Regional Public Health
Better Health For The Greater Wellington Region

PUBLIC HEALTH POST

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

Also available online at www.rph.org.nz

April 2016

IMPORTED FROZEN BERRIES & HEPATITIS A IN THE NEWS

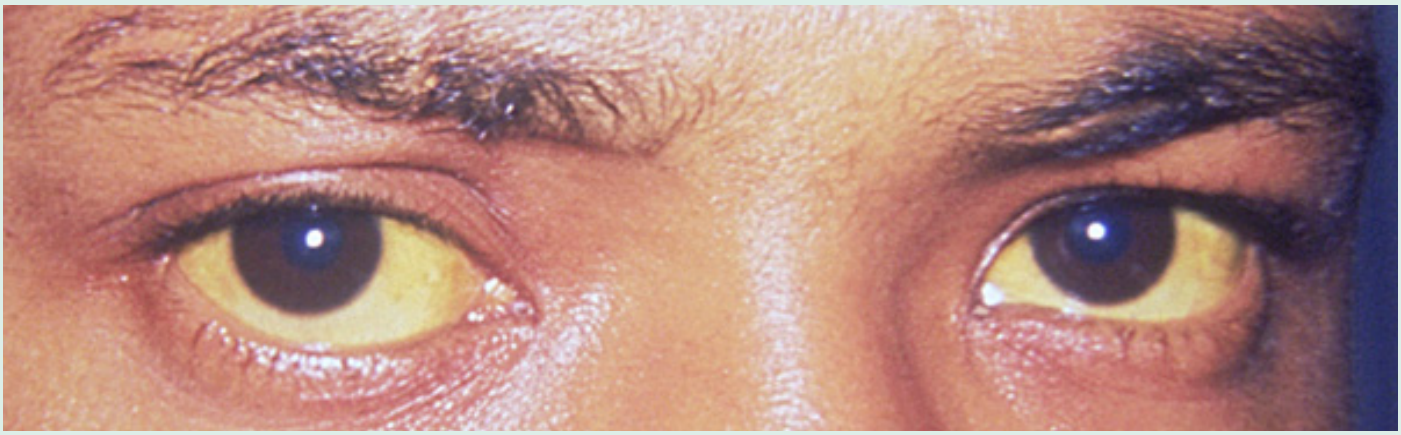


Image: CDC/Dr. Thomas F. Sellers.

Key Points:

- Hepatitis A is a **notifiable disease** in New Zealand.
- Rates of hepatitis A notifications have **decreased over time** in New Zealand.
- Over 50% of all hepatitis A notified in New Zealand are **acquired overseas.**
- Detecting hepatitis A in children is complicated by their **atypical presentation.**
- Treatment of hepatitis A is mainly supportive.
- Following a notification of hepatitis A, the public health management includes: interviewing the person who has hepatitis A, identification of possible sources of infection, identifying and managing contacts, and health messaging.

The 2015 outbreak of hepatitis A linked to imported frozen berries received substantial media coverage and highlights the value of notification in identifying sources for outbreaks. It is timely to explore this disease in more detail including the public health management.

Microbiology

Hepatitis A, a picornavirus[1], is a vaccine preventable illness and a **notifiable disease** in New Zealand.[1,2] A key feature of the virus is its ability to remain infectious in the environment for long periods. The virus tolerates freezing and high heat.[1,3] It is only inactivated in food held at temperatures >85°C for at least a minute.[1]

Epidemiology

National Epidemiology

Since 1997, there has been a marked decrease in hepatitis A notifications in New Zealand (Figure 1).[4] It is estimated that ~50% of all hepatitis A cases in New Zealand are overseas acquired.[2]

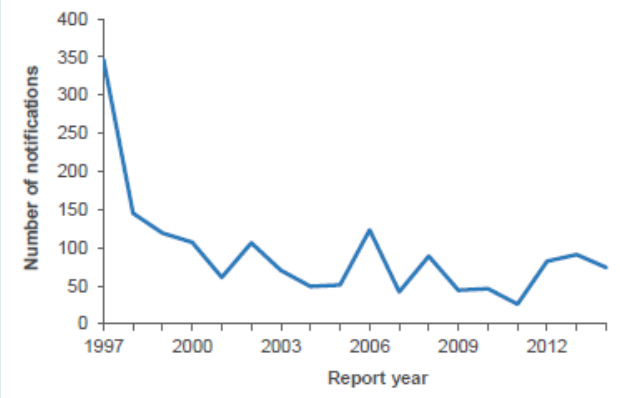


Figure 1: Hepatitis A notifications by year, 1997-2014.
Source: *ESR 2014 Surveillance report.*

In 2014, there were 74 cases of hepatitis A notified in New Zealand, giving a rate of 1.6 per 100,000.[4] The notification rates in 2014 were higher in those 30 years of age and under, and Pacific people. There were no gender differences. The most common countries visited by cases over the incubation period were Fiji and Samoa.[4]

Greater Wellington Region Epidemiology from 2010-2015

There have been 26 hepatitis A notifications in the greater Wellington region from 2010-2015.[5] The 2014 peak reflects a Lower Hutt outbreak involving an Early Childhood Education (ECE) Service (Figure 2).

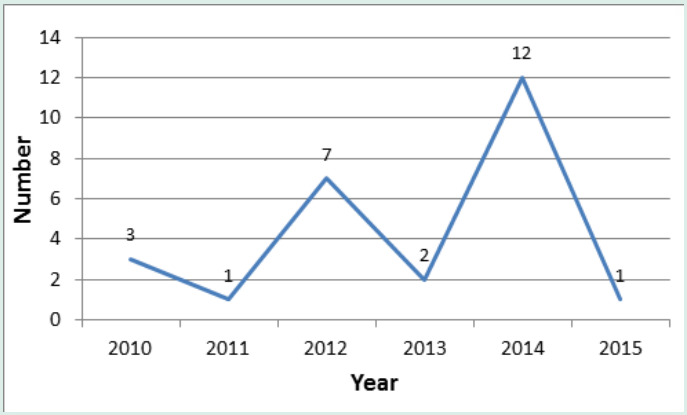


Figure 2: Greater Wellington region hepatitis A notifications by year, 2010-2015.

Cases during this time period have been 58% female and 42% male.The greatest percentage of notifications were in those aged 20-39 (38%). New Zealand Europeans accounted for the highest proportion (34%) of cases, followed by people of Pacific (31%) and Asian (23%) ethnicity. The majority of the notifications resided in Wellington City (38%) and Lower Hutt City (35%). Overseas travel was reported in 73% of all notifications.[5]

Route of transmission and outbreaks

The primary route of hepatitis A transmission is the faecal-oral route.[2]

Given the viruses environmental resilience, hepatitis A can contaminate food and water, which can lead to common-source outbreaks.[1,2] Common foods that have been linked to hepatitis A outbreaks include: shellfish, frozen berries and vegetables.[1,2,6] In 2015, a cluster of hepatitis A cases in New Zealand was linked to imported frozen berries.

Secondary cases are more common in household or sexual contacts, and in ECE Services. In the latter, symptomatic adults may be the first cases diagnosed associated with an ECE Service, as the disease can present as a non-specific gastrointestinal illness in children. Large hepatitis A outbreaks have previously occurred in New Zealand in ECE Services, such as the 2006 Christchurch outbreak.[7]

Clinical features and case definition

One of the challenges with identifying hepatitis A infection is that it presents differently in adults and children.[2] The key clinical features and case definition of hepatitis A are summarised in Table 1.

Table 1: Summary of key features of hepatitis A.[1,2,6,8]

	In adults	In children
Incubation period	Usually 14-28 days, but can be up to 50 days (WHO).	
Clinical Features	Prodrome of fever, malaise, anorexia, nausea or abdominal pain, followed by jaundice and tender right upper quadrant. Pale stools and dark urine may also be noted.	Often asymptomatic. Occasionally present with atypical symptoms of diarrhoea, cough, coryza, abdominal discomfort, or arthralgia. Jaundice is not a common feature in younger children.
Laboratory Features	Elevated serum liver function tests.	May have elevated liver function tests.
Serology	Elevated IgM anti-HAV antibodies (in the absence of recent vaccination).	
PCR	PCR can be used to genotype hepatitis A virus. Up until recently, PCR has not been routinely available in NZ for clinical samples. In the future it may be utilised more frequently for facilitating the diagnosis of hepatitis A (e.g. when IgM serology is unclear) or assisting in an outbreak investigation.	
Case definition	A clinically compatible illness with confirmatory serology.	
Period of infectivity	1-2 weeks before and 1 week following the development of jaundice. Children may have prolonged viral exertion.	

General Management

Treatment of hepatitis A is supportive, and may require hospitalisation.[1,2,6] Fulminant hepatitis may occur which will require specialist management.[1,6] Complete resolution of symptoms and normalisation of liver function tests usually occurs within a few months following acute infection.[1,6]

Public health investigation and management of hepatitis A

Once a hepatitis A case has been notified to Regional Public Health, the primary public health goal is reducing or preventing its spread within the community. This is achieved through a multi-faceted public health response, the details of which are outlined below.

Managing the public health risk

The first aspect of the response is ensuring the notified case is appropriately managed, which requires:[2]

- Use of appropriate **infection control precautions**, such as isolation and hygiene messages.
- **Exclusion, especially if from a high-risk group** (e.g. food handlers, staff at health centres, staff at ECE Services), from school and work till at least one week from the onset of jaundice or symptoms.

Identification of a possible source of infection

The ill person is interviewed about travel, overseas visitors, contact with ill people, and foods consumed during the exposure period. This interview aims to identify possible sources of infection, and protective factors (e.g. previous vaccination).[2]

Identifying and managing contacts

In New Zealand, a hepatitis A contact is defined as:[2]

1. A person who was in contact with the case over the infectious period (Table 1), including:
    a. Household and sexual contacts.
    b. Staff and children in close contact (e.g. nappy changing) at an ECE Service.
2. Persons exposed to a contaminated common source or to potentially contaminated food via an infected food handler.

Once identified, any contacts with clinically compatible symptoms should be tested for hepatitis A (serology and liver function tests), have a clear history taken and take precautions to prevent infecting others (including excluding themselves from work, school, or social events), until results have returned.

Any healthy contacts should be provided with health advice (see health messaging below) and be assessed for post-exposure prophylaxis (PEP). PEP is used to help prevent the spread of hepatitis A.[2] PEP options currently available include vaccination or immunoglobulin (see Table 2).

Table 2: PEP options and indications.[2]

	Vaccination	Immunoglobulin
Indication	Age-appropriate vaccination is recommended for all close contacts age >1 year.	Contacts under 1 year of age. When vaccine is contraindicated. People at high risk of severe disease.
Timeframe	Should be given within two weeks of last exposure to infectious case.	Should be given within two weeks of last exposure to infectious case.

In high-risk situations (e.g. ECE Service or infected food handler), a risk assessment will be done to determine who requires PEP and the most appropriate PEP. In the case of an infected food handler, other food handlers will be offered PEP. In certain circumstances, PEP may also be offered to patrons who ate food prepared by an infected food handler.[2]

Health messaging

The final aspect of the public health response is communicating key public health messages to cases and contacts, which include:[2]

- Firstly, a brief understanding of the disease, its incubation period, clinical symptoms and infectious period;
- Secondly, highlight the importance of effective hand washing for preventing the spread of disease, especially following going to the bathroom and before preparing food;
- Thirdly, advice to contacts (including those contacts who have received PEP) that if they develop compatible symptoms within the next 50 days from last contact they should exclude themselves (or their children) from work, school, or social events until they have been given a diagnosis by their GP;
- Fourthly, advice that any symptomatic person **SHOULD NOT PREPARE OR HANDLE FOOD FOR OTHERS** until cleared by their GP or Public Health;
- Finally, that a case should have their own towel, facecloth and toothbrush, and not share these items.

Wider public health messaging (e.g. through the media) may be indicated in certain circumstances, such as a common source outbreak.

Further information

Further Information on hepatitis A and the public health management of a case can be found at the following websites:

Ministry of Health website:

https://www.health.govt.nz/your-health/conditions-and-treatments/diseases-and-illnesses/hepatitis

Communicable Disease Control manual:

http://www.health.govt.nz/publication/communicable-disease-control-manual-2012

References

1. Bennett, J.E., R. Dolin, and M.J. Blaser, *Mandell, Douglas, and Bennett's principles and practice of infectious diseases.* 8th edition ed. 2015: Elsevier Health Sciences.
2. Ministry of Health, *Communicable Disease Control Manual.* 2012, Ministry of Health: Wellington.
3. Centers for Disease Control and Prevention, *Hepatitis A Questions and Answers for the Public.*
4. The Institute of Environmental Science and Research Ltd, *Surveillance Report - Notifiable Disease in New Zealand 2014.* 2015: Porirua.
5. The Institute of Environmental Science and Research Ltd, *EpiSurv.* 2015, The Institute of Environmental Science and Research Ltd.
6. Uptodate, *Overview of hepatitis A virus infection in adults.* 2015, Wolters Kluwer.
7. Booker, J., *Disease tracked to childcare centre, in New Zealand Herald.* 2006.
8. Hewitt, J., *Personal Communication with specialist ESR virologist.* 2015.
9. Hepatitis A case image: CDC/ Dr. Thomas F. Sellers; Emory University. 1963 Public Health Image Library (PHIL) image #2860.

WHAT ARE YOU REPORTING

THREE MONTHS OF NOTIFIABLE CASES IN THE HUTT VALLEY, WAIRARAPA AND WELLINGTON

Table 1: Notifiable cases in the Hutt Valley, Wairarapa and Wellington 1/12/2015 - 29/2/2016.

Notifiable Condition	Number of confirmed cases (with additional 'probable' cases in brackets)			
	Hutt	Wellington	Wairarapa	Totals
Campylobacteriosis	49	114	20	183
Cryptosporidiosis	1	10		11
Dengue fever	1	5(1)		6(1)
Gastroenteritis	1(5)	8(16)	1(2)	10(23)
Giardiasis	4	36	2	42
Hepatitis B		1		1
Invasive pneumococcal disease		2		2
Legionellosis	5	6	0(1)	11(1)
Leptospirosis		1		1
Listeriosis	1			1
Malaria	2		1	3
Meningococcal disease		3		3
Paratyphoid fever		1		1
Pertussis	8(6)	15(7)	1	24(13)
Salmonellosis	13	27	4	44
Shigellosis		2		2
Taeniasis		1		1
Tuberculosis disease	1(1)	5(1)		6(2)
VTEC/STEC infection	2			2
Yersiniosis	11	17	1	29
Zika virus	3	4(1)		7(1)
Totals	**102(12)**	**258(26)**	**30(3)**	**431(41)**

Notes

- The three malaria cases were acquired overseas, with travel within the incubation period including to Sudan and Kenya.
- The leptospirosis case had exposure to contaminated water in a bat cave.
- Cases of dengue infection were acquired overseas including in Samoa, Papua New Guinea, Cook Islands and India.
- Legionella cases nearly all had contact with potting mix used for gardening.
- Four people with symptoms of ciguatera fish poisoning had consumed marine eel brought from Samoa to New Zealand and are included in 'gastroenteritis' in the table above.
- Eleven of 24 cases of confirmed pertussis were from Kapiti area, principally from a community of people who had chosen not to receive vaccination.
- Salmonella cases' exposures included: consumption of BBQ food, undercooked chicken, raw milk, and by exposure overseas to contaminated water.
- Zika cases were exposed in the Pacific Islands (especially in Samoa), and one case was exposed in Brazil.
- One case of cutaneous diphtheria was investigated but was found to be a non-toxigenic strain of the bacteria, and so is not included above.

Sources

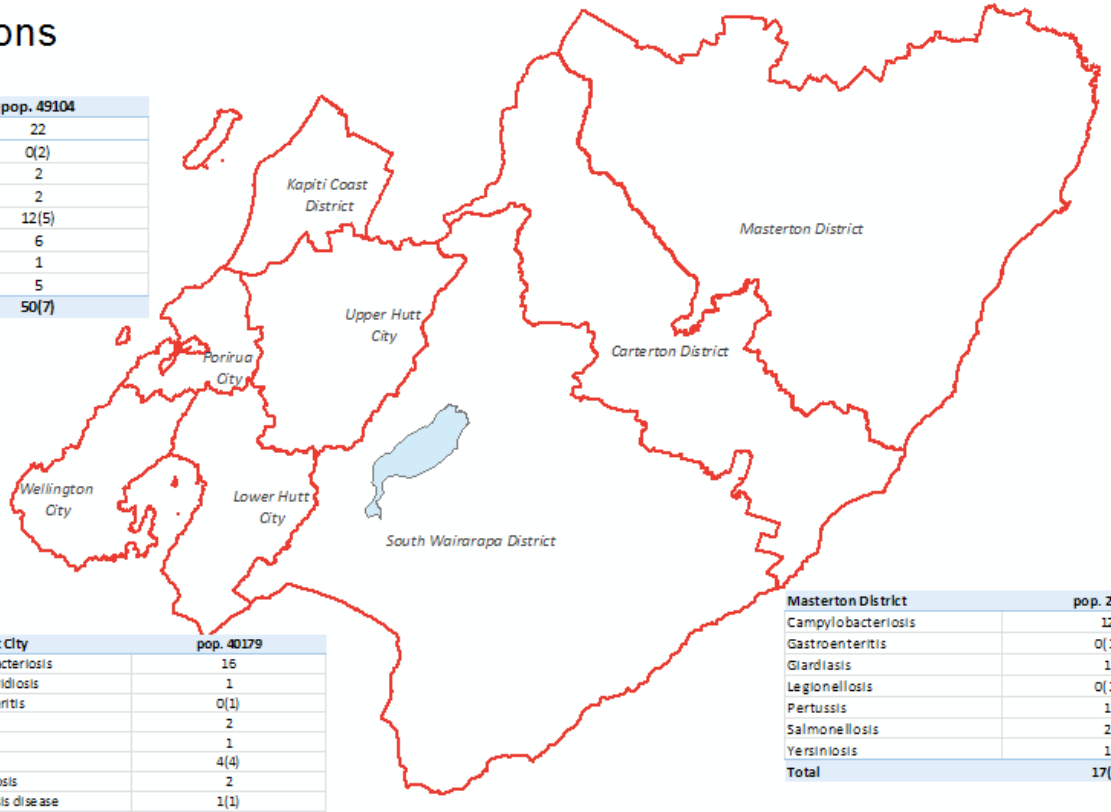
1. ESR. Episurv database of notifiable conditions accessed 9/3/2016.
2. Regional Public Health case notes.

Regional Public Health Notifications

1st December 2015 to 29th February 2016

Kapiti Coast District	pop. 49104
Campylobacteriosis	22
Gastroenteritis	0(2)
Giardiasis	2
Legionellosis	2
Pertussis	12(5)
Salmonellosis	6
Tuberculosis disease	1
Yersiniosis	5
Total	**50(7)**

Porirua City	pop. 51717
Campylobacteriosis	15
Dengue fever	1
Gastroenteritis	0(1)
Giardiasis	10
Hepatitis B	1
Invasive pneumococcal disease	1
Salmonellosis	4
Yersiniosis	4
Zika virus	3
Total	**39(1)**



Wellington City	pop. 190959
Campylobacteriosis	77
Cryptosporidiosis	10
Dengue fever	4(1)
Gastroenteritis	8(13)
Giardiasis	24
Invasive pneumococcal disease	1
Legionellosis	4
Leptospirosis	1
Meningococcal disease	3
Paratyphoid fever	1
Pertussis	3(2)
Salmonellosis	17
Shigellosis	2
Taeniasis	1
Tuberculosis disease	4(1)
Yersiniosis	8
Zika virus	1(1)
Total	**169(18)**

Upper Hutt City	pop. 40179
Campylobacteriosis	16
Cryptosporidiosis	1
Gastroenteritis	0(1)
Giardiasis	2
Malaria	1
Pertussis	4(4)
Salmonellosis	2
Tuberculosis disease	1(1)
Yersiniosis	2
Total	**29(6)**

Lower Hutt City	pop. 98238
Campylobacteriosis	33
Dengue fever	1
Gastroenteritis	1(4)
Giardiasis	2
Legionellosis	5
Listeriosis	1
Malaria	1
Pertussis	4(2)
Salmonellosis	11
VTEC/STEC infection	2
Yersiniosis	9
Zika virus	3
Total	**73(6)**

Masterton District	pop. 23352
Campylobacteriosis	12
Gastroenteritis	0(1)
Giardiasis	1
Legionellosis	0(1)
Pertussis	1
Salmonellosis	2
Yersiniosis	1
Total	**17(2)**

Carterton District	pop. 8235
Campylobacteriosis	2
Gastroenteritis	1
Salmonellosis	1
Total	**4**

South Wairarapa District	pop. 9528
Campylobacteriosis	6
Gastroenteritis	0(1)
Giardiasis	1
Malaria	1
Salmonellosis	1
Total	**9(1)**

Notes:

1. Population data from Statistics New Zealand 2013 Census 'usually resident population'.
2. Tables present the number of 'confirmed cases', with additional 'probable cases' in brackets.
3. Notification data from Episurv database. ESR, 9/3/2016.

Figure 1: Notifiable cases in the Hutt Valley, Wairarapa and Wellington 1/12/2015 - 29/2/2016, tabulated by territorial authority.

TO SWIM OR NOT TO SWIM - ALGAL BLOOMS IN RECREATIONAL WATER

Image: Benthic cyanobacteria floating raft Mangaroa River, 2008. Image courtesy of: *Greater Wellington Regional Council.*

Key public health messages:

1. Toxic algae (cyanobacteria) are present in our regional rivers and lakes/ponds.
2. Toxic algae pose a health risk via the release of toxin during a bloom.
3. Significant human exposures to toxic algae remains rare in New Zealand.
4. Pets (especially dogs) are more likely to be exposed.
5. Regional Public Health works alongside the region's councils to ensure our recreational waters are safe and to manage the risk of exposure to algal blooms.

Our rivers and lakes in New Zealand are populated by cyanobacteria (formally known as blue-green algae, they are bacteria that obtain energy through photosynthesis). Normally, these stay at low levels and are not problematic. In certain circumstances - warm weather, low water flows and the presence of nutrients - cyanobacteria can rapidly grow into an algal bloom and produce toxins which are harmful to health. Weather during this recreational water season has provided perfect conditions for algal blooms in some of our rivers and lakes.

This article will explore the health impacts of cyanobacteria and the public health management of our recreational waterways.

There are two types of cyanobacteria that pose a risk to humans:

- Planktonic: these are free-floating and found in lakes or ponds; and
- Benthic: forms clumps or mats within rivers.

Why are algal blooms hazardous?

In their normal low concentrations, cyanobacteria pose no health threat. However, when an algal bloom occurs, cyanobacteria can produce harmful toxins or cyanotoxins at high concentrations and cause harmful effects. Not all species produce toxins and even those that do, don't produce toxins all of the time. As testing for toxins is not usually practicable, it is safest to assume that cyanobacteria contain toxin. The key exposure routes in humans are ingestion (e.g. consuming algae or water contaminated with cyanotoxins), aspiration or direct physical contact. Certain animals (e.g. fish and birds) can accumulate toxins, making them another exposure risk if eaten. Acute exposure to cyanotoxins can result in a myriad of clinical features, which will be different depending on the exposure route and the type of cyanotoxin (Table 1).

Table 1: Clinical features of exposure to toxic algae.

Exposure Route	Clinical features
Ingestion or aspiration of toxic algae *OR* Ingestion or aspiration of water contaminated with cyanotoxins *OR* Ingestion of animals (e.g. fish) from contaminated water.	**General:** Fever and fatigue. **Respiratory:** Inflammation of the aero-digestive tract, breathing difficulties and pneumonia. **Gastrointestinal:** Nausea, vomiting, diarrhea and elevated liver enzymes. **Renal:** Acute kidney injury. **Neurological:** Headache, paresthesias and cramping.
Contact with skin or mucous membranes.	Conjunctivitis, dermatitis and blistering.

It is rare for humans to suffer serious health effects from cyanotoxin exposure. However, deaths have been recorded internationally following cyanotoxin contamination of drinking water.

In contrast to humans, animal exposure is more common (especially dogs). This can result in death of the animal, usually after the animal has ingested cyanobacterial mats. Animal exposures and deaths often cause great concern in the community.

How to identify an algal bloom

In a lake or pond

Planktonic cyanobacteria are responsible for causing algal blooms in lakes and ponds. At high levels they tend to make the water cloudy and murky. Surface scum and globules of algae may also be visible. In heavier blooms, the water may look like 'pea-green soup' (Figure 1, 2).

Figure 1: Algal bloom in a lake/pond.

Figure 2: Shoreline scum of an algal bloom.

In a river

Benthic cyanobacteria are the major cause of algal blooms in rivers. They can cause dark brown or black mats on river rocks or the riverbed. These can dislodge and wash onto the river bank or form rafts (Figure 3).

Figure 3: Benthic cyanobacteria in the Hutt River, 2008.
Image courtesy of: *Greater Wellington Regional Council.*

What to do if you have a patient with a suspected exposure?

If someone presents to you with a suspected cyanobacteria exposure that may fit with the symptoms in Table 1, please **contact the National Poisons Centre on 0800 764 766 for advice, and notify Regional Public Health by calling (04) 570 9002.** Useful information to gather from the patient includes: site of exposure; activity or reason for suspecting cyanobacteria exposure; intensity of exposure (e.g. duration, likely ingestion of water); onset, duration and nature of symptoms; and, whether others have been exposed (with or without symptoms).

What is the role of public health in algal blooms?

Regional Public Health's role in addressing algal blooms is two-fold:

1. To take notifications from GPs to inform action that needs to be taken to prevent further exposure and increase understanding of human exposure and illness to cyanotoxins.
2. To work alongside our councils to:
    a. Ensure our regions' recreational waters are safe.
    b. Assist with risk communication when any recreational water source poses a health risk.
    c. To help improve the community understanding of toxic algae and the means to reduce the risk of exposure.

What are the key risk communication messages for the public?

1. Toxic algae can pose a health risk in our recreational water.
2. If you see a toxic algae warning or identify toxic algae in the water:
    a. Do not swim or enter the water.
    b. Put your pets on a leash.
3. If you think your animal has eaten toxic algae:
    a. Take your animal to the vet immediately.
4. If you think you have been exposed and may have symptoms related to toxic algae:
    a. Seek medical advice, for example from your general practitioner.
    b. Contact the National Poisons Centre on 0800 764 766 for advice.

Where can I find more information?

Further information on toxic algae and the current status of our recreation water can be found at **http://www.gw.govt.nz/summer-check**

DISEASE NOTIFICATION – HOW YOUR GENERAL PRACTICE CAN HELP

In 2013 Regional Public Health launched the *Public Health Disease Notification Manual* to assist in the disease notification process.

Updates for this manual are located at **http://www.rph.org.nz**

To enable our staff to promptly initiate disease follow up we need your help in the following ways:

1. Inform your patient of the illness they have been diagnosed with or exposed to and that public health staff may be in contact
2. Notify Regional Public Health of the disease within a timely fashion (after the case has been informed) - by phone for urgent notifications (as soon as you are aware), or by faxing a case report form for non-urgent (within one working day). You can find a list of urgent vs. non-urgent notifications on the Regional Public Health website under Health Professionals > Notifiable Diseases.
3. Complete all sections of the form, especially:
    - work/school/early childhood centre information
    - name of parent or guardian for a child under 16 years old.

The 3D HealthPathways includes a pathway on reporting notifiable diseases: **http://3d.healthpathways.org.nz**

PUBLIC HEALTH ALERTS

Regional Public Health communicates public health alerts to primary care practices by fax and by email. These communications often contain information that needs to be urgently taken on board by general practitioners and primary care nurses.

Please contact Regional Public Health on (04) 570 9002 if you have not been receiving alerts, or to check and confirm that we have your correct details.

If you are not yet receiving alerts by email, and would like to, then you can provide your email address via phoning the number above.

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 enquiries regarding the Public Health Post, please contact Dr Jonathan Kennedy, medical officer, Regional Public Health, by email **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 Craig Thornley, Dr Annette Nesdale and Dr Stephen Palmer.**

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