Pertussis (whooping cough) in Infants

Author: Dr. Catherine Jackson, Public Health Medicine Registrar.

Pertussis is most severe in young children. Infants less than 12 months of age with pertussis have the highest hospital admission rate of any age group due to complications that include pneumonia, apnoea and seizures.

During the first six months of 2012 there were 50 infants with pertussis notified to ARPHS, a rate of 4.4. per 100,000. This rate in infants is 12 times higher than during the last pertussis nadir in 2006-2007.

In the six months to June 30 of this year, 31 infants in the Auckland Region had 42 hospital admissions including 5 infants admitted to paediatric intensive care. Of the 31 infants admitted to hospital, 27 (84%) were younger than 6 months old, 21 were Māori or Pacific (68%) and 19 (61%) lived in Counties Manukau DHB. The average admission length was 4.8 days (range 3 hours–38 days), with most being for more than 24 hours (76%).

For more information on pertussis or to notify a suspected case call 09 623 4600 (ARPHS 24 hour, 7 day phone line).

More information on pertussis for Health Professionals can also be found at: www.arphs.govt.nz/health-information/health-professionals

References

Image: Photomicrograph of bordetella pertussis bacteria.
Source: Courtesy of Department of Health and Human Services, Centers for Disease Control and Prevention (United States).

Key messages for Patients

- **On time immunisation**
  A delay in receiving any of the first three pertussis immunisations in the first year of life increases the risk of hospital admission by 4-5 times¹.

- **Immunisation in pregnancy**
  The adult pertussis vaccine (Tdap, Boostrix®) is recommended for pregnant women after 20 weeks gestation in the context of this large outbreak. See the immunisation in pregnancy information sheet at www.arphs.govt.nz for more information.

- **Imunise whānau**
  Around 80% of infants with pertussis catch it from a parent, sibling, or other whānau member².

- **Keep coughs away** from young babies, and advise good hand washing and drying before picking babies up for a cuddle.
Dengue Fever: A rising concern

Author: Dr. Simon Baker, Medical Officer of Health.

What is dengue fever?

Dengue fever and dengue haemorrhagic fever (DHF) are serious viral diseases transmitted by Aedes mosquitoes, usually Aedes aegypti and albopictus. These mosquitoes live in subtropical and tropical climates. The four dengue viruses (DEN-1 to DEN-4) are immunologically related, but do not provide cross-protective immunity against each other.

Dengue fever in New Zealand

To date, all reported cases of dengue fever in New Zealand have been acquired overseas. Dengue fever is not currently present in New Zealand, however, it may establish here if climate change progresses¹. Dengue is present in over 100 countries around the world including many Pacific Island countries and territories. In recent years, there have been outbreaks in the Cook Islands, New Caledonia and Rarotonga.

Advice for Travellers

► Wear clothing that covers the arms and legs.
► Wear hats and shoes (rather than sandals).
► Apply insect repellent to skin. The most effective repellents are those containing DEET (diethyl toluamide) – at a concentration of between 30 – 50%.
► Apply permethrin insecticide to clothes.
► Use mosquito nets impregnated with permethrin.
► Use electric insect-repellent devices, or mosquito coils.
► When possible, stay in accommodation that has screens on doors and windows, or is air-conditioned.

Dengue Shock Syndrome

DHF is usually caused by a second infection with a dengue virus of a different strain to that causing the first infection. The appearance of DHF is initially indistinguishable from dengue fever, but initial symptoms are succeeded by hypotension and haematological derangements that can cause shock and haemorrhage in severe cases. The DHF case fatality rate ranges from 1 - 20%, depending on adequacy of management of shock.

Confirmation of diagnosis

Dengue is diagnosed by detection of antibodies on serologic testing.

Note, specimens collected in the first few days after the onset of symptoms may be falsely negative.

Notification

Dengue is notifiable on suspicion to the Medical Officer of Health.

Symptoms

Dengue has a 4 - 6 day (up to 14 day) incubation period. It is characterized by the sudden onset of:

► High fever
► Severe headache
► Severe joint and muscle pain (dengue is also referred to as ‘break bone’ fever).
► Rash

The illness usually lasts 2-7 days, although full recovery may take weeks.

Diagnostic pointer

GPs should consider dengue in the differential diagnosis of any patient who has a fever and a history of travel to a tropical area within 2 weeks of onset of symptoms.

At a glance....

► No vaccine is yet available for Dengue fever.
► Dengue fever vector mosquitoes are not currently present in New Zealand, however, they may establish here if climate change progresses¹.

Treatment

► Paracetamol is recommended for pain and fever.
► Aspirin and other non-steroidal anti-inflammatory agents (such as ibuprofen) should be avoided because of their anticoagulant properties.
► Patients should be encouraged to rest and take abundant fluids.

In severe cases (DHF) hospital admission is necessary.

References

Mercury is a natural constituent of the earth’s crust, and is ubiquitous in the environment¹.

**Mercury has three major forms:**
- Elemental
- Organic (carbon-containing, i.e. methylmercury)
- Inorganic (no carbon)

Each form of mercury is toxic to human health and to certain environmental biota².

Natural sources of mercury include volcanoes, soil and rocks². Industrial processes (such as chloralkali production), mining (particularly gold ore), cremation, waste incineration, electronic manufacturing and the burning of fossil fuels are the major man-made sources of mercury pollution². The various forms of mercury interact within the environment via complex biogeochemical pathways. Of importance, inappropriately disposed of elemental mercury can contaminate soils and waterways. Bacteria in soil and water can transform elemental mercury into methylmercury and contaminate fish. Ultimately, foetal and infant growth and development can be negatively impacted following consumption of methylmercury contaminated fish³.

**Elemental mercury**

Elemental mercury, the focus of this brief article, has been an accepted part of our lives for many years in the form of medical formulations, electrical switches, weather devices (barometers) and fluorescent lights. Mercury use in thermometers and sphygmomanometers has enabled tremendous advances in medical diagnosis and disease management. Elemental mercury is a hazardous substance which, whilst innocuous when encapsulated in a sealed glass tube, rapidly releases highly toxic vapour when this glass protection is broken. Once inhaled, mercury vapour is readily absorbed, and can cross the placenta and foetal blood brain barrier⁴, and be transferred into breast milk³. It is highly toxic with deleterious actions predominantly on the renal, nervous and cardiorespiratory systems³⁵⁶. Those particularly at risk from exposure to mercury vapour include children, pregnant women, the elderly and those with pre-existing illnesses (particularly of the renal, nervous and respiratory systems)⁷.

**Elemental Mercury containing items**
- Fluorescent lights (energy savers, tubes, lamps)
- Mercury thermometers (fever, wall, cooking)
- Electrical switches
- Mercury sphygmomanometers
- Barometers
- Manometers

**Mercury spills and environmental contamination**

Following breakage of a mercury-containing item, certain actions such as vacuuming or heating a room where the mercury has spilt can markedly increase the amount of mercury vapour released. It is therefore essential that mercury spills are cleaned up in a specific way that includes isolating and ventilating the room to minimise exposure to vapour.

Likewise, spilled mercury and mercury contaminated items must be appropriately disposed of at a hazardous waste facility to ensure that the environment is not unnecessarily contaminated with mercury waste. If elemental mercury is not responsibly disposed of it can be transformed into methylmercury by bacteria in soil and water⁷. Methylmercury can contaminate fish, which when consumed by pregnant women in sufficient quantity can cause severe neuro-cognitive damage to the developing foetus³.

To notify Auckland Regional Public Health Service

P: 09 623 4600 (ARPHS 24 hour, 7 day phone line).

W: www.arphs.govt.nz E: arphs@adhb.govt.nz

**At a glance....**
- Mercury is a hazardous substance and releases toxic vapour.
- Mercury spills need to be cleaned up in a special way.
- Mercury and mercury containing devices must be disposed of at a hazardous waste facility.
- Mercury-containing devices should not be used.

**Image:** Elemental mercury.

Source: Reproduced with permission from the Wikimedia Commons.

**Image:** Elemental mercury can contaminate the environment if improperly disposed of.

Source: Courtesy of the Department of Environmental Conservation, New York, United States.
Elemental mercury: ARPHS Action

Author: Dr. Patricia Bolton, Public Health Medicine Registrar.

Response

ARPHS has been engaging with multiple stakeholders, including the NZ Fire Service and the Auckland Council, in creating a regional response plan for household mercury spills.

In the event of a mercury spill, please contact ARPHS in the first instance, 09 623 4600. For large spills, ARPHS will refer the NZ Fire Service to clean-up the site.

Ultimately, the best way to prevent mercury spills is to dispose of mercury-containing items responsibly at one of the hazardous waste facilities listed below.

Disposal options

Dispose of small amounts of mercury (intact lights, thermometers, sphygmomanometer/barometer/manometer) at one of these household hazardous waste facilities (you do not need to contact the facility before arriving):

► Silverdale Transfer Station. 105-107 Foundry Road, Silverdale. Hours: Mon-Sun 7:30am-5pm. Ph: 0800 422 477.
► Waitakere Refuse and Recycling Transfer Station, 50 The Concourse, Henderson. Hours: Mon-Fri 5am-6pm, Sat 8am-5pm, Sun 8am-4pm. Ph: (09) 301 0101.
► Waiheke Island Recycling Centre, 110 Ostend Road, Waiheke Island. Hours: Mon-Sun 8am-4pm. Ph: (09) 372 1070.

Dispose of larger quantities of mercury at one of these disposal facilities. Phone these facilities first. Disposal charges will apply:

► Transpacific Technical Services. 30 Neales Road, East Tamaki, Drop-off or collection. Hours: Mon-Fri 7:30am-4:00pm & after hours as needed. (09) 274 7963.
► Inter Waste. 2 Hape Drive, Auckland Airport. Hours: 8am-5:30pm, (09) 256 8534.
► Chemwaste Industries Ltd. 21 Miami Parade, Onehunga, No drop-off, collection only. Hours: Standard Business hours, (09) 634 6777.
► Please note that the Hazmobile hazardous substances disposal service has recently been discontinued.

Prevention

Importantly, exposure to mercury is both unnecessary and preventable; for instance, electronic thermometers have been shown to be as accurate as their mercury counterparts7,8,9. Internationally, many countries have undertaken actions to remove mercury-containing medical devices from healthcare. Internationally, many countries have undertaken actions to remove mercury-containing medical devices from healthcare, a move that is supported in the medical literature and by the World Health Organization10,11. Whilst the three Auckland DHBs have taken action to remove mercury containing devices, and replace these with electronic alternatives, many Auckland residents likely still use mercury thermometers and other devices. If you are concerned about the mercury content in fluorescent lights, we suggest you consider switching to LED lighting or alternatives. ARPHS is currently liaising with agencies to consider alternative avenues for disposing of household mercury thermometers to enable more accessible community disposal options. We are also liaising with various community organisations to begin to spread the message that mercury-containing devices pose a risk to health, and must be disposed of responsibly.

References


To notify Auckland Regional Public Health Service

Ph: 09 623 4600 (ARPHS 24 hour, 7 day phone line). W: www.arphs.govt.nz E: arphs@adhb.govt.nz
Disease Surveillance Summary

Quarterly Surveillance Commentary 1/4/2012 to 31/6/2012

Rheumatic Fever

The rise in notification rate for Rheumatic Fever over the last quarter appears to be due to notifications received belatedly from the Rheumatic Fever Registry. This occasionally occurs as a result of hospital doctors failing to notify their Rheumatic Fever patients to ARPHS while they are in hospital.

Dengue Fever

The increase in numbers of cases of Dengue in the last quarter could simply be due to random variation on small numbers. However, Dengue is becoming more widespread as each year passes, and combined with increases in international travel, it would be no surprise if numbers continued to rise.

Hepatitis A

There were 5 cases of Hepatitis A for the second quarter of 2012 (April to June), compared to 2 cases for the same time period last year. None of the 5 cases reported were linked.

Gastroenteritis/food borne intoxication

There were 24 cases of Gastroenteritis/foodborne intoxication for the second quarter of 2012 (April to June), compared to 5 cases for the same time period last year. Of the 24 cases, 5 cases were related to one outbreak and would not usually be reported in this disease category.

Pertussis

Pertussis notifications continue to be significantly higher than usual during this large national outbreak. In particular, 26 notifications for infants younger than 12 months old were received in this quarter compared with one notification in the same quarter in 2011.

Measles

On 26/7/12 the outbreak that began in May 2011 was declared over by the Ministry of Health, with ARPHS last confirmed case in early June 2012. Measles case management and immunisation should now return to normal.
Hepatitis A virus in the Auckland Region

Author: Dr. Shanika Perera, Medical Officer of Health.

Hepatitis A is highly infectious illness that can lead to outbreaks of disease. This disease is spread by faecal-oral transmission either from person-to-person or from contaminated food or water.

ARPHS advises health professionals to look out for the signs and symptoms of Hepatitis A infection.

**Hepatitis A infection**

Hepatitis A infection typically causes an illness which lasts up to two months, although 10-15% of cases have a prolonged or relapsing course lasting up to six months, with prolonged convalescence. Between 11% and 22% of those with hepatitis A infection are hospitalised. The overall reported case-fatality rate for hepatitis A infection is low (<1/1,000).

The symptoms of Hepatitis A infection include:

▶ Generally feeling unwell
▶ Tiredness and lack of energy
▶ Loss of appetite
▶ Stomach upsets and pains
▶ Diarrhoea
▶ Mild fever
▶ General aches and pains
▶ Nausea and vomiting
▶ Dark urine
▶ Yellowing of skin and eyes (jaundice)

**Hepatitis A infection in children**

Unlike adults, children with Hepatitis A generally experience a mild and non-specific illness. In those under six years, 70% of infections are asymptomatic. Children tend to present with non-specific symptoms of abdominal discomfort, diarrhoea and sometimes fever. Jaundice (if present at all) tends to be mild.

A key public health concern is the transmission of the illness from children to adults as Hepatitis A is generally a more serious illness in adults than in children.

**Advice for health professionals**

Consider Hepatitis A infection if a patient has undertaken recent overseas travel or has been in contact with someone that has recently travelled overseas (the incubation period for Hepatitis A is 15 to 50 days, with an average 28-30 days).

If Hepatitis A infection is suspected, serology and liver function tests should be ordered.

Because Hepatitis A is spread via the faecal-oral route, provide advice about hand hygiene. This is especially important after changing nappies, before handling food and before eating or drinking.

Recommend immunisation against Hepatitis A for those travelling overseas (particularly to Hepatitis A endemic countries). This is usually the HAVRIX® vaccine.

**Resources and Information**

▶ To order resources from ARPHS, phone: 09 623 4600 ext. 27188

[www.arphs.govt.nz/links/resources-centres](http://www.arphs.govt.nz/links/resources-centres)

▶ More information for Health Professionals

[www.arphs.govt.nz/health-information/health-professionals](http://www.arphs.govt.nz/health-information/health-professionals)

▶ Comments/feedback/ideas or more information on Public Health Quarterly please contact Jane Dudley: JDudley@adhb.govt.nz


**Hepatitis A as an imported illness**

▶ Most cases of Hepatitis A in New Zealand are originally linked to overseas travel or overseas visitors.

▶ Hepatitis A is not endemic in New Zealand and Hepatitis A vaccination is not included in the immunisation schedule.

▶ Due to the low levels of immunity to Hepatitis A in the New Zealand population, outbreaks can spread rapidly.

Please notify Auckland Regional Public Health Service on clinical suspicion of Hepatitis A and investigate.

For more information on Hepatitis A see:

Image: Jaundice of the eyes in an adult patient with Hepatitis A virus (HAV) infection. HAV infection is generally symptomatic in adults.

**Source:** Courtesy of Department of Health and Human Services, Centres for Disease Control and Prevention (United States).