Regional Public Health
Better Health For The Greater Wellington Region

The Public Health Post

Public Health for Primary Care in Wellington, Wairarapa and the Hutt Valley

Also available online at www.rph.org.nz March 2012

Enquiries regarding public health topics are welcome from primary care practitioners. Individual cases or urgent matters should always be discussed directly with the on call Medical Officer of Health.

Toxic Algae: cyanobacteria in regional waterways

With recent health warnings for toxic algae along parts of the Hutt and Waikanae Rivers, and the Waipoua River and Lake Henley in the Wairarapa, it is timely to review our knowledge of cyanobacteria. During warmer months it is not unusual for cyanobacteria (previously known as blue-green algae) to proliferate in our lakes and rivers. There are health effects associated with exposure to these organisms and to the toxins (cyanotoxins) they may produce. The following are some key points to help you recognise possible presentations associated with these exposures. These presentations should be notified to Regional Public Health (under the Health Act as "poisonings arising from chemical contamination of the environment") which will help build our knowledge base of human health effects, ensure warnings are in place where required, and determine whether any environmental testing is required.

There are two principal types of cyanobacteria species: planktonic present in lakes or ponds (free-floating organisms near the surface) and benthic present in rivers (clumps or mats attached to rocks or sand at the bottom of the river). Under ideal warm climatic conditions both types can rapidly proliferate, sometimes referred to as a "bloom". These blooms may be associated with the production of toxins that can produce a range of acute health effects. People are exposed to toxins via direct contact with the cells or water containing released toxin, ingestion of cells or water contaminated with toxins, or consumption of shellfish in affected waters.

Health Effects:

- Dermal exposure leading to skin irritations and allergic reactions.
- Inhalation or ingestion leading to:
  - Irritation of mucous membranes with ENT, respiratory, and gastroenteritis symptoms.
  - Hepatic or renal damage.
  - Neurotoxic effects e.g. paraesthesiae (similar to symptoms from paralytic shellfish poisoning due to marine algal blooms).

Although serious health effects are rare and usually short-lived, in animals (in particular dogs) neurotoxins have been associated with rapid respiratory arrest. These animals have usually ingested a significant quantity of cyanobacteria and associated toxin, for example dogs scavenging washed-up mats of benthic cyanobacteria at the rivers edge. Deaths in humans are rarely reported but there have been two international reports of deaths associated with contamination of drinking water by cyanotoxins.

Detached Phormidium sp. mat (Hutt River, Wellington) on the river's edge. Photo: S Wood, Cawthron.

The presentation following exposure to cyanotoxins depends on the type of cyanobacteria, the type of cyanotoxins present, and the concentration of the toxin in the water. The higher the concentration of cyanobacteria and cyanotoxins and the longer the contact with the water, the more severe the symptoms are likely to be. The effect can be immediate or up to seven days following exposure. Individuals vary in their sensitivity to cyanobacteria and cyanotoxins; for example it is thought that only around 10-15% of individuals exposed will develop allergy type symptoms.

In this issue

A non-toxic bloom of Anabaena planktonica (Lower Karori Reservoir, Wellington). Photo: S Wood, Cawthron.

Blooms in lakes can be identified by cloudiness or colour change in the water and are often associated with odour. In rivers, the most common type of benthic cyanobacteria looks like thick clumps or mats of brownish black algae attached to rocks. Clumps or mats can detach from the bottom of the river and wash to the side, or low river flows uncover the mats. This increases the risk of people coming into contact with the toxins.

For more info on cyanobacteria see http://www.gw.govt.nz/toxic-algae/. The Greater Wellington Regional Council website also contains updates on current cyanobacterial alerts for the region.

If you suspect that exposure to cyanobacteria and cyanotoxins may fit with a person's presenting symptoms please notify Regional Public Health on 04 570 9002. Useful information to gather includes:

- Site of exposure.
- Activity or reason for suspecting cyanobacterial exposure.
- Length of exposure.
- Onset, duration and nature of symptoms.
- Other people or animals exposed with or without symptoms.

Mumps – still seen in our region but not common

Mumps is caused by the mumps virus, a member of the Paramyxoviridae family genus *Rubulavirus*.

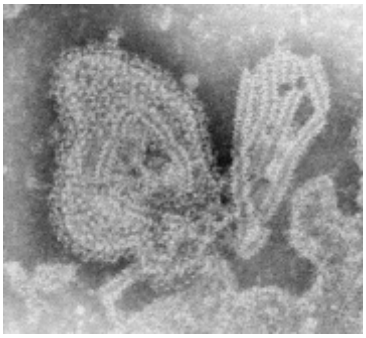


Image courtesy of CDC/ Dr. F. A. Murphy [1]

Mumps is spread by airborne transmission or droplet spread or by direct contact with the saliva of an infected person. Incubation ranges from 12 – 25 days, usually 16 – 18 days. Mumps virus is detectable in saliva from seven days before the onset of parotitis to nine days afterwards, and in urine from six days before onset of parotitis to 15 days afterwards. Maximum infectiousness is between two days before the onset of illness to four days afterwards. Unapparent infections can also be contagious [2].

More serious complications of mumps can include:

- Aseptic meningitis in 15 percent (almost always without sequelae).
- Orchitis (usually unilateral) in up to 20 percent of post-pubertal males.
- Oophoritis in 5 percent of post-pubertal females.
- Sterility occurs rarely.
- Profound unilateral nerve deafness occurs in 1 in 15 000 cases.
- Encephalitis has been reported to occur at a frequency of between 1 in 400 and 1 in 6000, the latter being a more realistic estimate.
- Pancreatitis, neuritis, arthritis, mastitis, nephritis, thyroiditis and pericarditis may also occur.

The case fatality rate for mumps encephalitis is 1.4 percent, while the overall mumps case fatality rate is reported as 1.8 per 10 000 cases. Mumps in the first trimester of pregnancy may increase the rate of spontaneous abortion, but there is no evidence that it causes fetal abnormalities [3].

History

In unvaccinated populations mumps is endemic with an annual incidence of 100 – 1000 per 100 000 population, with epidemic peaks every 2-5 years. This used to be the pattern seen in New Zealand. About a third of exposed susceptible people have subclinical infections, especially in the case of young children. Winter and Spring are the peak seasons in temperate climates [2].

We commonly think of mumps as being a disease of childhood. But historically it was thought of as an illness that affected armies during times of mobilisation. Although mumps was first described by Hippocrates in the 5th Century BC our understanding of mumps began with epidemics in the 18th and 19th centuries. In 1790, the Royal Society of Edinburgh published a paper by Hamilton titled 'An Account of a Distemper by the Common People of England Vulgarly Called the Mumps.' Hamilton reported for the first time that some patients with mumps had evidence of involvement of the central nervous system. He also emphasised the importance of orchitis as a manifestation of the disease in adult males [4].

There is speculation about the origin of the word mumps but it may be related to the old English noun, mump (meaning lump) or the English verb, mump (to be sulky); or that it is named after the mumbling speech of patients with parotitis [5,6].

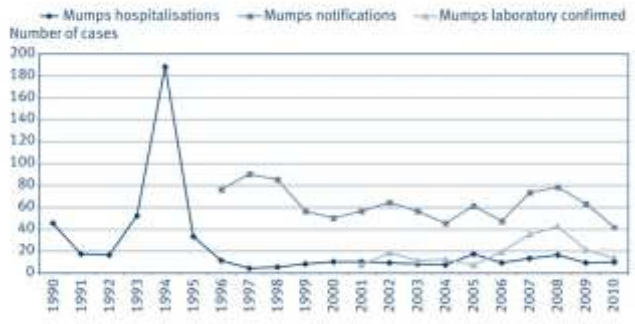
Epidemics of mumps occurred during the 18th and 19th centuries. The outbreaks occurred worldwide, often in close quarters, such as in military barracks, boarding schools, ships at sea and prisons. Mumps was one of the leading causes of days lost from active duty for most wars over the last two centuries often only exceeded by influenza or gonorrhoea [7,8]. Mumps continues to affect armies in the in the post vaccine era [9,10].

The virus was first identified in saliva in 1934 [11], and the first safe vaccine became available in 1967 [12].

Epidemiology in New Zealand

The incidence of mumps in New Zealand has been stable (rate 1.2 to 1.8 per 100 000) in the last 9 years. The last mumps epidemics in New Zealand were in 1989 and 1994. In 1994 there were 188 hospitalisations. From 1996 (the year mumps became a notifiable disease) to 2010, a total of 939 cases of mumps have been notified, of which only 188 (20 percent) were laboratory confirmed. There were a total of 179 hospitalisations over this 15-year period.

Mumps hospitalisations 1990–2010, notifications 1996–2010, and laboratory confirmed cases 2001-2010.



Immunisation

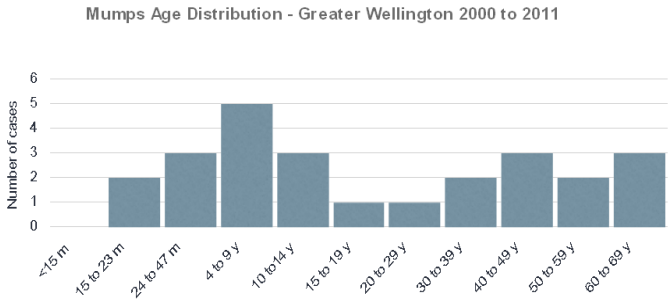
In New Zealand the mumps vaccine (as MMR) was introduced to the schedule in 1990 for children aged 12 to 15 months. In 1992 a second dose of MMR was added, given at age 11 years in school Year 7 (Form 1). The timing of the first dose was changed in 1996 to age 15 months to be given at the same time as the booster dose of diphtheria, tetanus, whole-cell pertussis and haemophilus influenzae type b vaccine (DTwPH [3].

In 2001 the schedule for MMR vaccine was changed, maintaining the first dose at age 15 months and changing the second dose to age four years in order to prevent further epidemics of measles. There was an MMR school catch-up programme throughout the country in 2001 for all children aged 5 to 10 years who would not receive MMR in school Year 7 because of the schedule change.

The protective efficacy of the mumps vaccine is about 95–96 percent [13]. Approximately five percent of children are not protected by the first dose but of these, nearly all will be protected by the second dose. The second dose can be given as soon as four weeks after the first dose [3].

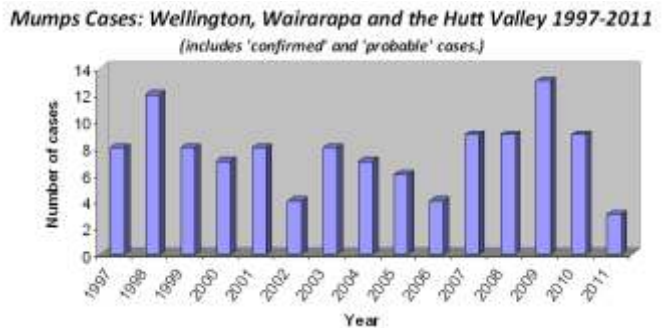
Wellington, Wairarapa and the Hutt Valley

From 2000 to 2011 there were 25 confirmed cases of mumps in our region, with 2004, 2007 and 2010 being peak years with four or more cases.



Six of the 15 that were old enough to have received at least one dose of MMR had received the vaccination. Four of the 15 were up to date for their age for MMR. One case had received two doses of MMR.

Most suspect cases of mumps that are notified turn out to have a different diagnosis. However, over the 11 years there were still 58 cases classified as 'probable', as they met the clinical criteria but were not confirmed by a laboratory.



Data from Episurv national database of notifiable diseases [15]

Testing for Mumps

The question 'who should be tested for mumps and with which tests?' is not simple to answer. This is because of the cost of PCR or culture testing and the difficulty interpreting serology testing especially when there is a history of mumps immunisation.

However there is a case definition in the New Zealand Communicable Disease Manual which is helpful:

> *An illness with acute onset of fever and unilateral or bilateral tenderness and swelling of the parotid or other salivary gland/s, lasting more than 2 days, and without other apparent cause.*

Patients meeting this description should be considered for testing. In particular note the requirement for the symptoms to have lasted more than 2 days as serology done too early may be even more difficult to interpret.

Testing done within six weeks of MMR vaccination is likely to

be extremely difficult and / or expensive to interpret (see below).

Regional Public Health is most interested in:

- Unimmunised children.
- Linked cases / possible outbreaks.
- Tertiary students especially in the context of a possible outbreak.

Laboratory tests available to confirm the diagnosis [14]

1. If case received a vaccine containing the mumps virus in the 6 weeks prior to symptom onset:
   - Evidence of infection with a wild-type virus strain (obtained through genetic characterisation).
2. If case did not receive a vaccine containing the mumps virus in the 6 weeks prior to symptom onset, then at least one of the following:
   - Detection of IgM antibody specific to the virus.
   - IgG seroconversion or a significant rise (four-fold or greater) in antibody level for the virus between paired sera tested in parallel where the convalescent serum was collected 10 to 14 days after the acute serum.
   - Detection of the virus by nucleic acid test or isolation of the virus by culture (usually from upper airway secretions).

Notes:

Regional Public Health recommends discussing a case with the Medical Officer of Health, infectious diseases specialist or clinical microbiologist before ordering PCR or culture testing due to the cost and availability of these tests.

In general, patients meeting the case definition should be notified to the Medical Officer of Health on suspicion, and appropriate testing can be discussed at that time.

Serology testing rarely proves to be useful.

The last word(s):

- Mumps is not a common infection but it can have serious complications.
- Immunisation is very effective.
- Mumps has public health significance especially in certain groups such as:
  1. Unimmunised children.
  2. Linked cases / possible outbreaks.
  3. Tertiary students.
- Testing is problematic, but when used appropriately in conjunction with the case definition test results become easier to interpret.

Sources:

1. Image: CDC/ Dr. F. A. Murphy: http://phil.cdc.gov/phil/details.asp image #1874
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12. Weibel RE, Stokes Jr J, Buynak EB, et al: Live attenuated mumps-virus vaccine. 3. Clinical and serologic aspects in a field evaluation. N Engl J Med 1967; 276(5):245-251.
13. PLOTKIN et al. Vaccines. Fifth Edition. 2008, Elsevier Inc.
14. Ministry of Health. 1998, 2011. Communicable Disease Control Manual 1998 and 2011 [draft]. Wellington: Ministry of Health.
15. ESR. Episurv National Database of Notifiable Conditions. Accessed 30/1/2012

Healthy Skin Promotion

The Keeping Well, Healthy Skin in Greater Wellington Group, contributed to by Regional Public Health, have made available a new resource for use by health professionals when treating children with skin infections.

It has been developed in response to the increasing numbers of children being hospitalised for skin infections in the region. The aim is to promote consistent skin care messages to children and their carers wherever they are seen.

The resource can be accessed at the link:
http://www.rph.org.nz/Article.aspx?id=3923&Mode=1

Ordering Pamphlets and Posters:

To order any Ministry of Health resources, please contact the Health Information Centre on 04 570 9691 or email laurina.francis@huttvalleydhb.org.nz

For enquires regarding The Public Health Post, please contact Dr Jonathan Kennedy. Medical Officer, Regional Public Health by emailing jonathan.kennedy@huttvalleydhb.org.nz or by phone 04 570 9002. Alternatively contact one of the regional Medical Officers of Health: Dr Jill McKenzie, Dr Margot McLean, Dr Annette Nesdale and Dr Stephen Palmer.

Produced by: Regional Public Health,
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What are you reporting?

Three months of notifiable cases in the Hutt Valley, Wairarapa and Wellington.

	Hutt	Wairarapa	Wellington	Totals
Campylobacteriosis	71	39	161	**271**
Cryptosporidiosis	6	2	10	**18**
Dengue fever	1			**1**
Gastroenteritis (includes confirmed norovirus)	10		3	**13**
Giardiasis	8	9	49	**66**
Hepatitis A			1	**1**
Invasive pneumococcal disease		2	4	**6**
Lead absorption	9	1	5	**15**
Legionellosis	1		4	**5**
Leptospirosis		1		**1**
Measles	1		3	**4**
Meningococcal disease		1		**1**
Pertussis	77	6	124	**207**
Rheumatic fever - initial attack			1	**1**
Rubella	1			**1**
Salmonellosis	12	2	20	**34**
Shigellosis			2	**2**
Tuberculosis disease - new case	2		5	**7**
Yersiniosis	5		8	**13**
Totals	**204**	**63**	**400**	**667**

Notes:

Data is from the 3 months to 29/02/2012.

1. Table includes confirmed cases only.
2. There were an additional 50 'probable' cases of pertussis notified across the region in this time period, for which no confirmatory laboratory results are expected.
3. Enteric infections make up the majority of notified conditions over the three months.
4. High rates of pertussis notifications reflect similar high rates across New Zealand since late 2011.

Source:

ESR. Episurv database of notifiable diseases, accessed 12/3/2012

Refugee Health Workshop for Primary Care Services

Friday 20 April 2012; 9.00am – 4.00pm
St Johns in the City, cnr Willis and Dixon Streets, Wellington

In April, Regional Public Health is running a workshop for primary care practitioners on refugee health. This will be particularly relevant to health care workers with significant numbers of refugee patients but all with an interest are welcome.

Topics include:

- Refugee Voices and Journeys.
- What happens at the Mangere Refugee Resettlement Centre.
- Mental Health issues and services available for refugees.
- Organisations that support refugee resettlement.

This workshop has been endorsed by The Royal New Zealand College of General Practitioners (RNZCGP) and has been approved for up to 6 hours CME for General Practice Educational Programme Stage 2 (GPEP2) and Maintenance of Professional Standards (MOPS) purposes. The cost is $30 for the full day workshop.

For more information please contact: anne-maree.delaney@huttvalleydhb.org.nz or phone 04 5872633.

For a registration form please contact: carol.young@huttvalleydhb.org.nz.

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