



**Australian Government**  
**Department of Health and Ageing**

**Australian Technical Advisory Group on Immunisation  
(ATAGI) Statement**

**Clinical advice for immunisation providers on resumption of the use of  
2010 trivalent seasonal vaccines in children less than 5 years of age**

**July 2010**

This document is intended to provide recommendations for the resumption of use of the 2010 trivalent seasonal influenza vaccines (either *Vaxigrip*; Sanofi Pasteur or *Influvac*; Abbott/Solvay) in children less than 5 years of age as directed by the Chief Medical Officer, Professor Jim Bishop in his statement made on 30 July 2010.

**Recommendations**

1. Children between 6 months and less than 5 years of age with medical condition/s placing them at increased risk of complications from influenza (Appendix 1) are recommended to receive *Vaxigrip* (Sanofi Pasteur) or *Influvac* (Solvay/Abbott) seasonal trivalent influenza vaccine (TIV), if they have not already done so in 2010. The benefits of the additional protection provided (against influenza A H3N2 strain and influenza B) are potentially substantial and the 2010 formulations of both *Vaxigrip* and *Influvac* have been shown to have a favourable safety profile, with low rates of fever similar to those in previous years. The use of the 2010 *Fluvax* or *Fluvax Junior* (CSL) is not recommended in children less than 5 years due to a significantly increased rate of fever reported following vaccination, with associated febrile convulsions. Seasonal influenza vaccine for children aged 6 months or older who are at increased risk of influenza complications is provided free under the National Immunisation Program (NIP). Adults with medical risk conditions placing them at increased risk of influenza complications (including pregnant women), and persons aged 15 years and older who identify as Aboriginal or Torres Strait Islanders also can access free influenza vaccine via the NIP.
2. Children who are 6 months to less than 10 years of age, will require two doses of seasonal TIV if they have not received two doses of seasonal TIV in a previous year. This applies even if a previous dose of monovalent, pandemic H1N1 influenza vaccine (*Panvax*, CSL) has been given. If such a child has received one previous dose of any seasonal TIV brand in 2010, the second dose using either *Vaxigrip* or *Influvac* and may be given at any time interval of more than 4 weeks after the first dose. A summary table outlining the recommended influenza vaccine doses and scenarios for this age group can be found at: <http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/national-vaccination-program>
3. Immunisation with the 2010 seasonal influenza vaccine, either *Vaxigrip* (Sanofi Pasteur) or *Influvac* (Solvay/Abbott), is recommended for any child, including those aged 6 months to less than 5 years, whose parents/guardians wish them to be protected against illness caused by any of the three strains of influenza contained in the vaccine. The benefits of vaccination are considered to outweigh the risk of side effects from the vaccine, which is unchanged from previous years. Seasonal influenza vaccine is not funded under the NIP for children who do not have medical conditions placing them at increased risk of influenza (Appendix 1), but can be obtained via prescription.

4. Influenza vaccine is particularly strongly recommended for all household contacts of children and adults with medical condition/s placing them at increased risk of influenza, as stated in the 9<sup>th</sup> Edition of *The Australian Immunisation Handbook* (page 192). Household contacts who are aged between 6 months and less than 5 years are recommended to receive either *Vaxigrip* (Sanofi Pasteur) or *Influvac* (Solvay/Abbott). Seasonal influenza vaccine is not funded under the NIP for this indication, but can be obtained via prescription.
5. Monovalent, pandemic H1N1 influenza vaccine (*Panvax*, CSL) can continue to be administered to any person greater than 6 months of age. This vaccine protects against only one influenza A strain (the pandemic H1N1 strain). It is unknown what proportion of influenza strains circulating in 2010 will be H1N1. *Panvax* has not been associated with increase over expected rates of fever or febrile convulsions and continues to be available free of charge.

## Background

On April 23 2010, the Commonwealth Chief Medical Officer (CMO) Professor Jim Bishop recommended the suspension of use of 2010 seasonal influenza vaccine in all children 5 years and under, in light of a reported increase in febrile seizures following influenza vaccination in young children in WA. Following extensive investigations into this safety signal, it has been determined that administration of the 2010 seasonal trivalent influenza vaccine *Fluvax* and *Fluvax Junior* (CSL) was associated with an increased risk of febrile convulsions in up to 1% (1:100) of vaccinated children less than 5 years of age in Australia. On June 1 2010, the CMO made a second statement that recommended a) the continued suspension of the use of 2010 seasonal influenza vaccine in healthy children aged less than 5 years and b) that children with medical conditions that place them at increased risk of influenza complications could be considered for vaccination with either *Vaxigrip* or *Influvac*. Further information on the investigation into febrile reactions in young children following 2010 seasonal trivalent influenza vaccination, is summarised in a Status report dated 2 July 2010, available on the website of the TGA: <http://www.tga.gov.au/alerts/medicines/flu vaccine-report100702.htm>.

Since that TGA status report was posted, additional information on adverse event profiles associated with the use of 2010 seasonal trivalent influenza vaccines has been provided from New Zealand. First, data provided by the New Zealand Ministry of Health and Medsafe, the New Zealand regulator, did not find any increase in adverse event reporting associated with the Sanofi Pasteur 2010 Southern Hemisphere TIV formulation (*Vaxigrip*) despite stimulated reporting. Approximately 10,000-12,000 doses of *Vaxigrip* were administered to an estimated 5,000 and 7,000 children under the age of 5 years between April and June 2010 in New Zealand, with no febrile convulsions reported. Prior to the cessation of *Fluvax* use in New Zealand (in late April, following the suspension of TIV use in Australia), there had been 10 reports of febrile convulsions, 9 of which had been in *Fluvax* recipients aged under 5 years, and one following an unknown vaccine, strongly suspected to have been *Fluvax*. No febrile convulsions have occurred since and none has been reported following either *Influvac* or *Vaxigrip*. Second, a follow-up study conducted by the University of Auckland based on parental report of fever post-influenza vaccine in over 300 children has confirmed findings from two similar studies in Australia of substantially increased febrile reactions in the first 24 hours after receipt of *Fluvax*. Reported occurrence of fever, especially high fever, in children under 5 years who had received *Vaxigrip* was low and similar to the incidence of fever reported by parents whose children had received *Influvac*, or *Panvax* in the two Australian studies, conducted in WA and in NSW.

Based on these additional data, the ATAGI recommend that the use of either of the two 2010 seasonal influenza vaccines, *Vaxigrip* or *Influvac* can occur in any child (in whom vaccination is not otherwise contraindicated), regardless of whether they have an underlying medical condition. The benefits of the protection provided against the three strains in the vaccine (two influenza A and one influenza B strain) substantially outweigh the risk of an adverse event following immunisation. (Appendix 1).

## Rationale for recommendations

### *What are the risks from influenza disease?*

- On average there are ~1800 hospitalisations attributable to influenza in Australian children aged 6–23 months and ~1100 hospitalisations in children aged 2–<5 years annually.
- Data from the AIHW National Hospital Morbidity Database show the annual average rate of hospitalisation for influenza is 75.7 per 100,000 for children aged <5 years, compared with 21.1 per 100,000 for adults aged ≥65 years during July 2003–June 2006.
- During 2009, those with a pre-existing risk factor for severe influenza (individuals with at least one co-morbidity) made up 46% (2303/4992) of all hospitalisations with pandemic H1N1 and 67% (457/681) of ICU admissions.  
<http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/ozflucrent.htm>
- 21.8% of children aged 0–4 years hospitalised with confirmed pandemic H1N1 influenza infection reported at least one co-morbidity (Unpublished data provided by the Australian Government Department of Health and Ageing).
- The Australian Paediatric Surveillance Unit (APSU) reported that between 1 July and 17 October 2008, there were 43 children aged ≤15 years (median age 3 years) admitted to ICUs in Australia with complications from influenza. Of the admissions, 29 were influenza B, 12 were influenza A and two were unknown.
- Medical conditions that place children (and adults) at increased risk of complications from influenza are listed in the 9<sup>th</sup> Edition of *The Australian Immunisation Handbook* (see Appendix 1 below).
- Asthma may also increase the risk of a child being hospitalised with influenza complications. In the United States it has been shown there is a five-fold increased risk of an influenza-related hospitalisation in children aged 6–23 months with asthma versus those children without asthma (2.8 vs. 0.6 cases per 1 000). *The Australian Immunisation Handbook* currently recommends annual influenza of children with severe asthma.
- As noted in *The Australian Immunisation Handbook*, (page 192) household contacts, both children and adults, suffering from influenza can also transmit the disease to susceptible children or adults with a chronic medical condition. These people are at increased risk because their underlying medical condition not only increases their risk of complications following influenza infection but also if vaccinated, may not mount an adequate immune response to the influenza vaccine. Vaccinating all household contacts, in addition to those with underlying medical conditions, will provide further protection against influenza in the household environment.

### *What is the risk of influenza due to strains other than pandemic H1N1 during 2010?*

- Although the pandemic H1N1 strain is thought likely to predominate in Australia this winter, this is impossible to predict. WHO reports that influenza B has accounted for 91% of influenza viruses detected in China for the week up to end of June 2010. Central African nations have also reported increased influenza B activity. It is therefore likely that Australia will experience at least some influenza B activity during the 2010 season and this may be substantial.  
[http://www.who.int/csr/don/FluTransmissionZones\\_2010\\_07\\_09.png](http://www.who.int/csr/don/FluTransmissionZones_2010_07_09.png) (accessed July 2010)
- Trivalent seasonal influenza vaccine offers protection against a second influenza A strain (H3N2) and an influenza B strain, in addition to the pandemic H1N1 influenza A strain.
- Children aged 5 years and older (with or without medical risk conditions) should continue to receive 2010 seasonal influenza vaccine where indicated. This is based on evidence that no increase in the rate of adverse events, such as fever and febrile seizures, following immunisation has been identified in older children and adults.
- The monovalent, pandemic H1N1 influenza A vaccine, *Panvax* (CSL), can be given to all persons aged 6 months or older, and will only offer protection against the pandemic H1N1 influenza A strain.

*What is the risk of febrile seizures following influenza infection vs vaccination?*

- Febrile seizures are a relatively common response to fever of any cause in young children, occurring in ~ 2% to 5% of all children by the age of 5 years.
- Influenza infection: Up to 1 in 5 children hospitalised with influenza experience a febrile seizure, more than double the rate for other respiratory viruses.
- Influenza vaccines: Although fever is relatively common after the first dose of inactivated influenza vaccine in children, previous studies have found very low rates of febrile seizures. In 2010, febrile seizures were reported in approximately 1 in 100 (1%) in children aged between 6 months to less than 5 years in the first 24 hours after receipt of 2010 CSL trivalent influenza vaccine (*Fluvax* or *Fluvax Junior*). Febrile seizures have also been documented following *Panvax*, but the rate was within expected limits of less than 1 per 1000 doses. For the trivalent vaccines *Influvac* (Solvay/Abbott) and *Vaxigrip* (Sanofi Pasteur) the rate is similar to *Panvax*. Prior to the suspension of influenza vaccines in April, only a limited number doses of the *Vaxigrip* 2010 vaccine had been used in Australia in children less than 5 years. However, based on data from New Zealand, the rate of febrile seizures following either *Vaxigrip* or *Influvac* is similar to *Panvax* and these vaccines can be administered to children aged between 6 months and less than 5 years.

### **References**

*National Health and Medical Research Council. The Australian Immunisation Handbook, 9th ed. Canberra: Australian Government Department of Health and Ageing, 2008*

*Therapeutic Goods Administration. Investigation into febrile reactions in young children following 2010 seasonal trivalent influenza vaccination Status report as at 2 July 2010.  
<http://www.tga.gov.au/alerts/medicines/flu vaccine-report100702.htm>*

*Department of Health and Ageing Summary of ATAGI dosage recommendations for pandemic H1N1 2009 (Panvax®) and 2010 seasonal influenza vaccination for children aged ≥6 months to <10 years.  
<http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/national-vaccination-program>*

## Appendix 1

Medical conditions that are associated with an increased risk of influenza disease complications\* adapted from the *Australian Immunisation Handbook, 9<sup>th</sup> Edition*.

Category	Vaccination strongly recommended but not limited to children with the following clinical conditions
Cardiac disease	Cyanotic congenital heart disease Congestive heart failure Coronary artery disease Down syndrome (whether cardiac involvement or not)
Chronic Respiratory disease*	Severe asthma (for which frequent hospitalisation is required) Cystic fibrosis Bronchiectasis Suppurative lung disease COPD
Diabetes and other metabolic disorders	Type 1 diabetes Type 2 diabetes Chronic metabolic disorders
Renal disease	Chronic renal failure
Chronic Neurological Disease*	Hereditary and degenerative CNS diseases* (including cerebral palsy) Seizure disorders Spinal cord injuries Neuromuscular disorders
Immune impairment	Immunosuppressive therapy due to disease or treatment (including leukaemia, cancer or transplantation) Asplenia of splenic dysfunction HIV infection
Long term aspirin therapy in children aged >6months to 10 years	These children are at increased risk of Reye syndrome following influenza infection
Haematological disorders	Haemoglobinopathies

\* Children who have any condition that compromises the management of respiratory secretions and are associated with an increased risk of aspiration should be vaccinated.

### **National Immunisation Program eligibility for seasonal influenza vaccine from 1 January 2010**

- All individuals aged 65 years and over
- All Aboriginal and Torres Strait Islander peoples aged 15 years and over;
- Individuals aged 6 months and over with medical conditions predisposing to severe influenza, namely;
  - *Cardiac disease*, including cyanotic congenital heart disease, coronary artery disease and congestive heart failure
  - *Chronic respiratory conditions*, including suppurative lung disease, chronic obstructive pulmonary disease and severe asthma
  - *Other chronic illnesses requiring regular medical follow up or hospitalisation in the previous year*, including diabetes mellitus, chronic metabolic diseases, chronic renal failure, and haemoglobinopathies
  - *Chronic neurological conditions that impact on respiratory function*, including multiple sclerosis, spinal cord injuries, and seizure disorders
  - *Impaired immunity*, including HIV, malignancy and chronic steroid use
  - *Children aged 6 months to 10 years on long term aspirin therapy*
- Pregnant women.