



## From the Director's desk

This edition of *Disease WAtch* features a report on an outbreak of gastroenteritis on a cruise ship caused by an unusual pathogen, the protozoan *Cyclospora*. We also describe a cluster of Measles cases associated with a local resident who acquired his infection in South-east Asia.

There is an update on the severe febrile reactions in young children associated with seasonal influenza vaccine. The findings of the Ministerial inquiry into the public health response to this incident were released on 11 August (see [www.health.wa.gov.au/publications](http://www.health.wa.gov.au/publications)). Finally, two important innovative, web-based resources are described – a hepatitis B e-learning program and the transition to an on-line vaccine ordering program for WA. I hope you find this edition of *Disease WAtch* informative.

Dr. Paul Armstrong

## Cyclospora outbreaks on a cruise ship

WA Health has been investigating a *Cyclospora* outbreak that affected passengers and crew on two successive cruises of the *Sun Princess* that departed from and returned to Fremantle during May and June 2010.

The most common symptom of *Cyclospora* infection is profuse watery diarrhoea, with other symptoms including anorexia, weight loss, abdominal cramps, bloating, nausea, body aches, low grade fever and vomiting. Illness can last for several weeks or longer, with relapses commonly occurring.

*Cyclospora* is not notifiable and is an uncommon disease in Australia. Western Diagnostic Pathology alerted WA Health in mid-June after they had processed five specimens with *Cyclospora*, and all of the request forms had noted recent travel on a cruise or to Asia.

WA Health commenced an investigation in conjunction with the cruise ship company, and found that passengers and crew on cruises that departed for south-east Asian ports on both 14 May and 31 May were affected. The first cruise had 2018 passengers, and eventually 24 laboratory confirmed *Cyclospora* cases from this cruise were reported to WA Health, with an additional 8 cases identified who had consistent illness. These people became ill after they had disembarked, and relatively few

cases of gastroenteritis had been recorded during the voyage. On the second cruise there were 2012 passengers, amongst whom 43 laboratory confirmed cases were identified, and an additional 233 passengers reported to medical services on board the ship with gastrointestinal illness. For both cruises more people are likely to have been affected, but did not report illness. In addition, a total of 79 crew members were also known to have been ill, with two of these confirmed as *Cyclospora* infection.

*Cyclospora* infection is most commonly associated with contaminated fresh produce or water, and hence the investigation focused on food or water that was brought on board in south-east Asian ports during the first cruise and carried over to the second cruise.

A case-control study with questions about fresh produce and water consumption, and on-shore visits, was conducted with crew members. Illness was not associated with water consumption, but was associated with a number of fresh produce items. It was not possible to determine definitively which of these fresh produce items was the most likely cause of illness. The cruise company has taken steps to prevent a similar incident in the future. No cases have been identified on subsequent cruises.

# A measles outbreak with transmission in WA healthcare settings

This brief report describes a recent outbreak comprising 9 cases of measles, all adults resident in the Perth metropolitan area. There were two generations of local transmission in this cluster, and 7 of the 8 local cases acquired their infection in healthcare settings. The outbreak provides lessons concerning the importance of healthcare worker vaccination, appropriate triaging and infection control in healthcare settings and public health follow-up of contacts exposed to measles cases.

The index case was a 32 year-old unimmunized WA resident who was infected in either Cambodia or Malaysia. He became unwell after returning to Perth, and attended a GP surgery, a pathology collection centre and ultimately the emergency department at Royal Perth Hospital (RPH) over a period of 4 days. These attendances resulted in three first generation cases, including a healthcare worker infected at the pathology collection centre, and a healthcare worker and a patient infected at RPH. Each of these cases in turn infected one or two second-generation cases: one was admitted to RPH, resulting in two more infected health care-workers; one infected his spouse; and one infected two co-patients in a psychiatric hospital.

The four infected healthcare workers comprised a physiotherapist, an ambulance officer, a nurse and an orderly, indicating the need to ensure that all persons working in patient care areas of healthcare facilities are immune to measles. The non-discriminatory spread of measles in healthcare settings seen in this outbreak is similar to the pattern seen in the period 1999 – 2003, when 60% of hospital-acquired cases were healthcare workers (doctors, nurses and ambulance officers), 20% patients and 20% visitors. Practically all measles cases diagnosed in WA in the past decade have attended general practices and/or hospitals while infectious and prior to diagnosis, some making up to four visits, so there are many opportunities for transmission to susceptible contacts during these visits.

Eight of the nine cases in this cluster were aged between 20 and 35 years, reflecting the fact that people born between 1966 and around 1993 when the second dose of measles vaccine was introduced are those in the Australian community most likely to be susceptible to measles – either because they escaped measles infection in the post-vaccine era or have not been fully vaccinated

with two doses of measles-containing vaccine. Interestingly, 3 cases were IgG positive with negative or equivocal IgM, indicating previous measles vaccination, most likely with one dose, but an insufficient antibody response to prevent infection. These 3 cases were all measles PCR positive, confirming infection, indicating that serology can be misleading, and if the patient's illness is clinically and epidemiologically consistent with measles, then they should be managed as a case and have specimens submitted for PCR testing.

There has been no endemic transmission of measles in WA since 1999, but the potential for re-establishment of local transmission is clear, should levels of population immunity fall. In this 12 year period there have been 106 laboratory proven cases – all imported from overseas by visitors or returning residents, or linked to these imported cases. In total, there have been 35 separate proven importations, with no secondary cases in 69% of importations and local transmission of between 1 and 26 cases associated with 31% of importations. The most commonly reported source countries for imported cases are Thailand, Japan, Indonesia, Vietnam, Malaysia and India, with most cases in unvaccinated young adults.

## Response to Suspected Measles Cases

- 1 Consider measles in any patient who presents with a fever and rash
- 2 Suspect cases should be placed in respiratory isolation in an unused room in a general practice (or negative pressure room if available in a hospital emergency department) prior to and during assessment
- 3 Undertake confirmatory testing in all suspect measles cases
  - Patients seen within 1 week of onset of rash should have respiratory (nose or throat swabs) and/or urine samples collected for PCR and culture, and clotted blood collected for serology (IgG and IgM)
  - Patients seen between 1 week and 3 weeks after the onset of rash should have clotted blood collected for serology and a respiratory and/or urine sample for PCR
  - Mark the pathology request form "URGENT"
- 4 Notify your local Public Health Unit or CDCD (telephone 9388 4852 office hours or 9328 0553 after hours), if you suspect a patient may have measles. Do not wait for laboratory confirmation before notifying a suspect case
- 5 Advise all suspected or confirmed cases of measles to remain at home for at least four days after the appearance of the rash
- 6 Public Health staff will coordinate follow-up of contacts of persons with suspected and confirmed measles
- 7 Detailed information on measles for health care providers is available at: [www.public.health.wa.gov.au/3/336/3/measles.pm](http://www.public.health.wa.gov.au/3/336/3/measles.pm)

# Severe febrile reactions to the 2010 CSL trivalent inactivated influenza vaccine in young children

The WA Department of Health has been offering trivalent inactivated influenza vaccine (TIV) to children aged 6 months to 4 years since 2008, following the deaths of three pre-school-aged children from influenza in 2007. In addition, a new national program that provides TIV to children with underlying medical conditions was implemented throughout Australia in 2010.

Distribution of TIV to immunisation providers in WA began on 8 March 2010 and the childhood influenza vaccination program was publicly launched on 19 March.

During the week beginning 12 April, 2010, emergency department (ED) clinicians at Princess Margaret Hospital noted an increase in children presenting with fever, vomiting, and occasionally febrile convulsions, often within 12-hours of vaccination with TIV. These reports led to a temporary suspension of the WA program for children under 5 years on 22 April 2010, pending further investigation. The following day the federal government suspended the use of TIV for all children aged 5 years and under throughout Australia.

Since the suspension there has been intensive scrutiny of the relationship between the 2010 TIV and adverse events following immunisation (AEFI). An investigation by the Therapeutic Goods Administration indicates that as of 4 June 2010 it had received 1,729 AEFI reports concerning 2010 TIV, including 1,152 reports of fever and 100 confirmed cases of febrile convulsions in children under the age of 5 years.<sup>1</sup> Febrile convulsions following 2010 TIV have been identified in all jurisdictions except the Northern Territory. CSL products FLUVAX® or FLUVAX JUNIOR® were used in all 66 febrile convulsion episodes where the brand of the seasonal influenza vaccine was reported; CSL has subsequently withdrawn the remaining stocks of FLUVAX JUNIOR® from provider offices.

There is currently no evidence of a similar safety signal from the other seasonal influenza vaccines, INFLUVAC® and VAXIGRIP®. There is currently no evidence to suggest that FLUVAX® is unsafe in older children or adults, in whom it may continue to be used. PANVAX JUNIOR® has now been withdrawn from use because of reduced potency.

Despite extensive analyses, the biological basis for the excess cases of fever and febrile convulsions with CSL's 2010 TIV vaccine remains unclear.

For this reason, on 1 June 2010, the Chief Medical Officer initially recommended that healthy children aged under 5 years should not be vaccinated with any of the 2010 TIVs until further notice.<sup>2</sup>

New Zealand health officials took a slightly different approach to that of Australia, i.e. discontinuing the use of FLUVAX TIV for young children in late April but continuing to recommend the INFLUVAC and VAXIGRIP formulations without suspending vaccinations for young children without risk factors.<sup>3</sup> No safety issues have been reported from New Zealand subsequent to implementation of these recommendations.

During 2008 and 2009 an estimated 120,000 doses of influenza vaccine were administered to children less than 5 years of age in WA without serious incident.

This year there has clearly been a safety issue with CSL TIV formulations (FLUVAX® and FLUVAX JUNIOR®) in children under 5 years of age, and until further notice neither of the CSL vaccines should be used in young children. However, on 30th July 2010, the Chief Medical Officer announced that VAXIGRIP® or INFLUVAC®, which are made by different manufacturers, could be used safely in children under 5 years of age.<sup>4</sup> This decision was based on clear evidence from Australia and New Zealand that rates of fever and febrile convulsions associated with these two vaccine formulations are similar to those seen with trivalent seasonal flu vaccine in previous years.

## Links

1. [www.tga.gov.au/alerts/medicines/flu vaccine-report100702.htm#assessment](http://www.tga.gov.au/alerts/medicines/flu vaccine-report100702.htm#assessment)
2. [www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/latest-cmo](http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/latest-cmo)
3. [www.immune.org.nz/site\\_resources/Professionals/MoH/Influvac\\_260410.pdf](http://www.immune.org.nz/site_resources/Professionals/MoH/Influvac_260410.pdf)
4. [www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/latest-cmo](http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/latest-cmo)



## Hepatitis B e-learning program for health professionals

In 2009 in Western Australia, 39 newly acquired and 699 unspecified cases of hepatitis B were reported to the Department of Health. One in five people with chronic hepatitis B die prematurely of liver cirrhosis or liver failure.

In response to the significant mortality and morbidity associated with chronic hepatitis B in Australia, the first National Hepatitis B Strategy has been released.

Workforce development is a priority action area of the national strategy, as strengthening the capacity of health services to respond effectively to hepatitis B will reduce the disease burden associated with chronic hepatitis B.

Edith Cowan University and the WA Department of Health have developed an innovative FREE online learning program for health professionals interested in increasing their knowledge and skills in caring for patients with hepatitis B at: <http://hepatitis.ecu.edu.au>

The online program consists of two modules covering:

- 1 Overview of hepatitis B, prevention and treatment
- 2 Assessment and management of hepatitis B.

For more information visit the website or contact:

[hepatitis@ecu.edu.au](mailto:hepatitis@ecu.edu.au)

## WA transition to online vaccine ordering

Over the next several months Western Australia will be transitioning to a web-based ordering system for vaccines funded through the National Immunisation Program. This electronic ordering system has been piloted in other States and shown to be an efficient method of processing vaccine orders.

The web-based ordering system has several important benefits for health care providers including:

- **Confirmation of Order Receipt:**  
When an order is placed, the provider will receive an email indicating that their order has been received.
- **Confirmation of Order Approval:**  
Once an order has been approved by WA Health, an email is automatically sent to the provider letting them know that the order has been approved.
- **Confirmation of Order Despatch:**  
Once an order has been packed, an email is sent to the provider advising them that the order is on its way.

The proposed electronic system will require many of the same details previously captured on the paper-based ordering system.

However, one new addition is that we will be asking for an email address for your practice to enable us to communicate with you about your orders in an automated, timely manner.

It is our intent to phase-in on-line ordering across the Perth Metropolitan area by **31 October 2010** and to expand to the regional areas after that time.