the 51 secondary cases acquired at educational facilities since the start of the pandemic. Factors that may have contributed to transmission included: delayed testing and ongoing attendance while symptomatic, high-risk seedling events, and very close case contact (multiple shared classes, prolonged exposure times).

**Conclusion:** Early detection through broad testing, stay-at-home-if-sick messaging, and aligning high-risk activities with community incidence of disease are risk mitigation strategies that may reduce transmission of SARS-CoV-2 in educational settings.

**COVID-19 outbreaks in Victorian schools and early childhood education and care facilities.**

**Authors:** Dr Kathleen Ryan1, Dr Kathryn Snow2, Associate Professor Margie Danchin1,2,3, Professor Kim Mulholland1,2,4, Professor Sharon Goldfield1,2,3, Professor Fiona Russell1,2,3

**Affiliations:** 1Murdoch Children’s Research Institute, Parkville, Australia, 2Department of Paediatrics, University of Melbourne, Melbourne, Australia, 3Department of General Medicine, Royal Children’s Hospital, Melbourne, Australia, 4London School of Hygiene and Tropical Medicine, London, United Kingdom

**Abstract:**

**Introduction:** Early childhood education and care services (ECECs) and schools are essential to children’s education and provide social, physical, behavioural and mental health benefits. School closures are disruptive, placing additional stress on students, families and teachers. We describe all Victorian COVID-19 ECEC and school outbreak events to inform an evidence-based strategy to re-open ECECs and schools, and keep them open.

**Methods:** Data on all cases and contacts linked to ECEC/school events (25/01/2020– 31/08/2020) were extracted from the Victorian Department of Health Public Health Events Surveillance System, supplemented with data from outbreaks management and Department of Education and Training. Data were descriptively analysed. A global review of the evidence was undertaken on strategies to open up schools safely.

**Results:** Of 19,901 cases, 1635 were linked to ECEC/school events: 113 events in ECECs and 230 in schools, with 66% involving a single case and 9% involving >10 cases. Most occurred during Victoria’s “second wave” and peaked in similar geographical areas to the broader community. In ECECs, secondary cases occurred more frequently when the index case was a staff member (39%) compared to a child aged 0-5 years (13%). In schools, secondary cases occurred more frequently when the index case was a staff member (38%), student aged 13-18 years (40%) compared to a child aged 6-12 years (31%). On average, ECEC/schools closed within 2 days of the first diagnosis and were closed for 9 days. The review found that reopening schools in the context of school mitigation measures was not associated with increases in community transmission.

**Conclusions:** Swift ECEC/school closures in Victoria during the COVID-19 pandemic limited onward transmission. Low transmission risk in younger children supported the re-opening of ECEC and primary schools. A mitigation strategy to re-open schools and keep them open has been recommended according to local area community incidence.
To open or close? COVID-19 in Educational Settings: key learning points.

Authors: Dr Archana Koirala1,2, Associate Professor Nicholas Wood1,2, Dr Helen Quinn1,2, Ms Noni Winkler1, Dr Lucy Deng1,2, Professor Kristine Macartney1,2

Affiliations: 1National Centre For Immunisation Research and Surveillance, The Children's Hospital at Westmead, Australia, 2The University of Sydney, Sydney, Australia

Abstract:

COVID-19 has affected up to 1.5 billion learners globally through school and early educational centre closures. Schools in NSW have remained open, with high attendance rates for the majority of the school year even during steady rates of community transmission in Term 3. We summarise the emerging evidence and risk factors on SARS-CoV-2 transmission in educational settings and present our population-based study [2] and ongoing work [1] [2] documenting low rates of SARS-CoV-2 transmission in >65 schools and childcare centres in New South Wales, Australia (population aged ≤ 18 years of 1.8 million).

Most NSW COVID-19 primary cases attending schools resulted in no or only a single secondary case. Four outbreaks – in a childcare centre [1] and stemming from a three high schools have provided salient lessons. We followed 4455 close contacts and found overall secondary transmission rates 1.1%, with adult to adult transmission being highest at 5.8%, and child to adult transmission being the lowest at 0.6%. Primary school settings had the lowest transmission rate of 0.5%.

Critical to keeping schools open has been: 1) detecting, and suppressing widespread, community transmission ensuring low overall case numbers 2) resourcing COVID-safe educational plans, and; 3) commitment between departments of education and health to provide a highly effective and coordinated public health response where an index case is detected within an educational facility. [6]

2. NCIRS, COVID-19 in schools and early childhood education and care services - the Term 2 experience in NSW. 2020, National Centre of Immunisation Research and Surveillance.

CoVID-19: Parent and caregiver concerns about reopening New Zealand schools

Authors: Dr Emma Jeffs1,2, Dr Nathanael Lucas1,2, Prof Tony Walls1,2

Affiliations: 1Canterbury District Health Board, Christchurch, New Zealand, 2University of Otago, Christchurch, New Zealand

Abstract:

Background: Children generally have a milder CoVID-19 disease course and better prognosis than adults. Many countries have closed schools as part of measures to limit transmission and this has had a considerable impact on children worldwide. This includes New Zealand (NZ), where rates of CoVID-19 have been very low.

Aims: To investigate parents’ and caregivers’ knowledge of CoVID-19 in children, to understand their levels of concern and to identify their most trusted sources of information.

Methods: Participants were recruited via NZ parenting support and interest groups on Facebook.com. Knowledge was assessed by way of a self-administered questionnaire during the 10 days prior to NZ schools reopening on 18 May 2020.

Results: Of the 1,191 study participants, 721 (60%) expressed some level of worry (14.5% very or extremely worried) that their child would catch CoVID-19 at school. A high proportion (79%, 941) thought it likely or very likely that their child would catch CoVID-19 at school if there were to be widespread community transmission. Fear scores for CoVID-19 were generally high, and 828 (80%) of participants said they would vaccinate their child if a newly developed vaccine were available.

Discussion: Parents and caregivers were generally fearful of their children acquiring CoVID-19 at school. This was despite messaging from multiple trusted sources that transmission in schools is unlikely, and the number of NZ CoVID-19 cases being extremely low. These findings have implications for policy development and public health messaging both in NZ and in countries with ongoing community transmission of CoVID-19.
**Concurrent Session 6E - Seroepidemiology**

On Demand from 10:00am AEDT

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**Symptoms and laboratory manifestations of COVID-19 in a repatriated cruise ship cohort**

**Authors:** Chris Bailie1,2,3, Lucinda Franklin1, Suellen Nicholson6, Francesca Mordant1,3, Charles Alpren1, Tony Stewart5, Carrie Barnes1, Annette Fox2,7, Julian Druce4, Kanta Subbarao2,5, Mike Catton4,5, Annaliese van Diemen6, Sheena Sullivan1,2,7

**Affiliations:** 1Communicable Diseases Epidemiology and Surveillance, Victorian Department of Health and Human Services, Melbourne, Australia, 2WHO Collaborating Centre for Reference and Research on Influenza, Royal Melbourne Hospital, at the Peter Doherty Institute for Infection and Immunity, Melbourne, Australia, 3National Centre for Epidemiology and Public Health, Australian National University, Canberra, Australia, 4Victorian Infectious Diseases Reference Laboratory, Royal Melbourne Hospital, at the Peter Doherty Institute for Infection and Immunity, Melbourne, Australia, 5Department of Microbiology and Immunology, University of Melbourne, at the Peter Doherty Institute for Infection and Immunity, Melbourne, Australia, 6Health Protection Branch, Victorian Department of Health and Human Services, Melbourne, Australia

**Abstract:**

**Background:** Most cases of novel coronavirus disease 2019 (COVID-19) are mild, but our current understanding of symptoms and laboratory findings is largely based on data from hospitalised patients. Understanding the spectrum of mild and subclinical disease has implications for population-level screening and control.

**Methods:** Participants were recruited from a group of 99 adults repatriated from a cruise ship with a high incidence of COVID-19. Respiratory and rectal swabs were tested by polymerase chain reaction (PCR) for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Sera were collected and tested for anti-SARS-CoV-2 antibodies by enzyme-linked immunosorbent assay (ELISA) and microneutralisation assay. Symptom profiles, patterns of viral shedding, and antibody response were examined.

**Results:** Forty-nine adults participated. The median age was 67 years (range: 36-81), and 31 (63%) were female. Forty-five (92%) met the study case definition of having either a positive PCR result or positive ELISA for immunoglobulin (Ig) G. Forty-two percent of cases were asymptomatic. Few symptomatic cases reported fever (15%). Serial respiratory and rectal swabs were positive for 10% and 5% of participants respectively; however, cycle threshold values were high (range 31-45), and attempts to isolate live virus were unsuccessful. Presence of symptoms was not associated with sex, age group, presence of comorbidities, or magnitude of antibody response.

**Conclusions:** In this cohort, asymptomatic infection was common, but antibody responses were similar in symptomatic and asymptomatic individuals. Fever was uncommon and by three weeks after disease onset, viral load in respiratory and gastrointestinal samples was low or undetectable. Neither demographic factors nor presence of comorbidities were predictive of mild symptomatic versus asymptomatic disease. Serology may be useful in confirming prior infection with SARS-CoV-2 in convalescent returned travelers where there is high pre-test suspicion but PCR results are either negative or not available.

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**Seroprevalence of SARS-CoV-2-antibodies in Sydney, April-June, 2020**

**Authors:** A/Prof Heather Gidding1,2,3, Dr Dorothy Machalek4,5, Dr Alexandra Hendry1, Dr Helen Quinn1, Ms Kaitlyn Vette1, Dr Frank Beard1, Ms Hannah Shilling2, Dr Rena Hirani6, Prof Iain Gosbell6,7, Prof David Irving6, Dr Marnie Downes8, Prof John Carlin8,9, Dr Matthew O’Sullivan9, Prof Dominic Dwyer10, Prof John Kaldor1, Prof Kristine Macartney1,11

**Affiliations:** 1National Centre for Immunisation Research and Surveillance, Westmead, Australia, 2Women and Babies Research, Kolling Institute, Northern Sydney Local Health District, St Leonards, Australia, 3The University of Sydney Northern Clinical School, St Leonards, Australia, 4The Kirby Institute, University of New South Wales, Kensington, Australia, 5Centre for Women’s Infectious Diseases, Royal Women’s Hospital, Melbourne, Australia, 6Australian Red Cross Lifeblood, Alexandria, Australia, 7School of Medicine, Western Sydney University, Penrith, Australia, 8Murdoch Children’s Research Institute, Parkville, Australia, 9Department of Paediatrics & School of Population and Global Health, University of Melbourne, Parkville, Australia, 10New South Wales Health Pathology, Institute of Clinical Pathology and Medical Research, Westmead, Australia, 11The University of Sydney Children’s Hospital Westmead Clinical School, Westmead, Australia

**Abstract:**

During Australia’s first wave of COVID-19, most cases were reported in Sydney. However, case reporting likely misses infections that are asymptomatic or not tested during the acute phase of illness. Surveys of antibody seroprevalence can provide a better understanding of SARS-CoV-2 spread in the community and are an essential component of pandemic intelligence. We aimed to estimate SARS-CoV-2 antibody seroprevalence among three subpopulations in Sydney (women undergoing antenatal screening aged 20-39 years, blood donors aged 20-69 years, and people having routine blood tests at selected diagnostic pathology services—all ages).
De-identified residual blood specimens were collected from across Sydney, distributed according to population size in each Statistical Area Level 4. For each collection, a target sample size of 350 specimens per 10-year age group was chosen as sufficient to exclude a seroprevalence >2.0% if observed seropositivity was 2/350 (0.6%). Antibody testing was performed at the Institute of Clinical Pathology and Medical Research using a validated immunofluorescent assay (IFA). All IgG positive samples were tested for IgM, IgA and neutralising antibodies. Crude seroprevalence was adjusted to account for IFA sensitivity (90.7%) and specificity (99.3%).

In total, 3,231 general pathology, 560 antenatal screening and 1,551 blood donor specimens were collected between 20/4/2020 and 2/6/2020. IgG antibodies were detected in 19 general pathology, 7 antenatal screening and 15 blood donor participants, giving crude test-adjusted seroprevalence estimates of 0.0%, 0.6% and 0.3%, respectively. There were no apparent patterns by age group, sex, or geographic area. Among IgG positive participants, 65.9% (27/41) had neutralising antibodies and six were positive for IgM or IgA.

Preliminary data demonstrates very low seroprevalence of SARS-CoV-2 infection in Sydney following the first wave of COVID-19, likely due to the early and successful implementation of public health measures. Final analyses accounting for sampling and test uncertainties will be presented.

**SARS-CoV-2 seroprevalence in a cohort of international travellers returning to regional Australia**

**Authors:** Dr Justin Jackson1,2, Jacqueline McBurnie3, Dr Chun Chan1, Dr Gina La Hera-Fuentes4, Dr John Burston1,2, Dr Craig Underhill1,2,3, Dr Richard Eek1,2,3, Dr Linda Hueston5, Dr Matthew O’Sullivan5, Professor Dominic Dwyer5

**Affiliations:** 1Albury-Wodonga Health, Albury, Australia, 2Faculty of Medicine, University of New South Wales Rural Clinical School, Albury Campus, Albury, Australia, 3Border Medical Oncology Research Unit, Albury Wodonga Regional Cancer Centre, Albury, Australia, 4Faculty of Medicine, University of New South Wales Rural Clinical School, Coffs Harbour Campus, Coffs Harbour, Australia, 5NSW Health Pathology Institute of Clinical Pathology and Medical Research, Westmead Hospital, Westmead, Australia

**Abstract:**

**Background:** Understanding the epidemiology of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection within the Australian population is important to inform the public health response.

**Aims:** To assess the effectiveness of a community screening program for the detection of SARS-CoV-2 infection by documenting PCR positivity and seroprevalence in a cohort of international travellers returning to regional Australia.

**Methods:** In this prospective study, adult international travellers returning to Australia between March 1st and March 31st, 2020 presenting with respiratory symptoms were recruited for collection of upper respiratory tract swabs for SARS-CoV-2 PCR and serology. Differences between cases returning positive and negative results were assessed using Fisher’s exact tests and Mann-Whitney U test, accordingly. The chronology of the dates returned to Australia, symptom onset, PCR collection and serology testing were described as was the country of travel.

**Results:** Ninety-nine eligible participants were included in this study. Of this cohort, 8 participants returned positive PCR results with 6 (78%) of these 8 participants seropositive. Of the remaining 91 patients with negative PCR results, one additional case was detected via serology. Patients with positive results were significantly older (59 vs 50) and had greater pre-existing comorbidities (33% of the positive cases had a Charlson Comorbidity Index score of 3 or greater compared to 7.8% in negative cases). The most frequent symptoms observed in the positive cases were cough (100%), headache (66.7%) and sore throat (44.4%). On average patients returned the 3rd week of March, with both symptom onset and PCR testing occurring within a week of return.

**Conclusion:** Our study documents that in a cohort of international travellers returning to regional Australia in March 2020 serology identified one unrecognised case and was negative in 2 cases who were PCR positive. A combination of PCR and serology is useful in identifying patients infected with SARS-CoV-2.
Establishment of a national SARS-CoV-2 serosurveillance program

Authors: Kaitlyn Vette1, A/Prof Heather F Gidding1,2,4, Hannah Shilling5, Dr Alexandra Hendry1, Dr Helen Quinn1,3, Suellen Nicholson1, Dr Matthew O’Sullivan6, Lucy Armstrong1, Dr Rena Hirani9, Prof lain Gosbell10,11, Adj. Prof David Irving8, Dr Frank Beard1,3, Dr Marnie Downes12, Prof John Carlin12,13, Prof Kristine Macartney1,3, Prof John M Kaldor5, Dr Dorothy Machalek5,6

Affiliations: 1National Centre For Immunisation Research And Surveillance, Sydney, , 2University of Sydney Northern Clinical School, Sydney, , 3University of Sydney, Sydney, , 4Women and Babies Research, Kolling Institute, Northern Sydney Local Health District, St Leonards, , 5The Kirby Institute, University of New South Wales, Sydney, , 6Centre for Women’s Infectious Diseases, The Royal Women’s Hospital Melbourne, Melbourne, , 7Victorian Infectious Diseases Reference Laboratory, The Peter Doherty Institute for Infection and Immunity, Melbourne, , 8Centre for Infectious Diseases and Microbiology, New South Wales Health Pathology - Institute for Clinical Pathology and Medical Research, Westmead, , 9Australian Red Cross Lifeblood, Sydney, , 10Clinical Services and Research, Australian Red Cross Lifeblood, Sydney, , 11School of Medicine, Western Sydney University, Penrith, , 12Murdoch Children’s Research Institute, Melbourne, , 13Department of Paediatrics & School of Population and Global Health, University of Melbourne, Melbourne,

Abstract:
Monitoring seroprevalence of SARS-CoV-2 antibodies is a key goal of Australia’s COVID-19 Surveillance Plan. Where virus-based testing likely misses asymptomatic cases and those not presenting during acute illness, serosurveillance can provide more comprehensive information on the true cumulative incidence of SARS-CoV-2 infection in the community. We have conducted Australia’s first national SARS-CoV-2 serosurvey, and established a framework for repeatable sampling to monitor changes over time.

For practical reasons we utilised residual specimens from three complementary populations. This included pregnant women undergoing antenatal screening (representing a stable population of 20-39 year old women); Australian Red Cross Lifeblood blood donors (a healthy population aged 20-69 years); and people presenting for diagnostic blood tests (all ages, but may be less healthy). The Australian COVID-19 Serosurveillance Network was established with representation from collection sites, health authorities, and reference laboratories to coordinate implementation in all jurisdictions. An expert laboratory subgroup conducted assay validations and developed a testing algorithm to maximise sensitivity and specificity, and facilitate testing in multiple laboratories.

From 19 June to 6 August 2020, 11,922 specimens were collected nationally across 23 collection sites. Testing is underway at five reference laboratories using the commercial Wantai SARS-CoV-2 total antibody ELISA with confirmatory testing of positives (and a selection of negatives) by microneutralisation. Bayesian analyses will be used to estimate seroprevalence, adjusting for assay performance and sampling bias.

This national serosurvey will provide baseline SARS-CoV-2 seroprevalence estimates by jurisdiction and age group for each population following the first wave of COVID-19 in Australia. Preliminary results will be presented. The methodology employed has established a practical, flexible and repeatable framework for monitoring SARS-CoV-2 infection in Australia over time.
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