

Preliminary implications for Europe of the 2011 influenza season in five temperate southern hemisphere countries

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Citation style for this article:

Lopez Chavarrias V, Broberg E, Nicoll A. Preliminary implications for Europe of the 2011 influenza season in five temperate southern hemisphere countries. *Euro Surveill.* 2011;16(50):pii=20044. Available online: <http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=20044>

Article published on 15 December 2011

The 2011 influenza season (May to October) in the southern hemisphere was dominated by the A(H1N1) viruses that emerged during the 2009 influenza A(H1N1) pandemic and influenza B viruses, although the proportion of these two varied between and within countries. Some influenza A(H3N2) viruses were also seen. We discuss here the preliminary implications for Europe of the 2011 influenza season in five temperate southern hemisphere countries.

Since 2009, the European Centre for Disease Prevention and Control (ECDC) has been monitoring the patterns of human influenza infection in five temperate southern hemisphere countries in their winters (May to October) as this gives some indication of what can be expected in the following northern hemisphere winter [1-8].

The pattern of influenza in the southern hemisphere is one of the many factors that the Centre takes into consideration in formulating its risk assessment in relation to severity and impact for epidemics of influenza [8].

From May to October 2011, ECDC monitored what was occurring in the five southern hemisphere countries in terms of virology, epidemiology and impact on health-care of influenza and other respiratory viruses. One important source was the reports that the countries place regularly on the websites of their ministries of health and public health institutes [1-5]. In addition, more specific analyses and reports – especially related to the impact (in the sense of pressures on primary and secondary healthcare services) – as well as information on unusual features were sought from influenza experts in the countries by a simple questionnaire to get information that was not otherwise available. The aim of the questionnaires was to gather details on the impact on the healthcare service, risk factors associated with severe cases, observed complicating conditions, vaccine coverage among the general population and anything unusual that could have been observed. Three reference time-points were indicated for comparisons: before the 2009 influenza A(H1N1) pandemic,

during the pandemic, and the first post-pandemic winter season (2010).

Findings and their implications for Europe

The findings for the five countries are shown in the Table, combining information from the questionnaire, the national websites and an earlier summary of the epidemiology and virology from the World Health Organization [9].

The observed respiratory virus pattern was mixed although no pre-pandemic seasonal influenza A(H1N1) viruses were seen in the southern hemisphere in the 2011 season. In 2011, in Argentina and Chile, respiratory syncytial virus (RSV) was the most frequent isolate, followed by influenza A(H1N1)pdm09 virus. South Africa also reported a predominance of RSV during 2011. In Australia, the most frequently isolated strains were influenza A(H1N1)pdm09 and influenza B viruses. New Zealand observed a pattern of influenza B viruses (Victoria lineage) dominating in 2011. This has been seen at intervals, approximately once every three seasons. All countries reported some influenza A(H3N2) circulation, although it was not the predominant influenza A subtype in any country.

The match with seasonal vaccines was found to be good overall [10]. Australia reported a regional cluster of oseltamivir-resistant influenza A(H1N1) viruses which were collected from patients without oseltamivir exposure (only one of the 29 cases infected with the resistant virus had received oseltamivir treatment). The individuals were not known to be immunosuppressed [11-13]. The viruses remained sensitive to zanamivir but were resistant to adamantanes. All the resistant influenza A(H1N1) viruses were found to carry a point mutation in their neuraminidase genes which encoded a histidine to tyrosine substitution at residue 275 (H275Y) of the neuraminidase active site.

Argentina reported higher burden on the healthcare system in 2011 than during the 2010 season and Chile noted higher pressure than usual on child healthcare

TABLE

Characteristics of the influenza season in five temperate southern hemisphere countries and their implications for Europe, 2011

Information requested in the questionnaire	Argentina	Australia	Chile	New Zealand	South Africa
<i>What was the observed influenza viral mix circulating in your country during the 2011 influenza season?^a</i>	A(H3N2), A(H1N1) pdm09, peak of RSV in children under one year of age (from May to July which has been observed before)	A(H1N1)2009, B, occasionally A(H3N2), some emerging A(H1N1)pdm09 oseltamivir-resistant strains	RSV was more prominent than usually during the 2011 season. Its detections surpassed influenza A isolations, among which the A(H1N1) subtype was more frequently isolated than the A(H3N2).	The predominant strains have been of the B/Victoria subtype/lineage, with some A(H3N2) and A(H1N1).	A(H1N1) predominant subtype until August, associated with the first peak of influenza-like illness/severe acute respiratory infections; secondary peak associated with A(H3N2) and B viruses.
<i>Are the primary care services in your country subject to unusual pressures of any kind?^b</i>	More than during the 2010 season but less than during the 2009 pandemic	No special burden during the 2011 season	High pressure during 2011 due to the early presence of RSV viruses, mostly in children	Less pressures observed than during the 2010 season and much less than during the 2009 pandemic	Not systematically measured in South Africa
<i>Are there any reports of secondary health centres of your country being particularly subject to pressures of any kind, compared to previous seasons?^b</i>	More than during the 2010 season but less than during the 2009 pandemic	Less than during the 2010 season and the 2009 pandemic	More than during the 2010 season but less than during the 2009 pandemic; hospital admissions began earlier than usual	Less pressures observed than during both the 2010 season and the 2009 pandemic	Same pressure as during the 2010 season but less pressure than during the 2009 pandemic
<i>Has there been marked heterogeneity (more pressures in some part(s) of the country) in primary and/or secondary care?^c</i>	There were higher pressures in both primary and secondary care in the region of Mendoza	No differences observed	Higher pressures observed in the metropolitan regions	A slight geographic variation but this is the norm every winter	No big differences observed
<i>Are the risk groups (people experiencing severe disease) the same this year?^c</i>	Healthy people with severe disease only observed in during the pandemic	People with co-morbidities, as in previous years	The same groups as in the 2009 pandemic and 2010 season	The same groups as in 2009 and 2010	The same groups as in the 2009 pandemic and 2010 season
<i>Are the age groups (people experiencing severe disease) the same this year?^c</i>	The same as in 2010 and 2009 when the influenza A(H1N1) pdm09 virus was involved; the same episodes observed than in pre-pandemic times with regards to the A(H3N2) virus	Slight increase in the median age of infection, more like the expected seasonal pattern	The same as in the 2009 pandemic but different compared to the 2010 season	Children (0-19 years) and young adults (20-34 years) had a higher disease burden compared to other age groups, as in the 2009 and 2010 seasons	Greater proportion of patients in the age group of one to four year-olds and a lower proportion in the age group of 25-44 year-olds in 2011 as compared with 2010 season; no information indicated with regards to pre-pandemic times
<i>Observed complicating conditions and other infections in severe cases^c</i>	Similar to the 2009 pandemic	None observed	Most of the severe acute respiratory infections cases were affected by influenza A(H1N1)pdm09 virus; some also attributed to influenza A(H3N2)	No relevant features observed	Not specific issues noted in relation to acute respiratory distress syndrome or secondary bacterial infections/co-infections
<i>Observed seasonal immunisation coverage and/or acceptance of vaccination^d</i>	Higher than during the 2010 season and pre-pandemic times	Not reported	Lower than in the 2010 season and pre-pandemic times	Slightly lower than during the 2010 season and higher than in pre-pandemic times	About the same as during the 2010 season but higher than in pre-pandemic times

RSV: respiratory syncytial virus.

^a None of the preceding seasonal influenza A(H1N1) viruses was observed in any of the five countries [9].

^b As compared with the 2010 season and the 2009 influenza A(H1N1) pandemic.

^c As compared with the 2010 season, the 2009 influenza A(H1N1) pandemic, and prior to the pandemic.

^d As compared with the 2010 season and prior to the 2009 influenza A(H1N1) pandemic.

services from illness among children, but mostly due to RSV (Chile is one of the few countries in the world outside the European Union that routinely reports on RSV detections). Australia and New Zealand reported less burden on the healthcare system in 2011 than in 2010, and much less than during the 2009 influenza A(H1N1) pandemic. In hospitals, the only unusual impact was high burden on the secondary healthcare system in Argentina and the burden through childhood RSV in Chile. Some geographical differences were reported in the burden of respiratory illness on the primary healthcare system in Chile and on the secondary healthcare system in Argentina.

Australia reported that surveillance data on severe disease remained consistent with people with co-morbidities being at higher risk of severe disease but that the age groups with severe disease had reverted to the pattern seen in the period before the 2009 pandemic. However, during 2011, three other countries noted a similarity with the pandemic pattern of severe disease in younger people (Table). There were fewer reports of acute respiratory distress syndrome than during the 2009 influenza A(H1N1) pandemic.

Three of the four countries that reported information on vaccine coverage, Argentina, New Zealand, and South Africa, indicated that vaccine coverage for seasonal influenza among the recommended groups was higher than before the 2009 influenza A(H1N1) pandemic, whereas Chile reported that coverage was lower than during the 2009 influenza A(H1N1) pandemic and in 2010 (Table).

Discussion and limitations

The influenza virological pattern seen in the southern hemisphere in 2011 was not consistent enough to make a clear prediction for the season 2011/12 in Europe. However, it was different from what was seen in 2010/11 in the northern hemisphere for Europe (predominance of influenza A(H1N1)pdm09 and, to a lesser extent, influenza B viruses), North America and North Asia (predominance of influenza A(H3N2) virus).

In relation to the seasons before 2011, the overall impact of influenza in the southern hemisphere was lower in 2010 than in 2009, with some exceptions, e.g. locally in New Zealand [14,15]. The reports of circulation of oseltamivir-resistant influenza A(H1N1) viruses are concerning, although these were also observed during the 2009 influenza A(H1N1) pandemic and in Europe in 2010/11 [16,17]. This indicates a particular need to monitor these viruses in Europe in the 2011/12 season to detect any rise in prevalence as was observed for the pre-2009 influenza A(H1N1) seasonal viruses in the 2007/08 season [18].

The main limitation of this survey lies in its descriptive character. In addition, the selection of the contributors did not follow a systematic procedure. Data derived from more thorough quantitative and statistical

analysis would render the information more meaningful but cannot be generated while there are such differences in the surveillance systems in the countries concerned.

The findings on the impact of influenza in the southern hemisphere in 2011 are reassuring for Europe before the influenza season reaches its peak, usually around January. The differences in the impact of influenza observed within the 2011 season between Australasia, South Africa and the southern cone of South America may become more apparent in future seasons. This was the case in the last inter-pandemic period, when large differences existed between continents for both the southern and the northern hemisphere [19]. This may reduce, but not eliminate, the utility of this kind of surveillance for Europe in the future.

Acknowledgements

The authors would like to thank a number of colleagues for their assistance in preparing this report: Brett Archer, Jorge Camara, Cheryl Cohen, Rodrigo Fasce Pineda, Sue Huang, Darren Hunt, Heath Kelly, Anne Kelso, Andrea Olea Normandin, Viviana Sotomayor and Osvaldo Cesar Uez. However, the comments in the report are the responsibility of the authors alone.

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