Measles Outbreak
A recent outbreak of measles in WA demonstrated that the resurgence of the measles virus in an unimmunised population is a continuing public health threat if herd immunity is not maintained. Since 2002, there have been fewer than 9 cases of measles infection each year, with no cases being reported in 2002 and 2003. With the exception of a cluster of 6 cases in 2005, all cases have been imported. However, a total of 17 cases have been notified in WA this year. There were 7 initial cases including 6 unimmunised children aged between 1 and 10 years. The further cases (all but one of whom were contacts of initial cases), included 7 unimmunised children of similar ages. The cases live in the metropolitan and southwest areas of the state. The source of the measles virus is thought to have originated through infected overseas visitors, part of an entourage accompanying a religious leader (AMMA) who arrived in Perth on the 31st March 2006. The AMMA organisation held several public meetings in the Fremantle area attracting crowds of up to 1000 people. The WA cases were reported to have either attended these meetings or had contact with members of the entourage. The AMMA entourage travelled to other States and Territories over the following 2 weeks, leaving Australia for Singapore on the 17th April, and were considered to be the source of 49 further measles cases throughout Australia including 37 cases in New South Wales. These cases have similar features to those from WA, with the majority being unimmunised. Investigation of this cluster of cases identified a common link of attendance at an AMMA gathering and the risk factor of being unimmunised. Moreover, the Communicable Disease Control Directorate (CDCD) quickly identified that, given the reported large numbers of people from around the State attending the meetings, considerable opportunity and potential for transmission of the highly infectious measles virus existed. Consequently, CDCD alerted public health units, GPs through their Divisions, hospital accident and emergency units, and the public via media releases. Messages included promoting immunisation, providing advice on the need to isolate suspected cases, and confirmation of diagnoses through throat/nasal swabs and blood tests. Public health, hospital and CDCD staff undertook extensive contact tracing for the cases. All of the recent measles cases in this outbreak exhibited a textbook sequence of signs and symptoms. While cases can be epidemiologically linked, it is important in the initial stages of the outbreak to undertake diagnostic tests.

Direct detection
The virus can be detected in the respiratory tract for up to 3 weeks after onset of the rash using polymerase chain reaction (PCR). It is detectable by immunofluorescence and culture for a shorter time (1 to 2 days). Measles virus can also be detected in peripheral blood and early catch urine.

Recommended samples
1. Nasopharyngeal aspirates or nasopharyngeal swabs are the preferred sample for antigen detection by immunofluorescence, nucleic acid detection by PCR, and culture. A dry* sterile swab of the nasal passage combined with a similar swab from the back of the throat is the recommended specimen for detection of viral nucleic acid (PCR). Swabs should be cotton, rayon or dacron-tipped, plastic-coated or aluminium shafted swabs. They should be placed into viral transport medium. Samples should be stored and transported at 4 ºC. If arrival at the testing laboratory will be delayed more than 72 hours then, if possible, samples should be frozen at –70 ºC and transported on dry ice. Do not freeze at –20 ºC.
2. Serology: measles specific IgM antibody is the mainstay of the diagnosis of acute measles. An IgM response will be present in about 75% * Not a swab pack with its own bacterial transport medium.
of patients 3 days after rash onset, rising to nearly 100% after 7 days. A measles IgG antibody test should preferably be performed together with the IgM assay. A 5 mL tube of clotted blood is the preferred specimen.

3 Early catch urine should be stored and transported as for swabs.

4. Heparinised blood for PCR should preferably be stored and transported at room temperature.

Guidelines

1. Patients seen within 1 week of onset of rash should have samples for direct detection plus culture and clotted blood for serology collected.

2. Patients seen between 1 and 3 weeks after the onset of rash should have clotted blood collected for serology and a respiratory sample for PCR.

3. Patients seen more than 3 weeks after onset of rash should only have clotted blood collected for serology.

4. Testing of asymptomatic contacts may be undertaken, but the reliability of serological and direct detection tests in that situation is not known and cannot be relied on to exclude incubating measles infection.

Summary

Before the development of a vaccine, measles was a common childhood infection. Following the introduction the 2-dose measles-mumps-rubella (MMR) vaccine policy in 1992, there has been a significant reduction in the number of cases in Australia, with only 10 cases of measles notified in WA between 2002 and 2005. Cases were mostly in unimmunised adults with a history of recent overseas travel to countries with low measles immunisation coverage, or their local unimmunised contacts (i.e. secondary cases).

Measles can be prevented through good public health action, early detection of contacts, and the administration of vaccine (within 72 hours of exposure) or immunoglobulin (within 7 days of exposure) to people who are not immunised or unsure of their immune status.

It is important to educate your staff and visiting patients to report symptoms of a rash on arrival at the surgery/centre/accident and emergency unit to ensure that potentially infectious people are isolated and prevented from further spreading the infection.

In conclusion, measles is a highly infectious communicable disease and, as such, a constant threat to public health. WA was extremely fortunate on this occasion that cases were contained quite quickly. This suggests that our herd immunity is better than predicted. Nevertheless, measles is a notifiable disease and any suspicion of this disease requires an immediate response by doctors to promote early intervention and control. GPs are required to telephone their local Population Health Unit, or CDCCD at the Department of Health on (08) 9388 4852, to raise the alert and assist in early identification of cases.

For more detailed information, refer to the Measles Information for GPs Fact Sheet, at www.population.health.wa.gov.au/Communicable/immunisation.cfm.

Bibliography

Department of Health 2006, Measles Information for GPs, Government of Western Australia, Perth.


Public Health Laboratory Network (PHLN) members can be identified from www.health.gov.au/phln.
New Rotavirus vaccines available.

Gastroenteritis caused by Group A rotaviruses remains a major cause of childhood mortality in the developing world. Even in Australia, rotavirus infection is a major cause of serious morbidity and the more serious the gastroenteritis the more likely that it is caused by rotavirus infection. An estimated 10,000 Australian children are hospitalised with rotavirus gastroenteritis each year.

Infection rates vary across Australia as does the predominant serotype. Rotavirus incidence is higher and occurs earlier in life in indigenous children reflecting similar international trends in poorer nations. Northern Territory (NT) data shows 56% of cases in Indigenous children occur before 6 months of age compared to only 7% in non-Indigenous children.

Rotavirus serotypes are classified on the basis of the outer capsid proteins (see diagram). The VP7 protein envelopes the virus particle and is responsible for the G typing. The VP4 protein contributes the spikes on the virus particle (producing the wheel like electron microscope picture which led to its naming) and is responsible for the P typing. National surveillance is coordinated by the Murdoch Childrens Institute in Melbourne via 10 collaborating centres, including PathWest Nedlands and PathWest PMH. The commonest serotype in Australia is the G1 P8 serotype which predominates in the Eastern States. Other common types include G9 P8 and recently G3 serotypes (commonest in WA).

Overall in Australia, 1:27 children are hospitalised for rotavirus gastroenteritis by the age of 5 years, most by the age of 3 years. Seasonal incidence peaks occur in the Eastern states from July to September but in WA this trend occurs earlier and is less pronounced. In the NT admissions are year round, but tend to be higher in the first half of the year. In WA around 1,000 children are hospitalised each year at a cost of over $2 million. There are an additional 2,000 emergency department attendances and further GP visits.

Rotavirus vaccines.
The first quadrivalent rotavirus vaccine was highly efficacious against severe disease but was withdrawn only 9 months following release after an association was seen with childhood intussusception. Two new vaccines are now available in WA, but at this time have not been added to the free National Immunisation Schedule. In large scale clinical trials, neither have shown an increased rate of intussusception over the 1:2,000 background rate. These vaccines are: RotaTeq®, Merck. This oral vaccine is a human bovine reassortment, mixing human G1-G4 strains with a bovine G6 strain. Bovine strains can only reassort in cows so the vaccine is protective without risk. The vaccine has a 3-dose regime commencing at 6 to 12 weeks, with a 4 to 10-week interval, and the last dose by 32 weeks. Rotarix®, GlaxoSmithKline. This attenuated live G1 P8 human oral vaccine is administered as 2 doses, the first at 6 to 14 weeks and the second at 14 to 24 weeks, with a 4-week minimum interval.

Both vaccines have some degree of viral shedding (around 10% in children after the first dose) but amounts are small compared to natural infection. They have no impact on co-administered vaccines.

Enhanced Rotavirus surveillance.
Rotavirus infection will be made a notifiable disease in WA later this year, and the CDC directorate will be enhancing the sentinel surveillance system through emergency departments, inpatient paediatric settings and GPs. Additionally a new intussusception surveillance system will be set up and compared to vaccination status and timing.

Avian Flu Clinical Trial
The Vaccine Trials Group, Telethon Institute for Child Health Research, will be conducting an Avian Flu vaccine clinical trial to identify a vaccine that may prevent the spread of ‘bird flu’ in the event of a pandemic. The study is designed to see how effective and safe 2 different formulations of the vaccine are when given to adults aged 18 to 64 years. The vaccines used in this study have been given to humans in a previous study. We are seeking volunteers who are healthy and aged between 18 to 64 years. For further information please contact Jan Adams, VTG Coordinator on 9340 8745.

To view and order CDCD resources go to:
‘Chlamydia. Most people haven’t got a clue.’

In June 2005, the Sexual Health & Blood-borne Virus Program launched a social marketing campaign in response to the high rates of chlamydia in young people. The campaign, titled ‘Chlamydia. Most people haven’t got a clue’, aimed to increase awareness of testing and treatment for chlamydia in the 15 to 25 year age group. A two-pronged approach was used to reach GPs and the target age group. Direct marketing was used to invite GP participation in a continuing medical education program that included a survey and clinical audit to assess knowledge and treatment of chlamydia. The call to action for the target age group was ‘see a GP and get tested.’ Innovative social marketing methods were used to reach the group including SMS text messaging, an interactive website www.couldihaveit.com, convenience advertising, youth focused radio and press advertisements. The 12-week campaign was shown to have impact on the target audience by increased testing and notifications of chlamydia during the campaign. Focus testing and surveys after the campaign demonstrated a high level of awareness of the campaign materials and message among the target audience. GP participation in the survey was encouraging, 576 GPs (n=2038) responded to the survey and 32 completed the clinical audit.

Progress in the development of an avian influenza vaccine.

Since December 2003 there have been over 200 human cases of avian influenza, including over 120 deaths. Health departments continue to plan for the arrival of a novel influenza A strain capable of human-to-human transmission. The recent Northern Sumatran cluster of 8 cases, 7 of whom died, is possibly the first significant small cluster associated with human-to-human transmission, although no sign of community transmission or spread to non-relatives was seen in North Sumatra. Health Service planning for the early phase of human-to-human transmission with a novel H5N1 influenza A is focused on slowing and containing the disease spread through border control, quarantine and social distancing, until a vaccine is developed.

A number of vaccine trials have commenced internationally and in the eastern States, with trials about to commence in WA. The most developed trial is a National Health Institute (NIH) sponsored, Sanofi Pasteur® trial of an inactivated subunit A/Vietnam/1203/2004 (H5N1) vaccine.

The early results suggest that the vaccines are very well tolerated and very safe. No allergic reactions were seen. Systemic side effects were equivalent to placebo, and only mild tenderness and pain was more common in vaccinees. The side effects from the second dose were the same as the first. However, the immunogenicity responses have been disappointing. The trials have suggested that 2 doses of vaccine will be necessary to create a response, and the dose required will be about 3 to 6 times that needed during routine interpandemic influenza vaccination.

Other trials are underway in the US and Europe including a GlaxoSmithKline® trial using a novel adjuvant in an attempt to increase immunogenicity and a Chiron® trial also funded by the united States NIH. In Australia CSL is trialling different vaccine doses in current trials.