



Updated report on the impact of the COVID-19 virus on the New South Wales prisoner population.

9 September 2021

Introduction

We have been asked by Legal Aid New South Wales (NSW) to provide updated expert opinion concerning the implications for people in NSW prisons of the Delta variant of COVID-19.

Qualifications and experience of experts

Paul L. Simpson (BSc (Psych), PhD) is Research Fellow of the Justice Health Research Program of the School of Population Health, UNSW Sydney, and Fellow of the National Health and Medical Research Council (NHMRC) Centre for Research Excellence in Offender Health. He has led and contributed to research funded by the NHRMC, NSW Department of Communities and Justice, and the Lowitja Institute, including prison crowding and infectious disease transmission, prison-based physical and sexual violence, and community attitudes to prison alternatives. He has led deliberative research projects that determined national prisoner health research priorities and key ethical issues of research involving people in prison. He currently is Chair of UNSW Human Research Ethics Advisory Panel for Health, Medical, Community and Social research, and is Chief Investigator on NHMRC project 'Second survey on sexual health and attitudes of Australian prisoners' and research evaluating the electronic monitoring of domestic violence perpetrators and victims.

Tony Butler (BSc, MSc, MSc, PhD) Professor Butler is a leading expert on the health of offenders and has developed numerous policy-relevant projects in the justice health area. He is the program head of the Justice Health Research Program of the School of Population Health and immunity in society, UNSW Sydney, and leads a team of twelve researchers including PhD and post-doctoral researchers. He developed Australia's only two national offender health data collection initiatives including the National Prison Entrants Bloodborne Virus Survey. He has led novel studies examining mental illness among prisoners, the role of head injury in offending, an RCT of a pharmacotherapy-based trial for impulsive-violent offenders, and text mining police domestic violence event narratives. He leads the NHRMC-funded Australian Centre for Offender Health Research. More recently he has developed two teaching initiatives: 'Public Health and Corrections' aimed the nexus between health and criminology, and the 'Inside the Criminal Mind' course.

Raina MacIntyre (MBBS Hons 1, M App Epid, PhD, FRACP, FAFPHM) is Professor of Global Biosecurity and Head of the Biosecurity Program at the Kirby Institute for infection and immunity in society, UNSW Sydney. She leads a research program in control and prevention of infectious diseases, spanning pandemics and emerging infections, epidemiology, vaccinology, biosecurity, risk analysis, personal protective equipment, mathematical modelling, public health, and clinical trials. She has over 400 peer reviewed publications. She has received many awards including the Sir Henry Wellcome Medal and Prize from the Association of Military Surgeons of the US, the Public Health Association of Australia's National Immunisation Award, and the Frank Fenner Award for Research in Infectious Diseases. She currently heads a NHMRC Centre for Research Excellence in Epidemic Response. Her PhD research was on tuberculosis in prisons in the United States, and she also has conducted outbreak investigations in Australian prisons.

Michael Levy (MBBS Hons, MPH, FAFPHM) was the Clinical Director of Justice Health Services (ACT) from 2007 to 2018. He is a Public Health and a Clinical Forensic Physician with national and international experience in prisoner health. He has worked with the World Health Organization and the European Committee for the Prevention of Torture - "CPT". Between 1995 and 1997, he worked at the Global Tuberculosis Programme at World Health Organization Headquarters (Geneva, Switzerland). He resumed active clinical practice in 2007, developing the primary care model for adult and juvenile persons in detention. He currently works part-time as a Medical Officer with a Canberra-based non-Government Organisation, focusing on clinical management of drug and alcohol affected patients. Until August 2021 he had a professorial appointment with the School of Medicine Australian National University and is a Board Member of the Community Restorative Centre, a non-government organisation concerned with the welfare of families of prisoners and the re-integration of ex-prisoners back into the community. In June 2014 he was recognised for meritorious service with the Member of the Order of Australia in the General Division (AM) – "For significant service to medicine in the field of public health as a clinician, academic and educator".

Our instructions

We have been instructed to address the following questions:

1. What is the Delta variant of COVID-19, and how does it differ from the COVID-19 virus the subject of your reports dated March and September 2020, including in terms of its:
 - a. Transmissibility
 - b. Length of incubation period
 - c. Symptoms (including proportion of infections which are asymptomatic)
 - d. Risk of serious illness, long term future health complications and death. What underlying conditions (including age and pre-existing health conditions) may increase these risks?
2. Considering the delta variant, what is the risk of (i) infection; (ii) suffering severe symptoms; and (iii) mortality within NSW correctional centres and youth detention centres?
3. What impact does the rate of remand receptions have on the risk of COVID-19 entering the broader prison population? What is the risk of introduction of COVID-19 into a remand centre in particular?
4. Do your opinions in your 2020 reports otherwise change in light of:
 - a. the Delta variant of COVID-19
 - b. current levels of community transmission of COVID-19 in NSW
 - c. vaccination rates of inmates and prison staff, to the extent that these rates can be established?
5. Please comment on the above issues in respect of prisons in western NSW with higher proportions of Indigenous detainees.
6. Any other matters in addition to the above that are relevant in your opinion to the issues relating to the delta variant of COVID-19 and the prison population in NSW?

Source materials

In formulating our opinion, we draw upon our experience as set out on pages one and two. We have also relied on peer-reviewed academic papers from medical, epidemiology and public health journals, reports by research institutes and public health institutions, and credible news sources. We have also relied on Correctives Services New South Wales (CSNSW) and Justice Health and Forensic Mental Health Network (JH&FMHN) documents, procedures and communications regarding COVID-19 where available, and NSW Ministry of Health COVID-19 surveillance reporting. Sources are referenced within the body of the report where appropriate.

The questions asked

1. **What is the Delta variant of COVID-19, and how does it differ from the COVID-19 virus the subject of your reports dated March and September 2020, including in terms of its:**
 - a. **Transmissibility**
 - b. **Length of incubation period**
 - c. **Symptoms (including proportion of infections which are asymptomatic)**

COVID-19 is a coronavirus disease caused by a virus named 'severe acute respiratory syndrome coronavirus 2' or SARS-CoV-2. Genetic variants of SARS-CoV-2 – such as B.1.617.2 or the Delta variant as it has come to be known – have been emerging and circulating around the world during the COVID-19 pandemic. A virus variant is an isolate (i.e., a virus that has been isolated from an infected host and propagated in culture) whose genome sequence differs from that of a reference virus. To assist in guidance on the prioritisation of variants of greatest public health relevance, the World Health Organization (WHO) has provided a working definition of SARS-CoV-2 'Variants of Concern'.¹ A variant is a Variant of Concern if it has been demonstrated to be associated with:

- Increase in transmissibility or detrimental change in COVID-19 epidemiology;
- Increase in virulence (i.e., severity or harmfulness of a disease) or change in clinical disease presentation; or
- Decrease in effectiveness of public health and social measures or available diagnostics, vaccines, therapeutics.

Additionally, a variant can be assessed to be a Variant of Concern by WHO in consultation with the WHO SARS-CoV-2 Virus Evolution Working Group.¹

The Delta variant has been classified a Variant of Concern by WHO and the United States Centers for Disease Control and Prevention (CDC),² a classification endorsed by the Australian Technical Advisory Group on Immunisation (ATAGI).³

The Delta variant differs from the COVID-19 and SARS-CoV-2 discussed in our previous reports dated 16 April 2020, 22 May 2020, and 18 September 2020 for the following reasons:

a. Transmissibility

Studies indicate that the Delta variant is more transmissible than ancestral SARS-CoV-2 virus. The *basic reproduction number* (R_0) is defined as the expected number of secondary cases produced by a single infection in a completely susceptible population. In a review of five studies that estimated R_0 of the Delta variant, estimates ranged between 3.2 and 8.0.⁴ A credible estimate is 6.4, which means one infected person on average infects more than six others in the absence of restrictions and vaccinations uptake among the population.⁵ This R_0 estimate is substantially higher compared with the strain circulating in 2020, responsible for Melbourne's second wave, which had an R_0 of 2.5.⁶

The *effective reproduction number* (R_e) is the number of people who can be infected by one individual in the presence of restrictions (and level of compliance to restrictions), vaccination coverage of the population, and the number of people already infected. A study on the transmissibility and R_e of the Delta variant in the United Kingdom, estimated R_e to range between 1.17 and 1.51. When compared with the previous Alpha variant (also known as the UK variant) this represents an increase in transmissibility of between 43% and 115%.⁷ R_e for the current Sydney wave has been steady in recent weeks, estimated to be 1.2, which reflects the effect of lockdowns, masks, and other interventions on reducing the transmission.⁸ A global analysis of SARS-CoV-2 variants and R_e estimated transmissibility increases by 97% for the Delta Variant.⁹

b. Length of incubation period

The incubation period of an infectious disease describes the time between infection and illness onset and can vary between individuals due to differences in transmission route, pathogen exposure dose, and how functional

an infected individual's immune system is. The incubation period is a crucial epidemiological parameter in understanding pre-symptomatic transmission and providing guidance on the isolation period for individuals who may have been exposed to the virus.

The Delta variant appears to be more infectious during the early stage of the infection; during the incubation period. Knowing when an infected person can spread viruses is important for preventing transmission to others, but this is difficult to determine based on investigating symptomatic individuals alone as a substantial proportion of transmission can occur during the pre-symptomatic phase. A study based on a well-traced Delta outbreak in China found that the time between exposure to first positive in the quarantined population was 5.6 days in the 2020 epidemic and was 3.7 days in the 2021 Delta epidemic. This study found that viral loads in the Delta infections were 1,260 times higher than those in the earlier strain infections on the day when viruses were firstly detected.¹⁰ The anecdotal evidence from the NSW Ministry of Health during the current epidemic is that contacts were already infected at the time they were identified, and incubation periods as short as 24 hours were documented.

c. Symptoms (including proportion of infections which are asymptomatic)

There is some evidence showing different clinical symptoms between the Delta variant and previous strains. The most common symptoms reported for the Delta variant have included fever, sore throat, cough, headache, runny nose, muscle aches, and fatigue but unlike previous strains, loss of smell is less frequently reported.¹¹ Runny nose was less of a feature in 2020.

It has been estimated that over 70% of Delta variant infections arise from asymptomatic transmission, which makes this variant very difficult to control.⁶

d. Risk of serious illness, long term future health complications and death. What underlying conditions (including age and pre-existing health conditions) may increase these risks?

There are studies emerging that show individuals infected with the Delta variant have an increased severity of illness and higher risk of hospitalisation compared with previous strains.

A study based on national surveillance data from January 2021 to May 2021 – obtained from the Ministry of Health of Singapore – found increased risk of developing pneumonia and severe COVID-19 as defined by supplemental oxygen requirement and intensive care unit (ICU) admission, or death, when compared with previous strains.¹² A large national study in England found a higher hospital admission or emergency care attendance risk for patients infected with the Delta variant compared with the Alpha variant.¹³ Additionally, a Scottish study of approximately 20,000 patients with confirmed SARS-CoV-2 infections reported that risk of COVID-19 related hospital admission was almost doubled in individuals with the Delta variant compared to the Alpha variant, with increased admission risk among those with five or more relevant comorbidities.¹⁴

Pre-existing health conditions and age continue to be correlated with hospitalisation and death for those infected with the COVID-19 Delta variant, albeit in modified ways. Studies currently indicate a higher proportion of people being hospitalised have a comorbidity and younger people are becoming infected and dying at a higher rate than previously reported. For example, a large study investigating the differences between the characteristics of COVID-19 cases in Wave-1 (n= 14,398) and Delta Wave-2 (5,454) admitted to a network of hospitals in India, found that comorbidities were statistically more present in patients in Wave-2 (59.7%) than in Wave-1 (54.8%), especially for diabetes, hypertension, and chronic kidney disease but not coronary artery disease. Additionally, the study showed that the death rate increased by nearly 40% in Wave-2, particularly among patients age less than 45 years.¹⁵ However, India at the time of the study had lower vaccination rates than Australia currently has, and thus less protected from hospitalisation and death. A higher proportion of younger people in the UK and Sydney are reported to be infected with the Delta variant compared to previous strains.^{16,17} Although the risk of hospitalisation and death increases with age, there appears relatively less morbidity and mortality in older adults compared to 2020, as they tend to be highly vaccinated.

There is evidence that two doses of BNT162b2 (Pfizer–BioNTech), mRNA-1273 (Moderna), and ChAdOx1 (AstraZeneca) vaccines are effective at preventing infection,^{18,19} hospitalisation and death.²⁰⁻²² Data from the United States (US) and Israel indicate a higher rate of hospitalisation and death among unvaccinated individuals, compared with those who have been vaccinated.^{20,21} Additionally, data from the US state of North Carolina showed that unvaccinated people were 15.4 times more likely to die from COVID-19 during the four-week period ending 21 August 2021, compared with those who were fully vaccinated.²³ However, vaccine breakthrough (i.e., infection despite full vaccination) and waning vaccine efficacy (especially for the Pfizer vaccine) is apparent.²⁴⁻²⁶

Chronic respiratory disease (chronic obstructive pulmonary disease, asthma) can increase risk of infection, suffering severe symptoms, and dying from COVID-19. Long-term complications after COVID-19, or “long COVID” has been found to be relatively common (e.g., 61% of patients in Norway), and independently associated with pre-existing chronic respiratory disease.²⁷

2. Considering the delta variant, what is the risk of (i) infection; (ii) suffering severe symptoms; and (iii) mortality within NSW correctional centres and youth detention centres?

The likelihood of an index case entering a prison or youth detention centre is dependent on the characteristics of the individual, their likely exposure to a case in the wider community, their vaccination status, and the prevention protocols practiced within a correctional centre, including policies and procedures for isolation of all persons about to enter custody from the community and diverting individuals from custody.

Given the current Delta variant wave that is occurring in NSW, which includes approximately 27,000 active COVID-19 cases (as of 7 September 2021), the higher transmissibility and severity of the Delta variant, and the continuous movement of prison staff and detained persons between prisons and their communities, the risks of any potential index case entering a correctional centre is very high and will remain so until community transmission reduces significantly and community cluster outbreaks are absent. The situation that is unfolding in Parklea, Silverwater, and Bathurst prisons (as of 9 September 2021), and internationally supports this.^{28,29}

Once an index case is introduced into a NSW prison, the risk of infection, severe symptom presentation, and/or death will depend on numerous factors, including compliance with prevention protocols including universal face masking, provision of hand sanitiser, vaccination coverage of staff and incarcerated persons, population density within the prison and accommodation cells, quality of air ventilation, extent of people movement between sections within the prison and between prisons, and the health and demographic profile of the incarcerated population.

Although information on all but one of these factors for NSW is lacking or not publicly available, there has been some notable studies and data published on COVID-19 in US prison settings since our previous reports that may inform risk appraisals.

By 12 July 2021, nearly 600,000 incarcerated persons in 122 countries had contracted COVID-19, with over 4,100 COVID-19 related deaths across 47 countries.³⁰ This is an underestimate as many jurisdictions do not test for COVID-19, only test asymptomatic people, and do not publicly release their data in a timely manner.

A study examining COVID cases by 6 June 2020 among 1.3 million people in US prisons, reported that the COVID-19 case rate for the incarcerated population was 5.5 times higher than the general US population, with the average daily case growth rate of 8.3% per day in prisons compared to 3.4% per day in the general population. Adjusting for age and gender, the death rate for people in prison was three times higher than the general population. Given that this study relied on officially reported data and that many US prisons during the study period either tested no prisoners or only symptomatic persons, the findings likely underestimate the true number of COVID-19 cases.²⁸ Another US study supported these findings.³¹ It is important to note that these studies were conducted before the Delta variant entered US prisons. If these studies were repeated after the entry of the Delta variant in the US, case numbers for incarcerated populations would likely be higher.

We acknowledged in our previous report dated 16 April 2020 that the concepts of crowding and prison cell spatial density (i.e., cell floor area per person) are relevant to COVID-19 transmission as they have been linked

to adverse health outcomes, including the transmission of infectious diseases.³² Since this previous report, a longitudinal study among all incarcerated persons (n=6,876) housed in fourteen Massachusetts state prisons between April 2020, and January 2021 found that increased crowding was associated with increased incidence rates of COVID-19. In this study, prison crowding was measured by (1) the size of the incarcerated population as a percentage of the prison's design capacity and (2) the percentage of incarcerated persons housed in single-cell units.²⁹

Another US study assessed the effectiveness of three interventions to reduce COVID-19 transmission in a large urban jail: depopulation of the jail, increased proportion of people in single cells, and asymptomatic testing. At the first phase of the outbreak where various strategies were in place, including flu like symptom screening, staff contact reporting, quarantining those entering custody for 14 days, and ceasing all in-person prison activities, the estimated basic reproduction rate (R_0) was 8.23. Following the depopulation intervention R_0 reduced to 3.58, and further reduced to 1.72 after more people were housed in single cells. Lastly, R_0 reduced to 0.45 following the introduction of asymptomatic testing. In total, these interventions were estimated to prevent approximately 83% of projected cases and hospitalisations and 89% of deaths over 83 days.³³

In assessing the generalisability of these US studies to the NSW context, it is our opinion that the US evidence is applicable to NSW prisons with some caveats. The US has had and continues to have much higher community transmission rates than NSW. As of 9 September 2021, infections per 100K people reported in the last seven days is much higher in the US than NSW (331 vs. 42 per 100,000).³⁴ While this difference is important in terms of the risk of an index case entering prisons, once an outbreak is identified in a prison, other differences in organisational and socio-cultural factors between US and NSW prison and detention settings become more relevant. Types of prison accommodation (e.g., the US use more dormitory style accommodation than NSW, which present higher risk of infectious disease transmission), and institutional practices directed at the health care of people in prison can be different between these jurisdictions. There are also commonalities between the US and NSW prison settings due to historical, economic, and socio-cultural factors. Both the US and Australia are high income countries and have comparatively well-resourced penal systems.

Vaccination coverage of incarcerated persons and prison-based staff is a critical factor. The World Health Organization and advisory committees of various governments have recommended prison-based staff and incarcerated persons be prioritised for COVID-19 vaccination programs. In November 2020, ATAGI recommended that workers and residents of correctional and detention facilities be considered as a priority population group for COVID-19 vaccination.³⁵ On 31 August 2021, the Justice Health and Forensic Mental Health Network ("Justice Health") reported that 21% of incarcerated people, 42% of Corrective Services NSW staff, and 74% of Justice Health staff had received two COVID-19 vaccination doses. As with other closed settings such as aged care homes, these variable vaccination rates are concerning. As reported above, risk of transmission, hospitalisation, and death occurs disproportionately among those unvaccinated.

3. What impact does the rate of remand receptions have on the risk of COVID-19 entering the broader prison population? What is the risk of introduction of COVID-19 into a remand centre in particular?

Without effective interventions in place, the higher the number of persons entering remand and reception centres, the higher the risk for the introduction of COVID-19 cases into the correctional system. The level of risk will depend on various factors, including:

1. The proportion of people entering remand and reception centres who resided or who had frequented places in the community the previous 1-2 weeks with high case numbers. It is likely that a considerable proportion of people entering NSW remand and reception centres resided in the more populated Sydney metropolitan areas. As of 3 September 2021, twelve (40%) Sydney metropolitan Local Government Areas (LGA) were considered "LGAs of concern" by the NSW Ministry of Health.³⁶ Consequently, it is probable that there is a high proportion of people entering remand and reception centres who resided or frequented places in the community with high case numbers.

2. Host susceptibility to infection as informed by underlying health conditions, age, and vaccination status. Epidemiological surveys have consistently shown that people in prison experience poor physical and mental health, compared to the wider community.³⁷ While older age groups are more at risk of hospitalisation and death, a higher proportion of younger people are becoming infected with the Delta variant compared to previous strains.^{16,17} As at 30 June 2020, the median age of people in NSW prisons was 35.7 years.³⁸ As reported above, as of 31 August 2021, 21% of incarcerated persons and 42% of Corrective Services NSW had received two COVID-19 vaccination doses. These factors taken together suggest a moderate to high host susceptibility.

3. Staff compliance levels with current Justice Health policies, whereby, as outlined in Annexure 2:
 - All new receptions are placed in a quarantine cell for 14 days and are tested on day one and again on day 12. Patients with negative COVID-19 results from the Day 12 test are released from quarantine on day 14 to general prison population. Patients who test positive to COVID-19 are immediately placed in isolation.
 - All staff (JHFMHN/CSNSW/YJ) must wear full Personal Protective Equipment (PPE) in all quarantine areas in reception centres and all isolation areas.

In the absence of NSW data on this factor, we are unable to comment on the level of staff compliance to the above procedures. Australian and international studies have reported common compliance issues among health care workers with social and behavioural infection control measures during emerging infectious disease outbreaks.³⁹

4. The level of universal mask wearing by staff and incarcerated persons – In the absence of NSW data on this factor, we are unable to comment on the level of staff compliance with mask wearing. It is our understanding that mask wearing among incarcerated persons in NSW is not mandatory or likely to achieve 100% compliance.

5. Quality of air ventilation – Good ventilation for all indoor spaces reduces risk of transmission. SARS-CoV-2 infection by droplet transmission is well established, where large droplets are transferred from one infected person to another by sneezing, coughing, sneezing, or speaking.⁴⁰ SARS-CoV-2 has been found to remain viable in aerosols with a half-life of approximately one hour, with some remaining viable for over three hours.⁴¹ The amount of emitted aerosol particles by an individual increases with loudness leading to the finding that one in five people maybe super-emitters.⁴² One study examining air ventilation in the closed setting of a school showed that air purifiers equipped with high efficiency particulate air (HEPA) filters can reduce the risks of airborne transmission of SARS-CoV-2 substantially.⁴⁰ In the absence of data, we are unable to comment on the quality of air ventilation in remand and reception centres.

6. Spatial density and crowding in the remand and reception centre and sleeping accommodation/cells. As previously reported, prison crowding as measured by design occupancy level or cell spatial density is associated with infectious disease transmission including COVID-19.^{29,33,43} Reducing spatial density levels become more important if the quality of air ventilation is poor. Without access to reception and remand centre specific data on design occupancy level and prison cell spatial density levels we are unable to comment on the degree this factor in NSW remand centres contributes to risk.

4. Do your opinions in your 2020 reports otherwise change in light of:

- a. **the Delta variant of COVID-19**
- b. **current levels of community transmission of COVID-19 in NSW**
- c. **vaccination rates of inmates and prison staff, to the extent that these rates can be established?**

There were many opinions expressed in the three 2020 reports. Perhaps the most relevant ones to revisit in light of 4a-4c are our opinions regarding the risk of: COVID-19 entering the NSW correctional system; capacity to contain a COVID-19 outbreak; and health impacts of COVID-19 infection among people in prison.

In the 16 April 2020 report, we affirmed: “We can confidently state that as the pandemic progresses in the wider community, the risks of any potential index case entering a correctional centre will be high.” Given the characteristics of the Delta variant and current levels of NSW community transmission, the risk of an index case entering a correctional centre is very high. Both the situation internationally and the August 2021 outbreaks in Parklea and Silverwater Correctional Centres have regrettably confirmed this opinion.

Additionally, staff compliance with COVID-19 protocols and staff COVID-19 testing policy will likely be contributing factors to this risk level. Regarding the Parklea Correctional Centre outbreak, the Department of Communities and Justice secretary Michael Coutts-Trotter told a budget estimates session on 1 May 2021 that “two inmates who were out of their quarantine pod tested positive on August 27” 2021, and that he did not know why this breach in protocol occurred.⁴⁴ We acknowledge that Justice Health and Corrective Services NSW appear to have done a good job in developing COVID-19 related policies and protocols, however, staff compliance to such measures will likely remain an issue.

Because staff are not currently tested and can move between prisons and their communities daily, they continue to pose a source of introducing COVID-19 into prisons. As of 1 September 2021, nine prison staff have tested positive at Bathurst Correctional Complex in regional NSW.⁴⁵ In our previous report dated 18 September 2020, we recommended that testing to be done on a regular basis for staff. We note that in Annexure 3 it states that Parklea Correctional Centre staff are now “swabbed 3 times a week, more regularly if they live in the LGA’s of concern”. This should substantially reduce the risk of cases entering the prison. It is unclear if this regular testing occurs for all prison staff in NSW.

COVID-19 vaccine programs had not commenced in Australia at the time of releasing our previous reports. At the time of vaccination program development, the Australian Federal government overlooked the recommendation of ATAGI to prioritise residents in correctional and detention facilities.^{35,46} Vaccination programs play an important role in mitigating outbreaks and preventing hospitalisations and deaths. Vaccination may also play a role in lifting in-prison restrictions – such as the removal of in-person activities and long-term cell confinement (‘lockdowns’) – and their mental health impact. Additionally, high vaccination coverage may assist custodial authorities from contravening Rule 43 of the United Nations Standard Minimum Rules for the Treatment of Prisoners (the Nelson Mandela Rules), which states that certain restrictions such as prolonged solitary confinement for more than 15 consecutive days amount to torture or other cruel, inhuman or degrading treatment or punishment.⁴⁷ This would also support Australia’s commitment to the Optional Protocol to the Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (OPCAT) – which is an international agreement aimed at preventing torture and cruel, inhuman or degrading treatment or punishment.⁴⁸

Stanford University modelling indicates that if vaccine coverage of incarcerated persons ranged from 36% (for those aged 18–29 years) to 76% (for those aged ≥70 years), then continued cessation of in-person prison activities and/or maintenance of non-pharmaceutical interventions, will likely see infections levels increase by 4–19%. If this same level of vaccine coverage is achieved, non-pharmaceutical interventions are removed, and in-person activities are resumed, then infections levels may increase by 55%. If 90% vaccination coverage is achieved for all incarcerated persons and non-pharmaceutical interventions are maintained, then infections may increase by 6%. Additional analysis showed that if vaccination scale-up is delayed and an index case is introduced into the prison in the meantime, then the rate of spread is likely to overtake sufficient vaccine scale-up.⁴⁹ These findings strengthen the importance of ensuring very high vaccination coverage of incarcerated persons and staff to prevent widespread infections.

Regarding our previous opinions on the health impacts of COVID-19 infection among people in prison, there have since been large studies conducted that examine the COVID-19 outcomes of hospitalisation and death. As reported above (1.d), these studies indicate that the Delta variant presents a higher risk of hospitalisation and

death, particularly among the unvaccinated, when compared to ancestral strains. Given incarcerated populations have poorer health outcomes when compared to the wider community, this population is likely to become overrepresented in hospital admission and mortality data should Delta variant outbreaks take hold within the NSW correctional system.

5. Please comment on the above issues in respect of prisons in western NSW with higher proportions of Indigenous detainees.

We know that Aboriginal and Torres Strait Islander peoples have higher rates of social exclusion, unemployment, trauma, ill-health, and have shorter life expectancy.^{50,51} We also know that Aboriginal and Torres Strait Islander peoples are substantially overrepresented in the NSW incarcerated population; representing 3.4% of the wider NSW community,⁵² but 26.2% of the NSW incarcerated population.³⁸ Historically, during pandemics, indigenous peoples have had higher infection rates, and more severe symptoms and death than non-indigenous populations.⁵³ Following ATAGI's recommendation, the Australian Government listed Aboriginal and Torres Strait Islander peoples as a priority group for COVID-19 vaccination due to having an increased risk of developing severe disease from COVID-19 compared with other groups.^{35,46} If an outbreak were to occur in a western NSW prison, then Aboriginal people would be at a high risk of infection and COVID-19 related symptom severity and hospitalisation.

Another issue is 'prison-to-community-transmission', which is a high risk for Aboriginal communities, which are under-vaccinated. Infectious disease outbreaks in prisons have been known to 'seed' wider community transmission. As far back as the 16th century typhus ("gaol fever") was responsible for high mortality in English prisons and community outbreaks when it "jumped the fence."⁵⁴ Following mass COVID-19 testing of all prisoners and partial testing of staff in April 2020 at Ohio's Marion Correctional Institute (MCI), COVID-19 cases were identified in 79% (1950/2453) of prisoners and 35% (154/446) of prison staff within three weeks of the first reported case.⁵⁵ At the time of the MCI outbreak, the surrounding town simultaneously experienced a substantial number of cases. Due to the MCI outbreak, in April 2020 Marion County had the second highest infection rate of any county in the US.⁵⁶ The release of a COVID-19 infectious person from the Bathurst Correctional Centre in the first week of August 2021 to Walgett, and community transmission from infected Bathurst Correctional Centre staff, have provided a supportive narrative on the risks that prisons pose to the general community.^{57,58}

We note that in Annexure 2 Justice Health state that "Patients are not provided a COVID-19 test on release unless they are symptomatic or considered a close contact of known cases." Measures reliant on the identification of persons who are infected through syndromic surveillance (fever, sore throat, cough etc) and isolation of such cases will not stop prison-to-community-transmission. Given that asymptomatic cases represents a substantial proportion (70%) of Delta variant transmissions, this has significant implications for people and health agencies in the wider community. Additionally, as of 1 September 2021, two-dose vaccination rates for the western NSW Aboriginal population ranges from 13.8% (Far West and Orana) to 18.9% (Murray).⁵⁹ The surrounding Central West region of the Bathurst Corrections Centre – which as of 1 September 2021, nine prison staff tested COVID-19 positive⁴⁵ – has a two-dose vaccination rate of 17.8% among the Aboriginal population.⁵⁹

If we assume that a proportion of those released from western NSW prisons go on to reside, or frequent family and loved ones, in western NSW, then it is our opinion that if a prison-to-community seeding event occurred, the cost to Aboriginal families and community members (with low vaccination rates due to delays in the vaccine roll out) could be dire.

6. Any other matters in addition to the above that are relevant in your opinion to the issues relating to the delta variant of COVID-19 and the prison population in NSW?

Youth in detention

Very little data exists on the impacts of COVID-19 for youth in detention. Consequently, this report has focused on incarcerated adults. However, the risks associated with COVID-19 for youth in detention are likely to be no

less than incarcerated adults. Approximately one half of all youth in NSW detention are Aboriginal and Torres Strait Islander,⁶⁴ and only recently has this population been able to access vaccines. Additionally, we currently do not know about the level of vaccine access through the NSW Youth Justice health services or vaccine uptake.

Vaccination is important but not enough to prevent outbreaks and disease in prisons

Rapid vaccination scale-up among prison staff and incarcerated adults and youth is important. Additionally, given the emerging evidence on postvaccination infections or breakthrough infections^{25,26,60,61} incarcerated people should be prioritised for COVID-19 vaccination boosters given the extreme vulnerability of these populations. Breakthrough infections occur because vaccines do not provide 100% protection and waning vaccine efficacy (especially for the Pfizer vaccine) is apparent.²⁴⁻²⁶ An Israeli study on almost 5 million Pfizer vaccinated people found waning immunity in all age groups after six months following a second dose of the vaccine. Findings showed that the efficacy of the vaccine for people aged 60 or older decreased from 73% to 57% over six months with a similar decrease in vaccine protection observed for all other age groups. A decrease in vaccine efficacy against severe disease was not as pronounced, decreasing from 91% to 86% and from 98% and 94% for those aged 60 years and older, and those aged between 40-59 years, respectively. As a result of these findings, the Israeli Ministry of Health made the decision to provide a third booster dose of COVID-19 vaccine to people aged 60 years or older who had been vaccinated at least five months previously, which was then expanded to all people aged 12 years and older.⁶⁵

The generalisability of the findings of this large population-based study to a specific sub-population such as the incarcerated population in NSW requires consideration of the different characteristics, exposure risk, and detection risk between these populations. Given that the NSW prisoner population is likely to have more co-morbid health conditions, be proportionally less vaccinated, and have a higher risk of exposure if a COVID-19 index case enters a prison (due to the unique features of incarceration that increase exposure risk as previously reported) than the Israeli study population, then it is probable that vaccine effectiveness to protect against COVID-19 infection and severe disease will decrease further for the incarcerated population compared to the general population.

Nonetheless, vaccination remains important for incarcerated populations and prison staff, but it is likely not enough to prevent outbreaks and disease in prisons due to the following reasons.

Based on the current experience in NSW, there is a risk that efforts to increase vaccine coverage to the incarcerated population and prioritising this population for future booster doses will be reactive, not preventative, and may not occur until it is too late to contain an outbreak. ATAGI first issued advice on prioritising people who work and reside in correctional facilities for the COVID-19 vaccination program on 13 November 2020.³⁵ As reported above, only 21% of incarcerated people, 42% of Corrective Services NSW staff have received two vaccination doses as of 31 August 2021. Additionally, there were reports that in July 2021 vaccines designated for people in NSW prisons were diverted to Year 12 secondary students in Sydney LGAs of concern, as occurred for supplies for NSW regions that were also diverted to Sydney.⁶⁶ Although governments have emphasised that their COVID-19 measures are informed by expert medical and public health advice, we note that local and international governments have often not heeded advice from the World Health Organization or their local expert advisory committees regarding prioritising vaccinations for incarcerated persons.⁶² As reported above, modelling by Stanford University suggests that if vaccination scale-up is delayed, or reactive and not preventative, then the rate of spread in a prison is likely to overtake sufficient vaccine scale-up.⁴⁹

Further, vaccine hesitancy among both prison staff and incarcerated people may also see low uptake of vaccines and booster doses. A US study on incarcerated persons housed in a jail with 130 active COVID-19 cases found that only 40% of participants would volunteer for vaccination (cited in Barksy *et al* 2021).⁶³ Without educational material or information delivered by trusted experts including peer-educators, this level of vaccine hesitancy is unlikely to change substantially.

These supply and demand issues as well as the security, physical design, and spatial density features of a prison tell us that factors related to “real world” implementation are likely to contribute more to the success of vaccination programs than a vaccine’s efficacy as determined by observational studies and clinical trials.

Vaccination modelling from the Yale School of Public Health indicates that the benefits of a vaccine will decrease substantially following deployment delays, significant vaccine hesitancy, or greater epidemic severity in a particular setting (as measured by the effective reproduction number, R_e). Modelling results showed that for a highly infectious disease, even vaccines with adequate efficacy, speed of distribution, and extent of delivery may be insufficient to modify population dynamics that produce high disease prevalence.⁶⁷ This reinforces the need for a sustained commitment to public health strategies including both vaccination and non-pharmaceutical interventions not just until a vaccine is procured, but during the course of which a vaccine and any required booster doses are effectively and sustainably deployed.^{63,67}

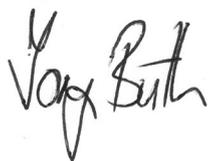
Considering the high transmissibility and health impacts of the Delta variant, likely poor airflow, absence of universal masking, inability of the detained individual to regulate their contacts, waning immunity for current vaccines, and likely ongoing vaccine implementation issues associated with deployment delays, vaccine hesitancy, and potential greater epidemic severity for closed and congregate settings like prisons, we reiterate an opinion presented in our previous reports regarding prioritising a managed depopulation strategy to decrease spatial density within the prison estate. An increase in the spatial separation of incarcerated persons and staff while simultaneously continuing NPIs and rapidly scaling up vaccinations would reduce the risk of infectious diseases transmission, outbreaks and severe disease, as emerging evidence reported above supports. Any depopulation approach should ensure adequate health, social and economic supports are in place for people who are released, and infection control measures are in place for their families and loved ones.

Declaration

The contents of this report are true to the best of our knowledge and belief. We understand that in preparing this report we have an overriding duty to the Court as outlined in the Uniform Civil Procedure Rules 2005, Schedule 7 Expert witness code of conduct, and we confirm that we have complied with this duty. We, the undersigned, would be prepared to attend the Court to give evidence if required.



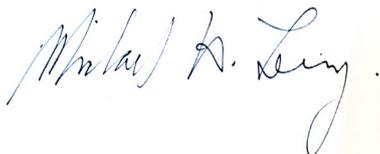
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9 September 2021

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