

GUIDELINES

Influenza A(H1N1) and infection control guidelines for optometrists

Clin Exp Optom 2009; 92: 6: 490–494

DOI:10.1111/j.1444-0938.2009.00420.x

Patricia M Kiely* BScOptom PhD**Ka-Yee Lian^{†§}** BOptomPGDipAdvClinOptom PGCertOcTher
FVCO**Genevieve Napper^{||}** MScOptom MPH

PhD PGDipAdvClinOptom

PGCertOcTher FVCO

Carol Lakkis[†] BScOptom PhD

PGCertOcTher FAAO FVCO FBCLA

* Optometrists Association Australia,

Carlton, Victoria, Australia

† Clinical Vision Research Australia,

Carlton, Victoria, Australia

§ Dr Damien Smith and Associates,

Camberwell, Victoria, Australia

|| Melbourne Optometry Clinic, Victorian

College of Optometry, Carlton, Victoria,

Australia

E-mail: clakkis@vco.org.au

Submitted: 23 June 2009

Revised: 3 August 2009

Accepted for publication: 6 August 2009

The emergence of a novel influenza A virus (Influenza A[H1N1]), which has not circulated previously in humans, has led to the first global influenza pandemic in 41 years. Influenza A(H1N1), commonly called 'swine flu', is a novel influenza virus made up of porcine, avian and human genes, and preferentially infects younger people. Although Influenza A(H1N1) does not appear to be likely to cause as many fatalities as previous influenza pandemics, attempts to contain it are necessary because people whose health is already compromised through underlying chronic medical conditions are at risk of death if they contract the virus. In addition, pregnant women who become infected are at increased risk of complications.

This paper provides figures on the number of cases of Influenza A(H1N1) and deaths associated with this virus in Australia (using World Health Organization and Australian Government figures) and discusses infection control measures that optometrists should put in place for themselves, their staff and their patients, in the event that there is suspicion of Influenza A(H1N1) infection. Measures include isolating those who display symptoms indicative of influenza, use of surgical masks (P2 [N95]) by the infected person, frequent hand-washing, appropriate cough and sneeze etiquette, disposal of used tissues and rescheduling of non-urgent appointments for those thought to be infected. Any staff members who need to be closer than one metre to the infected person should also use personal protective equipment (for example, surgical masks, goggles or safety spectacles, gowns and gloves). The current evidence indicates that Influenza A(H1N1) should be treated by optometrists as another type of flu. As with other forms of influenza, following basic infection control guidelines will help reduce the spread of infection in optometric practices and within the community.

Key words: infection control, Influenza A(H1N1), pandemic

In April 2009, the World Health Organization (WHO) announced 'the emergence of a novel influenza A virus' (Influenza A[H1N1]), which had not circulated previously in humans. On 11 June 2009, the WHO Director-General, Dr Margaret Chan, advised that the scientific criteria

for an influenza pandemic had been met and that the level of influenza pandemic alert was now phase 6.¹ This was the first global influenza pandemic in 41 years. There were three pandemics last century: the Spanish flu (1918–1919), for which estimates of deaths ranged from 20 to 40

million² to 50 to 100 million³; the Asian flu (1957–1958) with from one to four million deaths² and the Hong Kong flu (1968–1969) with from one to four million deaths.²

An influenza pandemic is said to occur when:⁴

- a new influenza virus subtype emerges, for which there is little or no immunity
- the virus is easily spread between humans
- the virus is capable of causing severe disease.

There are six phases in the WHO preparedness and response plan for pandemics:⁵

1. no viruses circulating among animals have been reported to affect humans
2. humans have been infected by an animal influenza virus affecting domesticated or wild animals
3. an animal or human-animal influenza reassortant virus has caused sporadic cases or small clusters of disease in humans but there has not been widespread transmission in the community
4. there is verified human to human transmission of the virus causing 'community outbreaks'. This is the stage at which countries need to communicate with WHO to have the outbreak assessed
5. there is human to human spread of the virus into at least two countries in one WHO region
6. the global pandemic phase—there are sustained community-level outbreaks from human to human transmission of the virus, in two or more countries in one WHO region, and in at least one country in another WHO region.⁵

There are six stages in the Australian Government response to pandemics:⁴

1. Alert: increase Australia's readiness for a pandemic; support overseas responses
2. Delay: delay entry of the virus by border measures, support overseas response; increase surveillance
3. Contain: slow the spread of the virus in Australia
4. Sustain: continuation of containing measures while a vaccine is developed
5. Control: use of a customised vaccine to control the virus
6. Recover: process to return to normal living.

INFLUENZA A(H1N1)

Commonly called 'swine flu', novel H1N1 is a new influenza virus first detected in humans in April 2009.⁶ It has been named 'swine flu' because many of its genes are similar to influenza viruses normally occurring in pigs, however, it is different because as well as having two genes from the flu viruses that normally circulate in pigs, it also has avian genes and human genes. It is thus a 'quadruple reassortant' virus.⁶

The WHO has advised that the virus preferentially infects younger people and that approximately two per cent of cases have developed severe illness, which often rapidly progressed to life-threatening pneumonia. By June 2009, the number of worldwide deaths was small. Most severe or fatal infections had occurred in people aged between 30 and 50 years with underlying chronic conditions, such as respiratory and cardiovascular diseases, diabetes, autoimmune disorders and obesity. The WHO also advised that pregnant women were at increased risk of complications.¹

The Influenza A(H1N1) pandemic has been described as being of moderate severity because overall, most people recover without hospitalisation or medical care, levels of severe illness are similar to those from local seasonal influenza and health-care systems have been able to manage the numbers of people seeking care.⁷ In most instances, the condition can be managed by resting, drinking plenty of fluids and using a pain reliever for aches.⁸

On 9 May 2009, when Australia reported its first case of novel influenza A virus, 29 countries had reported 3,440 laboratory confirmed cases of Influenza A(H1N1) infection with 48 deaths.⁹ At 22 June 2009, 99 countries had reported over 52,000 cases with 231 deaths and Australia had reported a cumulative total of 2,436 cases (approximately 0.01 per cent of the Australian population) and one death.⁹ By 4 August, there were 23,692 confirmed cases and 70 deaths in Australia.¹⁰ Figure 1 shows the number of laboratory confirmed cases and deaths due to Influenza A(H1N1) infection in Australia between 9 May and 4 August 2009. As a comparison worldwide, WHO has estimated

that annual influenza epidemics cause approximately three to five million cases of severe illness, and approximately 250,000 to 500,000 deaths.¹¹ On 21 June, there had been 85 hospitalisations due to the virus throughout Australia and this had increased to 2,705 by 4 August.¹⁰ It is likely that there are many more infected people who have not presented for medical assessment and so have not had a diagnosis confirmed.

On 16 July 2009, the WHO altered its reporting requirements for 'Pandemic H1N1 2009'. The speed with which the virus travelled and the increasing number of cases were thought to make it almost impossible for countries to undertake laboratory testing to confirm that cases were due to Influenza A(H1N1). The counting of individual cases was no longer considered important for monitoring the risk or for guiding implementation of response measures.¹²

Cases have been reported in all states and territories of Australia. Initially most cases occurred in the state of Victoria, however, by 4 August there were more deaths, hospitalisations and intensive care unit admissions due to the virus in New South Wales than in any other state.¹⁰ In June 2009, the state of Victoria was in the 'modified sustain' phase of its pandemic plan, while the remainder of Australia was still in the 'contain' phase. By 27 July, the whole of Australia was in the 'protect' phase. The reason for more cases in Victoria initially than in the rest of Australia may be explained by research that has found that transmission of influenza A is favoured by cold and dry conditions.¹³

As with other influenza viruses, the H1N1 virus may be spread from one person to another through inhalation of infected droplets from coughing or sneezing or through contamination of hands or surfaces. Signs and symptoms of the disease are flu-like and include fever, cough, headache, muscle and joint pain, sore throat, runny nose and sometimes vomiting and diarrhoea.¹⁴ A number of mild and even severe cases have not been associated with fever.¹⁵

Because this is a new virus, most people have little or no immunity,¹⁴ however,

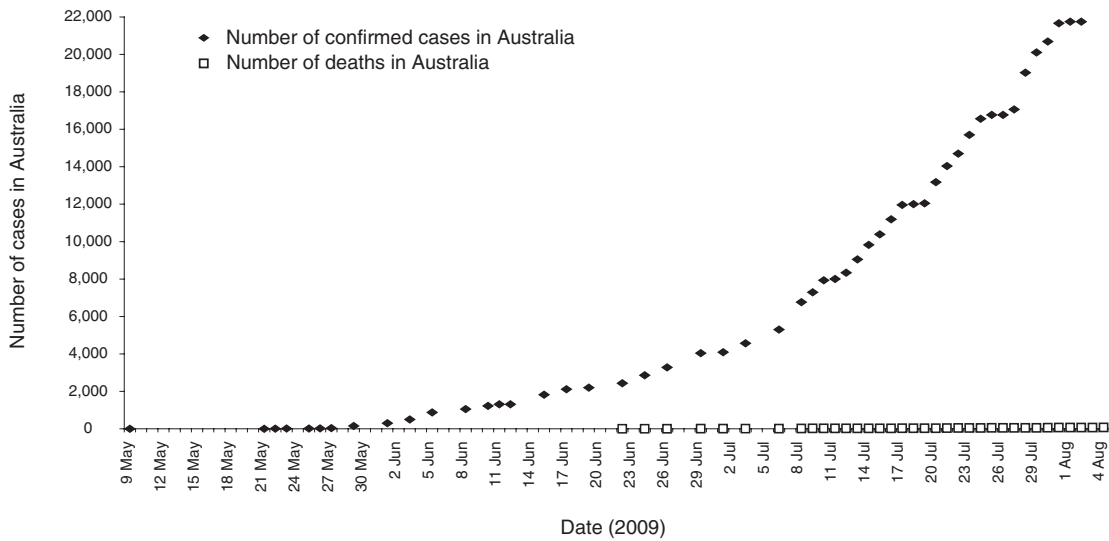


Figure 1. Number of laboratory confirmed cases of Influenza A(H1N1) and associated deaths in Australia from 9 May 2009 to 27 July 2009. Sources: World Health Organisation: www.who.int/csr/don/en/ (data from 9 May to 5 July inclusive) and Australian Government Department of Health and Ageing: www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/updates (data from 8 July to 4 August inclusive).

unlike seasonal influenza, people older than 64 years do not appear to be at increased risk of novel H1N1-related complications.⁶ The virus tends to affect younger people. The apparent immunity of older people may be due to previously generated antibodies to a vaccine or a circulating influenza virus that was related to the new virus. These antibodies now provide some degree of immunity to the new virus.¹⁵

To prevent the spread of the virus, the WHO advises that ‘people who are ill should cover their mouth and nose when coughing or sneezing, stay home when they are unwell, clean their hands regularly and keep some distance from healthy people’.¹⁴ The incubation period varies from two to seven days and patients may be contagious from about one day before and up to seven days after the onset of symptoms.¹⁶

OPTOMETRISTS AND INFLUENZA A(H1N1)

Optometrists may face situations where various staff, patients or they are infected

or are suspected of being infected with the influenza A(H1N1) virus. Because of the close proximity to their patients and to minimise the risk of spreading the virus to other staff and patients, optometrists need to be aware of the appropriate infection control procedures to be followed, if they are concerned that they or a staff member or patient is infected with the virus.

Of particular importance is the need for an optometrist or staff member to stay away from the practice and from other people, if they display symptoms that could indicate the presence of influenza or if someone in their household has symptoms. If a staff member develops influenza-like symptoms while at work, they should be asked to leave immediately and to seek medical attention. Any optometrist or staff member who is diagnosed with Influenza A(H1N1) and deals with the public should remain away from the practice for the time advised by a medical practitioner. Any government directive requiring provision of details of patients, with whom the optometrist has been in contact at the practice overrides privacy considerations and the optometrist should

comply (see National Privacy Principles: Principle 2—Use and Disclosure: section 2.1e).¹⁷ In the interests of common courtesy and positive patient relationships, the optometrist may wish to inform the patients that they have done this and the reason for doing so.

At the time of writing, the Infection Control Guidelines for Optometrists in 2007,¹⁸ precautions to be taken by optometrists in the event of a pandemic were addressed because there had already been outbreaks of Severe Acute Respiratory Syndrome (SARS) and Avian Influenza (Bird Flu). It is recommended that practitioners ask patients with symptoms suggestive of influenza to reschedule their appointments unless the reason for their visit is urgent. If rescheduling is not possible:

1. Optometrists and staff should continue to maintain good infection control standards.
 - 1A. Hands should be washed with alcohol-based hand antiseptics that contain isopropanol, ethanol, n-propanol or a combination of two agents (as these are effective against enveloped viruses) or hand

hygiene products containing four per cent chlorhexidine.¹⁸

- 1B. Surfaces and fittings should be cleaned with an alcohol-based solution or sodium hypochlorite solution.
- 1C. Optometric equipment should be cleaned/disinfected as described in the guidelines.¹⁸
2. A patient with a history of travel to an area affected by the virus or who has been in contact with a confirmed case of Influenza A(H1N1) or who presents with an influenza-like illness should be given a surgical mask (P2 [N95]) to wear immediately and moved to a separate room or, if this is not possible, they should be separated from people in the waiting room by at least one metre. These patients should be provided with tissues and asked to use them to cover the nose and mouth when coughing or sneezing and to dispose of them immediately into a hands-free waste receptacle.¹⁸ They should also be asked to wash their hands after contact with respiratory secretions and contaminated objects or materials¹⁸ and to avoid touching their face. Reinforcement of the need for infection control procedures for patients such as frequent hand-washing, appropriate cough and sneeze etiquette, used tissue disposal and rescheduling of non-urgent appointments can be achieved through signs, posters and information leaflets in the practice visible to both staff and patients. (A selection of downloadable posters is available at <http://humanswineflu.health.vic.gov.au>).
3. Staff should remain at least one metre away from these patients and use personal protective equipment (PPE): surgical masks, goggles or safety spectacles, gowns and gloves if they must be closer. P2 (N95) masks are recommended to reduce the risk of infection through small particle aerosol transmission.¹⁸ The correct method for donning and fit testing P2 (N95) masks is shown at <http://flu.sa.gov.au/LinkClick.aspx?fileticket=8xFZedrHGLI%3d&tabid=66> and www.pandemic.tas.gov.au/what_does_it_mean_to_you/

health_sector. Equally important in infection control terms is use of the correct doffing technique which is shown at www.pandemic.tas.gov.au/_data/assets/pdf_file/0008/75383/Infection_Control_Advice_-_Putting_on_and_removing_surgical_mask_20090505.pdf.

OPTOMETRISTS AND STAFF AT HIGH RISK FOR INFLUENZA A(H1N1)

Optometrists and their staff who are in high risk groups for complications if they contract Influenza A(H1N1) should maintain a distance of one metre from suspected or confirmed cases and not place themselves in a position where they may be subjected to small particles or aerosols of respiratory secretions in patients with confirmed or suspected Influenza A(H1N1). At-risk groups include pregnant women and people with chronic conditions that predispose them to severe influenza, for example, chronic respiratory disease including asthma, chronic obstructive pulmonary disease, obesity, renal, hepatic, haematological, neurologic, neuromuscular or metabolic diseases (including diabetes mellitus) and immunosuppression, including that caused by medications or by human immunodeficiency virus (HIV).¹⁹

Seasonal flu vaccine for all health workers

Although it confers no immunity against Influenza A(H1N1), optometrists and their staff should consider yearly immunisation against influenza,¹⁹ for both their own benefit and that of their patients.²⁰

CONCLUSION

The evidence to date indicates that Influenza A(H1N1) should be treated by optometrists as another type of flu. As with other forms of influenza, following basic infection control guidelines will help reduce the spread of infection in optometry practices and within the community.

ADDITIONAL INFORMATION

Advice from the Australian Government on business planning in light of the

risks related to likely high absenteeism in a pandemic can be found at: www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/businesscomm.

Government Information Websites regarding H1N1 influenza include:

Australian Government information: www.healthemergency.gov.au

Health Professional Advice: www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/healthprof

Interim Pandemic Influenza Infection Control Guidelines: www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/interim-infection-control-guidelines.htm

NSW: www.health.nsw.gov.au/publichealth/swine_flu.asp

Victoria: www.health.vic.gov.au/ideas/diseases/swine-influenza

Queensland: www.health.qld.gov.au/swineflu

Western Australia: www.public.health.wa.gov.au/2/949/2/swine_flu.pm

South Australia: www.flu.sa.gov.au/Swineflu.aspx

Northern Territory: www.health.nt.gov.au/Centre_for_Disease_Control/index.aspx

Tasmania: www.pandemic.tas.gov.au/
Australian Capital Territory: www.health.act.gov.au/c/health?a=da&did=10098808&pid=1240874209

REFERENCES

1. WHO: World now at the start of 2009 influenza pandemic. www.who.int/mediacentre/news/statements/2009/h1n1_pandemic_phase6_20090611/en/index.html (accessed June 2009).
2. WHO: Influenza Pandemic of Last Century: Some Lessons. www.searo.who.int/LinkFiles/Avian_Flu_right_3.pdf (accessed June 2009).
3. Johnson NPA, Mueller J. Updating the accounts: global mortality of the 1918–1920 ‘Spanish’ influenza pandemic. *Bull Hist Med* 2002; 76: 105–115.
4. Council of Australian Governments. Working Group on Influenza Pandemic Prevention and Preparedness: Pandemic Planning in the Workplace 2009. www.dpmc.gov.au/publications/pandemic/

- docs/Pandemic_Planning_in_the_Workplace.pdf (accessed June 2009).
5. World Health Organization. Aide Memoire. WHO Pandemic Phase Descriptions and Main Actions by Phase. www.who.int/entity/csr/disease/influenza/GIPA3AideMemoire.pdf (accessed June 2009).
 6. Centers for Disease Control and Prevention. Novel H1N1 Flu (Swine Flu) and You. www.cdc.gov/h1n1flu/qa.htm (accessed June 2009).
 7. World Health Organization. Epidemic and Pandemic Alert and Response (EPR). What is Phase 6? www.who.int/csr/disease/swineflu/frequently_asked_questions/levels_pandemic_alert/en/ (accessed June 2009).
 8. World Health Organization. Epidemic and Pandemic Alert and Response (EPR). What can I do? www.who.int/csr/disease/swineflu/frequently_asked_questions/what/en/index.html (accessed June 2009).
 9. World Health Organization. Epidemic and Pandemic Alert and Response (EPR). Situation updates—Influenza A(H1N1). www.who.int/csr/disease/swineflu/updates/en/index.html (accessed June 2009).
 10. Australian Government Department of Health and Ageing. Update bulletins for Pandemic (H1N1) 2009. www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/updates (accessed July 2009).
 11. World Health Organization. Fact sheet No. 211: Influenza (Seasonal) April 2009. www.who.int/mediacentre/factsheets/fs211/en/print.html (accessed June 2009).
 12. World Health Organisation. Pandemic (H1N1) 2009 briefing note 3 (revised). www.who.int/csr/disease/swineflu/notes/h1n1_surveillance_20090710/en/index.html (accessed July 2009).
 13. Lowen AC, Mubareka S, Steel J, Palese P. Influenza virus transmission is dependent on relative humidity and temperature. *PLoS Pathog* 2007; 3: 1470–1476.
 14. World Health Organization. Epidemic and Pandemic Alert and Response (EPR). What is the new influenza A(H1N1)? www.who.int/csr/disease/swineflu/frequently_asked_questions/about_disease/en/index.html (accessed June 2009).
 15. Senanayake SN. Swine flu update: bringing home the bacon. *Med J Aust.* (eMJA) www.mja.com.au/public/issues/191_03_030809/sen10696_fm.html (accessed June 2009).
 16. World Health Organization. Communicable Disease Newsletter 2009; 6(1). www.searo.who.int/LinkFiles/CDS_News_letter_vol-6_issue-1.pdf (accessed June 2009).
 17. Australian Government Office of the Privacy Commissioner. National Privacy Principles. www.privacy.gov.au/publications/npps01.html#npp2 (accessed June 2009).
 18. Lakkis C, Lian KY, Napper G, Kiely P. Infection control guidelines for optometrists 2007. *Clin Exp Optom* 2007; 90: 434–444.
 19. Communicable Diseases Network Australia. H1N1 Influenza 09: Guidance for Health Care Workers at Increased Risk of Complications. 9 June 2009. [www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/477A0768B005A41DCA2575A800210183/\\$File/H1N1-HCW-GL.pdf](http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/477A0768B005A41DCA2575A800210183/$File/H1N1-HCW-GL.pdf) (accessed June 2009).
 20. Isaacs D, Leask J. Should influenza immunisation be mandatory for healthcare workers? No. *BMJ* 2008; 337: a2140.

Corresponding author:

Dr Carol Lakkis

Director of Research

Clinical Vision Research Australia

Corner Keppel and Cardigan Streets

Carlton VIC 3053

AUSTRALIA

E-mail: clakkis@vco.org.au