Covid-19 and Regional Health: We're all in this together?

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The rapid spread of the coronavirus commencing in Wuhan in December 2019 led to it being declared a pandemic in March 2020. Mortality rates were high. Reactions to the spread and control of the disease varied between countries. This article examines the history of control of previous epidemics and pandemics and explores the effect of globalisation on the spread of the current pandemic. It considers the impact of COVID-19 on Australia, the Federal Government's control measures and the differences in impact and reaction between the states and the impact on universities and students. It examines the urban/regional divide with particular emphasis on South Australia. The effect on regional health workforces, on locum services and international medical graduates is discussed. Social distancing and isolation are considered including their effect on families, communities, business and wellbeing. The advantages and problems of the increasing use of telehealth and digital support are considered as is the potential long-term regional effect from this pandemic.

KEY WORDS: COVID-19, regional health, social change, telehealth, globalisation

A global disease has encircled the world, bringing cities to a standstill and claiming the lives of more than 475,000 people by 24 June 2020. First reported in December 2019 in Wuhan, China, the serious acute respiratory virus to be designated COVID-19 spread rapidly across the world. On 30 January 2020, the World Health Organisation (WHO) declared it a Public Health Emergency of International Concern. On 11 March 2020, it was given 'pandemic' status (WHO 2020a). There was, and remains, no existing immunity in the population and no specific medication or vaccination available for treatment. In past eras, there have been other epidemics with crippling and fatal diseases threatening the population. The management and treatment of earlier pandemics provides insight and warnings for the management of this current pandemic.

Management of Previous Epidemics and Pandemics

In his book *Two Million South Australians* (1984), Woodruff, the former Director General of Public Health, in South Australia, described the passage of the State through several epidemics. When the book was written the population of South Australia was 1.25 million people.The population today is 1.677 million and we are again experiencing a shocking world crisis as the coronavirus spreads across countries. Woodruff examines the impact of several worldwide epidemic illnesses, such as diphtheria, tuberculosis, polio and influenza. He describes the policies instigated to limit their spread and to control the isolation of those afflicted with these diseases. He also outlined the development of vaccination programmes and compulsory testing.

Tuberculosis

A national campaign was instituted to eradicate tuberculosis in Australia in 1970 which replaced the voluntary state programs (Cousins and Roberts 2001). This involved compulsory chest X-rays and Mantoux testing to identify those who either had the disease, or who had developed some immunity to it through exposure to the bacillus. Those affected were compulsorily isolated and treated in sanitaria until cured. Those who had no immunity were vaccinated against the disease. This testing and vaccination programme was carried out through schools and workplaces, with most of the population within Australia eventually vaccinated. Reports from the National Health and Medical Research Council (NHMRC) stated that the death rate from tuberculosis during the twentieth century had dropped from 105.5/100,000 in 1970 to 0.3/100,000 in 2000 (Australian Government). For many years Australia was free of the disease, but gradually over the last decade, we have seen a rise in tuberculosis numbers, another effect of our more mobile lifestyle.

Poliomyelitis

Another contagious disease which created havoc was poliomyelitis – a disease which affected children more

than adults. It spread slowly at first, but reached epidemic proportions in South Australia in the late 1930s and into 1940. Woodruff notes that:

> There was no clear plan of action for dealing with it. The responsible organism was known to be a virus, but it had not then been isolated or grown in the laboratory, the circumstances favouring its spread were largely unknown and there was no therapeutic substance to which it was susceptible (1984: 82-83).

These words are remarkably pertinent to conditions prevailing in the present coronavirus pandemic. In the polio epidemic, it became apparent that the spread came not only through the sufferers but also from seemingly well people in the community carrying and spreading the contagion. This knowledge led to the understanding that the traditional methods to control the spread of infectious diseases were no longer enough. The WHO established a World Global Polio Eradication Initiative in 1988, relying on a public/private partnership for health with the assistance of Rotary International, leading to a 99% world reduction in the incidence of polio (WHO 2020b). The disease is now generally confined to poorer and the most marginalised populations in several developing countries, notably in Pakistan, Afghanistan and Nigeria (Polio Global Eradication Initiative). During the Australian outbreak in the early 1950s, people were also conscious of quarantining those with communicable diseases such as measles, mumps and other childhood illnesses.

A second large epidemic outbreak of polio came in South Australia in the early 1950s. Many parents remembered the horror of the earlier epidemic and were immediately prepared to enforce isolation habits. Schools and group gatherings were closed immediately. By the time of this outbreak, the virus had been isolated and work was underway to produce a vaccine which could be given to all children.

Globalisation and Disease Control

There have been major social changes over the years since these epidemics. Perhaps the greatest change is the population movement between countries across the world, making it increasingly difficult to maintain sovereign regulations concerning healthcare.

Figures released by the Australian Bureau of Statistics (ABS 2018-19) regarding short-term visits to Australia show a steady increase from less than 1 million people in 1978 to 3.8 million in 2008-9 and 9.3 million ten years later. International migration has also increased rendering vaccination and disease control more difficult (The Lancet 2016).

The Current Pandemic

Unfortunately, the severity of the spread and extent of this disease was not initially understood and it began to appear in other countries. Italy was particularly impacted and quickly instituted a lockdown of areas affected (Vaughan 2020). A series of decrees culminated in the whole population being confined to home isolation irrespective of any known personal contact with anyone with the disease. However, this had little initial effect as lockdowns followed rather than preceded the spread and rules were not initially fully adhered to. Rapid spread of the disease has also been seen in countries where isolation was not quickly instigated. Countries such as Spain, the United Kingdom and United States of America have seen large daily death rates with need for the emergency opening of subsidiary intensive care facilities hampered by a shortage of ventilators and personal protective clothing.

As news of increasing infection and death rates and of lockdowns spread, panic grew across the world. People began over-purchasing household requirements particularly focusing on toilet paper, hand sanitiser and other cleaning materials. Later, people started panic buying food, fearing that these things would become unavailable in a shutdown.

Global Considerations

The virus's spread was rapid in densely populated areas. Globally, the disease failed to respond to known forms of symptomatic treatment with many patients developing serious complications and large numbers requiring intensive and specialised medical care. In some countries and regions, people were unable to access the specialised treatment they required. Mortality rates varied across the world, impacted by the numbers tested, the age of populations, the quality of health systems and the extent to which they were overwhelmed. People over 70 years of age and those who were immuno-compromised were considered most at risk of dying. Statistics from the Centre for Evidence Based Medicine state the Australian case-related fatality rate (CFR) to be 1.33% with 6,746 known cases up to the end of March. At the same time, the CFR in France was 18.6% and in the US, 5.7% (Hendrie 2020).

Australia

The ability for speedy international movement of people exacerbated the rapid global spread of the disease, with air travel and cruise ships highlighted as prime causes. In Australia, interstate and overseas travel was shut down. Each Australian State then imposed its own restrictions on entry, intra-state travel and closure of public spaces and businesses. The Prime Minister and the Commonwealth Chief Health Officer and each State Premier, together with their own chief

health officers, made daily reports on case numbers and changes to regulations. Initial concern focused on reducing the numbers of people affected by the virus, but concern was also held for business continuity and access to household requirements for people in isolation within their homes. Business, sport and tourism were all severely impacted by the need for isolation. Child-care facilities remained open assisted by a federal subsidy. Schools were initially closed for all but children of emergency workers in most states.

Universities suffered severe financial consequences when they were required to close, providing lectures and tutorials online. International students were severely affected. Many were unable to return to study in Australia while those already in Australia, who normally supported their accommodation costs with part-time work, were left with no source of income. Financial losses for universities are high with fears of multiple staff retrenchments and course closures (Suha 2020). The social and economic consequences will require further analysis and management as control of this disease is gained.

Impact of COVID-19 on Australia and Australians

Tourists, both within and outside Australia were affected dramatically in the initial stages, as they were initially unable to return home due to airport closures and prohibitions on the entry of cruise ships. Within Australia, tourism and accommodation businesses have faced a devastating period firstly as they struggle to assist their clients stranded overseas or interstate, and then as they had to cope with the requirements of self-isolation and border closures on their businesses.

Like the polio epidemic of the 1930s, SARS Covid-2 is a virus previously unknown to medical science. Health advice from the Australian Government describes the spread as similar to previous illnesses such as MERS and SARS Covid-1: rapid, and with a high number of fatalities. As yet there is no vaccine or treatment to arrest the virus. But it is clear that the virus spreads quickly from personal contact and by droplet infection. Authorities have issued strong advice on regular and thorough hand washing, avoiding personal contact and to being self-contained when sneezing or coughing. Social distancing is an imperative. Cleaning and disinfecting of surfaces and clothing must be regularly carried out. Reports on the disease are readily available from the WHO and Australian Government websites with daily updates of advice and statistics (Australian Government, Department of Health 2020).

Initially, diagnostic testing on referral was commenced only for those who had been overseas or exhibited symptoms of coronavirus as demand quickly outstripped the availability of tests and results took several days. For those in regional areas, testing was more difficult with longer delays for results.

Regional Health: The case of South Australia

The Australian health system is funded through the budgets of Federal, State and Local Governments, with a joint health policy relying on maintaining private revenue from the insured population. This has historically led to debate and argument about responsibilities and has been managed through the Australian Healthcare Agreement between State and Commonwealth Governments.

The South Australian health system is centrally controlled by SA Health, comprising one central and ten regional local health networks reporting to the South Australian Health Department. Local health networks (LHNs) are responsible for the performance, budget, clinical governance, safety and quality of services provided. There is an expectation that LHNs will work with primary health providers and health services in a collaborative approach for total health of communities.

As a regional paediatric physiotherapist living and working in the Limestone Coast region of South Australia for most of my working life, I have observed vast changes in the health system. Our regional hospital forty years ago, was a busy 400-hospital with intensive care and high dependency units combined with full obstetric, surgical and medical facilities. There was an accident and emergency department, a pathology and post-mortem facility and a well-equipped radiology department. Nursing training was conducted there and provided a local tertiary study opportunity to many rural and regional young people.

Local general practitioners and specialists cared for the patients in the hospital and provided a fee-for-service availability to the accident and emergency department. But changes to funding, access and staffing created increasing divergence between the scope of services available and patient expectations. There was mounting concern that country people would be required to pay for services which could be accessed without fee in the metropolitan area.

Salaried medical officers commenced at our regional hospital in 2000 and the local resident general practitioners were advised that they could no longer admit or treat patients in the hospital. Regulations controlling the type and severity of conditions which could be locally managed have altered. Prior to these major changes there was on average, one medical evacuation per week; we now see more than fourteen each week, despite little change in

population numbers. We have no critical care unit and only a small high dependency unit. This was a matter of serious concern with a growing pandemic in a region which operated with a range of interstate border transfers. The impact of these changes to the regional health system in Country Health South Australia (CHSA) warrants deeper examination as we struggle to come to terms with the reaction to, and control of the spread of the coronavirus.

Globalisation, and Regional Health

Within the health system, marked shortages in the rural medical, nursing and allied health workforce have been noted since 1980 (Struber 2004). Researchers have studied medical workforce distribution and training to determine contributions to shortages (McGrail and Russell 2013). Another impact of globalisation has affected the medical workforce as the rapid increase in internet access and communication allows positions to be advertised, and interviews conducted worldwide, using digital media for communication. There has been a rapid increase in the number of international medical graduates (IMG) working within Australia, alleviating workforce shortages in rural and regional Australia. O'Sullivan et al. (2019) note that medical workforce shortages are greater in regional, rural and remote Australia than in urban areas. These figures are reported in the Medicine in Australia: Balancing Employment and Life (MABEL) research which show that workforce shortages in these areas, where 65% of our Indigenous population and 30% of the non-indigenous population live, are characterised by difficulties in recruitment and retention of health care workers. In 1970, 16% of the workforce in large regional centres were IMGs while they comprised 11% of the workforce in smaller rural and remote areas. In the years 2005-2009 these numbers had increased to 59% of generalists and 60% of specialists in regional centres. During the same period in rural and remote areas these numbers had increased to 67% of GPs and 66% of specialists (O'Sullivan et al. 2019). With international borders closed IMGs will not be available to work in regional Australia.

Rural and Regional Impact

The lockdown of social gatherings has disengaged people from communities. For those in regional Australia the threat of isolation is particularly great. Doubts have been expressed about the ability of the local regional health services to manage a substantial regional outbreak. The atomisation observed in the regional health workforce over the last fifteen to twenty years, in conjunction with the increasing need for locum medical staff and the prevention of local general practitioners from using local hospitals has created a potentially dangerous situation in a pandemic which may see demand exceeding availability if patient numbers escalate.

There remain a small number of GP obstetricians who are contracted to provide maternity services, in collaboration with the resident specialist obstetrician, to maintain continuity of service. For maternity patients in this region, as in maternity units throughout Australia, restrictions due to COVID-19 are making things extremely difficult, with little ability to have an accompanying person, or for other siblings to meet the new family arrival.

The closing of State and international borders has made locum services unattainable, putting the staffing difficulties for regions under even greater pressure. The Local Health Network has expressed concern about this in their Board planning for management of COVID-19 (SA Health LCLHN minutes March 2020). For example, the Intensive Care Unit (ICU) within Mount Gambier and District regional hospital had been downgraded to a High Dependency Unit (HDU) and strict criteria exist for the evacuation of seriously ill people. Evacuations are arranged through the Royal Flying Doctor Service. Previously they provided emergency evacuations less than fifty times per year. However, as a result of the changing regulations, the Royal Flying Doctor Service now makes more than 700 trips for retrieval of patients from the Limestone Coast Region to hospitals in Adelaide per year.

Furthermore, the local GP workforce is now no longer familiar with the layout of the hospital nor the procedural protocols which exist therein. How well equipped are we then as a community, to cope with a disaster of the proportions we have seen unfolding internationally, or even in the Eastern States of Australia? Contemporaneously, air services have been cut, making it impossible for visiting specialists and locums from within the State to come to the region. If de-skilling and downsizing is a problem in the largest regional centre in South Australia, how much greater is the problem in smaller regional centres?

COVID-19, Federal Complications and State Differences

The complications caused by the response to COVID-19 to our three-tiered government system in Australia can be seen in the variations from State to State in regulation, behaviour, occurrence, testing and fatalities. There have been differences between States in closure of borders with total restriction in some States. Western Australia closed it borders completely, forbidding travel across the border in either direction and limiting it by region within the state. South Australia, Tasmania and Queensland restricted border crossing to essential travel for work or on compassionate grounds, issuing permits for those allowed to enter the State, and enforced isolation for a 14-day period for those returning from interstate (Australian Interstate Quarantine).

There was also a difference in access to schools seen across states. The Commonwealth Government wanted schools to remain open but most states did not agree. Victoria commenced school holidays early, from the last week of their first term at school and introduced home schooling for term two. NSW, Queensland, Victoria, Western Australia, the ACT and Tasmania introduced home schooling except for essential workers and vulnerable students (Karp 2020). South Australia and the Northern Territory maintained access to schools although some cautious parents made their own decisions to keep their children at home. Many people decided to maintain family isolation in an attempt to minimise the risk of contracting the disease. South Australia was quick to impose self-isolation with strict regulations about staying at home and the closure of shops and public facilities. As the numbers contracting the virus have lessened, the same cross-border variation can be observed in differing dates for phased removals of the lockdown regulations allowing returns to school, travel and work. There are State differences in operation of public spaces as well and in the phased opening of commercial premises.

Perhaps one of the most contentious of differences has been the access of families and friends to those in aged care facilities. Where school-aged children are recognised as being at low risk of contracting the coronavirus, the elderly population is considered high risk and this has led many aged-care facilities to completely close access to outsiders. However there have still been serious cases of spread of the disease in some of these facilities. Newmarch House in New South Wales is one such facility, reporting 19 deaths amid sad tales of families unable to be with their relatives at such a time (Thomas 2020). Much stress has been caused to those who have been unable to visit close family, particularly where the cognitive capabilities of some residents has not permitted understanding of their loss of access.

Impact on Universities, Rural Students and International Students

Universities have been extremely disadvantaged, particularly at the start of a new university year. Students eager to embark on the next major stage of their educational experience and having gained entry to the course of their choice expected a new environment where the attendance at lectures, seminars and tutorials would support the change from previous learning styles. These students must now adapt to digital learning, without many of the joys of wider exposure to new ideas and cultures.

For international students this has the potential to change forever the pathway they had chosen in their life. The early messages from the Australian Government, directing international students to return to their home countries if unable to support themselves, sent an unwelcome message to many. With the cessation of international air travel, it became impossible for many international students to return to university at the commencement of the first semester. Those already studying or researching within Australia, many of whom subsidised their income with part-time work, have been forced to continue their studies online, but are suffering difficulties in accessing money for food and rent. Australian immigration rules state that a student must have $21,041 to provide for accommodation each year, but more than half the students require part-time work to subsidise their living costs (Morris and Ramia 2020). Most work within the food and hospitality industries and these sectors have been seriously impacted by the shutdown of communities. Living in shared accommodation presents problems for self-isolation, as well as the ability to access online study to continue their courses. The travel restrictions and other government policies will discourage international students and the multiculturalism they bring to Australian universities. The 750,000 international students in Australia are an important export for Australia, contributing $376 billion to our economy in the 2018-19 financial year and supporting 240,000 jobs (Xiao et al. 2020). The loss of international students has presented a major budgetary shortfall for universities who have included fees of a large number of international students in their annual budgets (Doughney 2020).

The temporary closure of universities and the change to remote on-line teaching has seriously affected many young people from rural and remote Australia who usually move to accommodation in urban areas and university colleges. They are likely to be seriously disadvantaged by the inability to interact with their lecturers, tutors and fellow students.

The safety measures and changes introduced have caused rapid expansion of digital learning. This has opened opportunities for those with digital communication skills to develop new platforms for the dissemination of information. But this has highlighted and increased the potential gap for rural and regional people (Meyers et al. 2013). Those who have poor and unreliable internet connection are seriously disadvantaged. There are also many families who do not have any access to computers and the internet.

Long Term Impacts: After COVID-19

There will be some marked changes to life after Covid-19. For those working within the allied health sector, issues will arise from the probable expansion of telehealth, ranging from an ethical responsibility to alleviate suffering, to creating a secure environment in which to operate. In

regional areas, the problem is exacerbated by the lack of health workers resulting in more resort to telehealth.

The move to on-line delivery of services will impact heavily on older citizens, many of whom have limited or no computer skills and yet this age group is the most vulnerable and isolated in this pandemic. Data garnered from ABC news/coronavirus charts based on figures taken from the National Notifiable Disease Surveillance Systems reveal that most deaths in Australia have occurred in people 70 years and older (Ting et al. 2020).

As an allied health professional working in the paediatric field, winning the confidence of a small child when addressing them on their family computer or their mother's telephone, can be quite difficult. Assessing a child with Autism Spectrum Disorder is hard enough even within a consulting room but problems are compounded in remote assessments. Yet, these are the parents who really need our help right now. As a result of COVID-19 restrictions, they are confined with their children. Often there are siblings who also have changing needs while schooling in isolation. It is important that regional health services can continue to provide support to families until the isolation phase of this pandemic subsides.

There may be both threats and advantages to rural and regional communities from opportunities to use digital platforms including more frequent, if shorter contacts. The medical and allied health workforce could benefit from developing greater skills in digital consulting and secure record-keeping which may increase the ability for regional people to access services similar to urban populations without the need for excess travel. But it could also pose threats to the regional understanding arising from the visits of urban specialists to regional centres, where a first-hand knowledge of the impact of distance and differing community standards can be gained. Digital consultations can overcome geographic barriers, if internet connection can be achieved, but its increased adoption creates the potential for a greater divide between those who can access digital health services and those who are unable to do so.

When this is all over there will be the need for a review of regional health in light of the dangers exposed by COVID-19. These should include a review of the recurrent needs for evacuation of patients with health problems and of the provision of accessible digital support for specialist medical services. Such a review could hopefully lead to more provision of services available within regions, encouraging increased interest from medical and allied health graduates in working regionally.

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