

The Australian public health response to the H1N1 pandemic

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This paper critically analyses the Australian public health response to the H1N1 influenza pandemic in 2009. The aim is to analyse the response in respect to the core public health leadership and management skills of preparation, crisis management, media management, and risk communication. Aspects of ethical and legal considerations are also explored.

Introduction

In early 2009, a novel influenza virus first emerged with reports of large numbers of young adults with serious respiratory illness in Mexico. Shortly after, the new influenza A H1N1 virus was isolated in California and subsequently linked to the earlier cases in Mexico (Center for Disease Control 2009). On 24 April 2009, the World Health Organization (WHO) reported more than 882 cases in Mexico and seven cases in the United States of America, with 62 deaths caused by the H1N1 influenza virus. The situation was defined as 'a public health emergency of international concern' (WHO 2009). Worldwide, H1N1 spread rapidly by person-to-person transmission, and from one country to another. On 11 June 2009 the WHO declared the infection at pandemic levels reporting more than 30,000 cases in 74 countries (WHO 2009).

While initial predictions may have overestimated the morbidity and mortality of the H1N1 influenza strain, its impact was significant. By 2011 approximately 1.5 million people were believed to have been infected in 214 countries, with over 25,000 confirmed deaths (Gable *et al.* 2011). The spectrum of illness varied greatly but the majority of cases were mild. However, more serious illness was noted within particular groups including pregnant women, Indigenous peoples, the morbidly obese, and those with significant medical co-morbidities (Western Australia Department of Health 2012). The lower-than-expected morbidity and mortality has been attributed to a successful public health response and the fact that the H1N1 virus was less virulent than predicted.

Method

Given the complexities of these topics, a broad selection of information was reviewed. Literature searches were undertaken within PubMed, MEDLINE and CINAHL. Key word searches were undertaken using the terms influenza OR H1N1 OR swine flu, AND public health response AND Australia. The search was limited to the English language and articles from 2009 onwards, when available. The database searches yielded 80, 58 and two articles respectively. Abstracts of these papers were reviewed and appropriate papers were selected. References used in the selected articles were explored for further information. In total 17 peer-reviewed articles were included. The majority of papers that were reviewed but not included were deemed more medically technical (i.e. focusing on treatment, seroprevalence, vaccination or management of high-risk patients) rather than public health.

In addition to the peer-reviewed journals from database searches, state and Commonwealth government websites were examined for relevant policy and review documents, for example, the health websites of the New South Wales, Queensland, Western Australia and Commonwealth governments. The website for the US Centers for Disease Control was searched for relevant documentation, as well as non-government organisation websites, including the WHO.

The literature selected was reviewed to elicit information about the role of the Australian public health response during the H1N1 influenza pandemic. The focus of the review was to critique the public health response in terms of the core leadership and management skills required. The review specifically looked at aspects of preparedness, public health leadership, crisis management, media management, communication, and ethical and legal considerations.

Results and discussion

The literature showed that significant public health action was required to help control the spread of H1N1 influenza in the Australian community. The public health response followed the framework described in the Australian Health Management Plan for Pandemic Influenza [AHMPPI] 2008 (Spokes, Cretikos & Ward 2010).

The AHMPPI identifies six possible phases for pandemic response:

- ALERT
- DELAY
- CONTAIN
- SUSTAIN
- CONTROL
- RECOVER.

The DELAY phase was activated on 28 April 2009 with the objective of preventing or slowing the entry of the virus into Australia using border control measures and increased vigilance. Numerous cases were identified and, on 22 May, Australia moved to the CONTAIN phase. The CONTAIN phase is designed to prevent community transmission from becoming established (Spokes, Cretikos & Ward 2010). On 17 June 2009 Australia moved to a new PROTECT phase in recognition of widespread community transmission and generally mild clinical disease (Spokes, Cretikos & Ward 2010). This phase identified high-risk groups and aimed to protect those most at risk of severe illness. Neuraminidase inhibitors, such as oseltamivir, were provided prophylactically and the largest public vaccination program undertaken in Australia commenced on 30 September 2009 (Australian Government Department of Health and Ageing 2010).

The H1N1 virus was a significant burden to the Australian public health system. By the end of 2009 there had been more than 37,000 laboratory-confirmed cases of H1N1, including 191 deaths and 5000 people requiring hospital admission (Australian Government Department of Health and Ageing 2010). Based on laboratory-confirmed cases, the median age of those infected was 21 years and 31 years for those hospitalised. The median age for those receiving intensive care treatment was 44 years and 53 years for those who died (Dowse *et al.* 2011). Of note, these were comparatively younger ages than usually seen with seasonal influenza.

Preparedness

Pre-pandemic planning was instituted in Australia before the appearance of the H1N1 virus. This had been largely stimulated by previous outbreaks in the Asia-Pacific region of SARS in 2003 and H5N3 avian influenza from 2004 onwards (Weeramanthri *et al.* 2010). Planning documents included the AHMPPI. This is a comprehensive document providing background to influenza pandemic planning and outlines strategies for responding (Waterer, Hui & Jenkins 2010). Key actions for forward planning and forecasting, communication,

surveillance, reducing transmission and optimising health services are detailed in the document (Waterer, Hui & Jenkins 2010). The AHMPPI was the result of extensive collaborative work by all levels of government and multiple other stakeholders over several years (Bishop, Murnane & Owen 2009). Arrangements were trialled in large-scale pandemic exercises in 2006 *Exercise Cumpston* and in 2008 *Exercise Sustain* (Weeramanthri *et al.* 2010).

The H1N1 public health response in Australia was well-planned and the feedback generated has confirmed the value of planning and preparedness. Importantly the shortfalls identified through critical analysis of the H1N1 response have since been incorporated into future pandemic planning, including an update to the AHMPPI in 2014.

Public health leadership

The scale of the Australian public health response is difficult to describe in words and the number of personnel involved was significant. Numerous tasks were carried out by the teams involved including developing operational guidelines, communicating with professionals and the public, tracking patients and tracing contacts, running laboratory tests, creating supply chains for medications and vaccines, collecting and analysing data, and actually caring for the 'worried well', the 'mildly symptomatic' and the seriously ill (Weeramanthri *et al.* 2010). Successful leadership was vital during the H1N1 pandemic to coordinate the public health response and, therefore, minimise the extent to which people were affected by the crisis (Demiroz & Kapucu 2012). The then Minister for Health and Ageing, Nicola Roxon, and the then Commonwealth Chief Medical Officer, Professor Jim Bishop, received commendations for their leadership during the H1N1 pandemic (see Professor Jim Bishop to leave post in May 2011). They worked together with the Chief Health Officers of the states and territories and with a range of experts. Their leadership and management was a great example of inter-jurisdictional cooperation (Bishop 2009).

Crisis management

It is without a doubt that good prior planning aided the public health response in Australia, but flexibility in the face of an emerging crisis was also invaluable. A series of discussions, involving the Commonwealth and all states and territories ultimately resulted in the creation and implementation of an entirely new pandemic phase. The PROTECT phase was instituted on 17 June 2009 (Dowse *et al.* 2011) and allowed for a refocussing of resources, including the use of antiviral drugs, for those at highest risk (Waterer, Hui & Jenkins 2010). Adapting plans as understanding of the disease developed and re-targeting efforts and resources as more information became available was a crucial and efficacious public health response (Australian Government Department of Health and Ageing 2010).

The previous framework phases of DELAY and CONTAIN needed reconsideration after the public health response had failed to prevent H1N1 from spreading (Hamilton, Crocket & Skippen 2010). Some criticism was voiced over a decision to allow the cruise ship, *Pacific Dawn*, to embark new passengers in Sydney while there remained the possibility of infected crew and a contaminated environment. This, predictably, led to further infection and dissemination of the H1N1 infection into Victoria (Waterer, Hui & Jenkins 2010). The management of cruise ships during a pandemic was not an issue that had been anticipated (Australian Government Department of Health and Ageing 2010). This will have to be addressed in future pandemic planning given this is a possible port of entry into Australia. Also the spread of the H1N1 virus may have been hastened by the decision to allow national sporting events for some schools to continue in Victoria despite sustained transmission being evident in the community. Evidence showed that school children then brought back the novel influenza virus to their home states and established infection there (Australian Government Department of Health and Ageing 2010).

Criticism of the H1N1 public health response has also focused on the virus being declared a pandemic when data had shown little variation from seasonal influenza (Kelly 2010). Many critiques have suggested that the different phases of a pandemic plan should only be adopted when a new influenza strain looks likely to arrive in Australia that is both hyper-virulent and spreads easily (Collignon 2009). Worldwide, criticism has focused on a lack of transparency, with the WHO declaring a pandemic despite data being available to suggest that the associated mortality rate was low. The controversy was further compounded by revelations that expert advisors had undisclosed financial links to pharmaceutical companies responsible for making antivirals (Davis, Flowers & Stephenson 2014).

The public health workforce was stretched to capacity by the H1N1 pandemic. Hospitals and their intensive care units, as well as general practices, were overextended. This is due to a chronic lack of surge capacity in the Australian health system. There is concern that an increase in hospital activity of less than 0.1 per cent of yearly admissions and bed days managed to strain hospitals (Collignon 2009). If H1N1 had been a more virulent virus, the lack of surge capacity in Australia's health service would have left communities seriously exposed. Future pandemic planning needs to include strategies for appropriate surge capacity in the health system, including alternative options to the traditional hospital system.

Media management

It is well recognised that the media plays an influential role in the public's response to health issues. The mass media (television, radio, print and the internet) has significant potential to influence health-related behaviours and perceptions (Leask, Hooker & King 2010). Media attention in Australia and worldwide was intense during the initial stages of the H1N1 pandemic. This

coverage, as well as government press releases, caused undue fear in the population. Panic and fear caused many people to present to their general practitioner or to emergency departments when they were not unwell (Collignon 2011). This placed further unnecessary pressure on an already overburdened health system. In contrast, in the later stages, the media portrayed H1N1 as a mild illness declaring the official response an overreaction (Hilton & Smith 2010). This new portrayal affected public response and led to a decrease in compliance with community-based mitigation measures (Waterer, Hui & Jenkins 2010). These included measures such as infection control, hygiene, the use of masks, and alcohol hand rubs, all of which are required to reduce transmission of respiratory infections (Lo *et al.* 2005).

The Australian Government review of the H1N1 response noted the difficulties in managing the intense media demand. In addition, they recommended a media strategy for future potential outbreaks that included principles and protocols of media engagement (Australian Government Department of Health and Ageing 2010).

Communication

Communication was, in general, efficient during the H1N1 pandemic in Australia. This was definitely guided by the strong communication flavour and prior planning in the AHMPPI (Weeramanthri *et al.* 2010). Mechanisms of public communication used during the public health response included public service announcements, press conferences, call centre hotlines, H1N1 dedicated websites, and media reporting and commentary (Spokes, Cretikos & Ward 2010). In terms of press conferences, the use of a consistent and credible health spokesperson was commended in helping to build rapport and trust in the community (Waterer, Hui & Jenkins 2010). Wisely, the information and questions coming into call centres was used to inform further outgoing information and health messaging (New South Wales Department of Health 2010).

Communication with general practitioners during the H1N1 pandemic was primarily via faxes, the Healthlink pathology system, and the H1N1 website (New South Wales Department of Health 2010). Criticism was voiced at the often duplicated and conflicting information provided. General practice plays a vital role in the front-line delivery of health services. Therefore there is a strong need for communication channels to be credible and up to date to avoid duplication and confusion (Weeramanthri *et al.* 2010). The issue of duplication of information was also a concern within the different levels of government. Despite best efforts there will always be issues with communication when multiple layers of bureaucracy are in place. Staff involved in the H1N1 public health response were critical of having to attend multiple meetings with different areas of the health system to discuss the same agenda (Waterer, Hui & Jenkins 2010). While communication during the H1N1 public health response was reasonably good, these experiences highlighted that improvements can still be made.

Legal and ethical issues during crisis management

Responding to pandemic influenza raises a number of legal, social equality and ethical dilemmas. Legal framework issues can arise due to different levels of government if there is not a coordinated approach. This was briefly evident during the H1N1 pandemic when the Queensland Government encouraged food stockpiling, before falling into line with the national view that this would unsettle the public (Bennett & Carney 2010). Legal frameworks are required to outline roles and responsibilities and to support the required public health response.

A number of ethical issues also arise in pandemic planning, as people's individual rights need to be balanced against public safety. These include priority setting and equitable access to antiviral medications and vaccines. When using isolation, quarantine, border control and social distancing measures, public health officials should be mindful of people's human rights, as well as protecting the public. Australia also has an international ethical obligation to provide assistance to countries in need during pandemic events (WHO 2007).

Conclusion

There are important lessons that can be learnt from the public health response in Australia to the H1N1 pandemic. Exemplary aspects of the response included pre-planning, public health leadership and communication with the public. The pandemic also served to highlight issues that need to be addressed, including media management, surge capacity, and inter-agency communication. It should also be noted that the apparent success of the response in 2009 is, in part, due to the low virulence of the H1N1 virus. Therefore we must not become complacent, but use the H1N1 experience to prepare for the future possibility of a more virulent virus pandemic and public health crisis.

References

- Australian Government Department of Health and Aging 2010, *Review of Australia's health sector response to Pandemic (H1N1) 2009: Lessons identified*. At: [www.health.gov.au/internet/publications/publishing.nsf/Content/review-2011-l/\\$File/lessons%20identified-oct11.pdf](http://www.health.gov.au/internet/publications/publishing.nsf/Content/review-2011-l/$File/lessons%20identified-oct11.pdf) [18 April 2016].
- Bennett B & Carney T 2010, *Law, ethics and pandemic preparedness: the importance of cross-jurisdictional and cross-cultural perspectives*, *Australia New Zealand Journal of Public Health*, vol. 34, no. 2, pp. 10.
- Bishop J 2009, *Managing Pandemic (H1N1) 2009. Influenza: A National Health Response*, *Australian Journal of Emergency Management*, vol. 24, no. 3, pp. 5-6. At: <https://ajem.infoservices.com.au/items/AJEM-24-03-04>.
- Bishop JF, Murnane MP & Owen R 2009, *Australia's winter with the 2009 pandemic influenza A (H1N1) virus*, *The New England Journal of Medicine*, vol. 361, no. 27, pp. 2591-2594.
- Centre for Disease Control and Prevention 2009, *Swine influenza A (H1N1) Infection in two children – Southern California, March–April 2009*, *Morbidity Mortality Weekly Report*, vol. 58, no. 15, pp. 400-402.
- Collignon P 2009, *Take a deep breath Swine flu is not that bad*, *Australasian Emergency Nursing Journal*, vol. 12, pp. 71-72.
- Collignon P 2011, *Swine flu: lessons we need to learn from our global experience*, *Emergency Health Threats Journal*, vol. 5, no. 4, p. 7169.
- Davis M, Flowers, P & Stephenson N 2014, *We had to do what we thought was right at the time: retrospective discourse on the 2009 H1N1 pandemic in the UK*, *Sociology Health Illness*, vol. 36, no. 3, pp. 369-382.
- Demiroz F & Kapucu N 2012, *The role of leadership in managing emergencies and disasters*, *European Journal of Economic and Political Studies*, vol. 5, no. 1, pp. 91-101.
- Department of Health 2012, *Australian Health Sector Response to Pandemic (H1N1) 2009: Key Recommendations - Public Health and Clinical Services Division*. At: www.public.health.wa.gov.au/cproot/4979/2/20121218-key-recommendations-pandemic-influenza-report-2009.pdf [18 April 2016].
- Dowse GK, Smith DW, Kelly H, Barr I, Laurie KL, Jones AR, Keil AD & Efler P 2011, *Incidence of pandemic (H1N1) 2009 influenza infection in children and pregnant women during the 2009 influenza season in Western Australia - a seroprevalence study*, *Medical Journal of Australia*, vol. 194, no. 2, pp. 68-72.
- Gable L, Courtney B, Gatter R & Kinney ED 2011, *Global Public Health Legal Responses to H1N1*, *The Journal of Law, Medicine and Ethics*, vol. 39, pp. 46-50.
- Hamilton A, Crocket R & Skippen B 2010, *Australia's response to swine flu in 2009 – has it been appropriate?*, *Journal of Rural and Tropical Public Health*, vol. 2, no. 9, pp.14-18.
- Hilton S & Smith E 2010, *Public views of the UK media and government reaction to the 2009 swine flu pandemic*, *BMC Public Health*, vol. 10, pp. 697. At: <http://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-10-697>.
- Kelly HA 2010, *A pandemic response to a disease of predominantly seasonal intensity*, *Medical Journal of Australia*, vol. 192, no. 2, pp. 81-83.
- Leask J, Hooker C & King C 2010, *Media coverage of health issues and how to work more effectively with journalists: a qualitative study*, *BMC Public Health*, vol. 10, p. 535.

Lo JY, Tsang TH, Leung YH, Yeung EY, Wu T & Lim WW 2005, *Respiratory infections during SARS outbreak, Hong Kong, 2003*, *Emergency Infectious Disease*, vol. 11, pp. 1738–1741.

New South Wales Department of Health 2010, *Key Recommendations on Pandemic (H1N1) 2009 Influenza from the NSW Health Emergency Management Committee*. At: www.health.nsw.gov.au/pandemic/Documents/Key-Recommendations-Pandemic-H1N1-NSW-Health-2010.pdf [18 April 2016].

Professor Jim Bishop to leave post in May 2011, *The Australian*, March 04. At: www.theaustralian.com.au/national-affairs/professor-jim-bishop-to-leave-post-in-may/story-fn59niix-1226015992182 [18 April 2016].

Spokes PJ, Cretikos MA & Ward JG 2010, *Pandemic (H1N1) 2009 influenza in NSW: an overview of the public health response*, *NSW Public Health Bulletin*, vol. 21, no. 1-2, pp. 4-9. doi: 10.1071/NB09035

Waterer GW, Hui DS & Jenkins CR 2010, *Public health management of pandemic (H1N1) 2009 infection in Australia: a failure!*, *Respirology*, vol. 15, no. 1, pp. 51-56.

Weeramanthri TS, Robertson AG, Dowse GK, Effler PV, Leclercq MG, Burtenshaw JD, Oldham SJ, Smith DW, Gatti KJ & Gladstones HM 2010, *Response to pandemic (H1N1) 2009 influenza in Australia - lessons from a State health department perspective*, *Australian Health Review*, vol. 34, no. 4, pp. 477-486.

World Health Organization 2007, *Ethical Considerations in Developing a Public Health Response to Pandemic Influenza*. At: www.who.int/csr/resources/publications/WHO_CDS_EPR_GIP_2007_2c.pdf [18 April 2016].

World Health Organization 2009, *Emergencies preparedness, response. Influenza-like illness in the United States and Mexico*. At: www.who.int/csr/don/2009_04_24/en/ [18 April 2016].

World Health Organization 2009, *Media centre. World now at the start of 2009 influenza pandemic*. At: www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/ [18 April 2016].

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