

The second winter of influenza A (H1N1) 2009 in Australian and New Zealand intensive care units

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The 2009 pandemic of H1N1 influenza A was a paradox. While large numbers of people were infected worldwide, in general the illness was mild and the attributable mortality and morbidity relatively low.¹ For a substantial number of people, however, pandemic influenza caused critical illness, and ultimately 760 patients with confirmed 2009/H1N1 influenza were cared for in 104 intensive care units in Australia and New Zealand (ANZ).^{2,3} There were 28 cases per million population, requiring 350 bed-days per million population, including up to 7.4 occupied beds daily per million at the peak of the epidemic; 14.3% of these patients died.² This caseload put substantial stress on the critical care resources of ANZ, although systems were not overwhelmed.

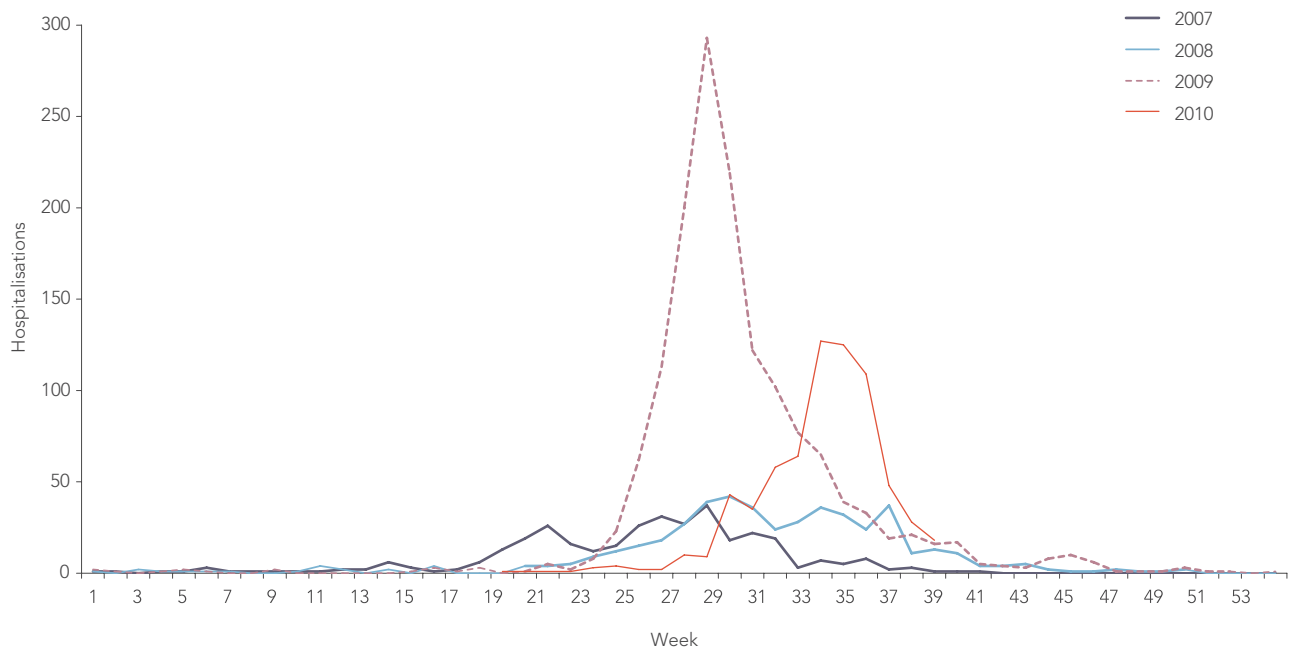
Importantly, the population affected in 2009 was very different from the population usually affected by seasonal influenza. Most patients admitted to intensive care were younger (92.7% were under 65 years of age, and many were young adults). Disproportionate numbers were obese or of Indigenous background,² and 9.2% were pregnant or

immediately postpartum when they contracted influenza.³ About half the patients had a very characteristic syndrome of influenza-associated acute respiratory distress syndrome (ARDS),⁴ with profound hypoxaemia and dependence on positive end-expiratory pressure (PEEP) but preserved compliance. This was associated with persisting fevers and, in many cases, acute kidney injury.³ Severity of illness was high, and 8.4% of patients admitted to the ICU received extracorporeal membrane oxygenation (ECMO).⁵

The ANZ experience provided valuable information for northern hemisphere countries preparing for their own responses to the pandemic during the winter of 2009/2010. Similar experiences have been seen in Canada and the United States⁶ and throughout Europe, from the United Kingdom⁷ to Turkey, France and Spain.⁸ In each of these countries, patients admitted to the ICU were younger and often obese or of indigenous background, and about 10% were pregnant or immediately postpartum.

In this issue of *Critical Care and Resuscitation*, a group representing the Intensive Care Society of Ireland reports

Figure 1. Weekly influenza hospitalisations during the 2010 influenza season in New Zealand, compared with 2007, 2008 and 2009*



* Source: Ministry of Health, New Zealand, with permission.

their experience of 77 adult patients in 27 of 30 Irish ICUs.⁹ Their findings, including the age distribution, the disproportionate number of patients who were pregnant or postpartum, the proportion who were obese, the overall mortality and the resource implications are almost exactly the same as was seen in ANZ in 2009.² Internationally there has been significant concern about a possible “second wave” of influenza, and the southern hemisphere winter experience is awaited to inform the response in the northern hemisphere.

In 2009, the novel H1N1 influenza A was not preventable, but in 2010 it has become a vaccine-preventable disease.¹⁰ Despite substantial public health education programs, uptake of the vaccine has been poor, and estimates are that only 30%–50% of the potentially susceptible population is actually immune (Professor Robert Booy, National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases, Children’s Hospital at Westmead, Sydney, personal communication). General concerns in the media, and especially highly publicised cases of paediatric vaccine complications in Western Australia, have not helped the cause of general vaccination against influenza. Ongoing surveillance is necessary to determine the effectiveness of vaccination in 2010.

It is clear that there has indeed been a second wave of H1N1 influenza in ANZ during the winter of 2010. The onset has been some 6 weeks later than in 2009. At the time of writing, the 2010 influenza epidemic has finished in New Zealand, while the peak was yet to be reached in Australia. The 2010 New Zealand experience is of a similar casemix to 2009, but with somewhat fewer numbers and spread out over a longer time period. Overall hospitalisation figures for proven influenza in New Zealand for the years 2007, 2008, 2009 and 2010 are shown in Figure 1. A total of 105 ICU admissions for influenza have been reported in New Zealand in 2010 (Mr Darren Hunt, Ministry of Health, NZ, personal communication), compared with 139 admissions in 2009.

Anecdotal information from Australia in 2010 suggests a similar pattern. Information from community surveillance indicates that the peak had not yet been reached at the time of writing. Up to 17 September, there had been 5606 confirmed cases of influenza in Australia in 2010.¹¹ Anecdotally, most major ICUs have treated patients in 2010, but not in the concentrated numbers seen in 2009. The patterns of illness seem to be similar and severity of illness remains high, with ECMO being used to treat some patients.

Australia and New Zealand remain in a unique position, as countries with well developed health systems and well documented populations, to inform the rest of the world as this second wave of the epidemic passes. It is important not to be complacent, as the same types of patients are becoming critically ill as did in 2009, and with an almost identical mortality. ANZ intensive care services must remain “alert but not alarmed”.

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