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

January 2015

EBOLA VIRUS DISEASE PUBLIC HEALTH READINESS

Report by Dr. Sarah Jefferies, Public Health Registrar, Regional Public Health

Background in brief

Ebola Virus Disease (EVD) is the latest zoonosis to trigger a Public Health Emergency of International Concern (PHEIC; a WHO declaration requiring multinational responses under the International Health Regulations)[1]. The outbreak, centered in Guinea, Liberia and Sierra Leone, is unprecedented, with >17,000 confirmed cases and >6,000 deaths as of 3rd December[2].

Table 1 lists factors contributing to the current epidemic[3,4]. One of the most concerning features of this outbreak is reportedly high mortality, between 60-90% [2,4]. However, prompt supportive care significantly improves survival; particularly for those presenting within 3-5 days of symptom onset (e.g. fever, headache, fatigue)[5]. Later symptoms (e.g. diarrhoea, vomiting, bleeding) are associated with poorer prognosis and higher risk of disease transmission.

Microbiology	Long incubation period (2-21 days); Potentially long infectious period (e.g. convalescent sexual contact); no current cure.
West African socio-demographic factors	Ebola animal reservoir (e.g. fruit bats) with increasing potential cross-transmission due to rapid human population growth and agricultural-forest mosaics; increasing urbanization and interregional mobility of people (uncontrolled EVD transmission became established in urban cities and slum areas); poor health care infrastructure.
West African socio-cultural factors	Fear, stigmatisation and resource constraints contribute to late presentations or unidentified cases; traditional funeral rites involve close contact with infected body fluids.

Table 1. Factors contributing to the severity of the Ebola outbreak in West Africa[3,4].

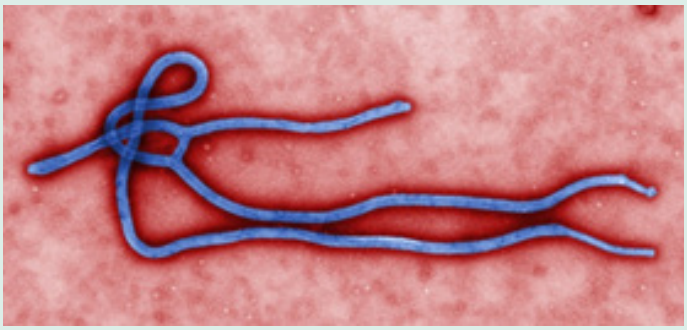

Figure 1. Ebola virus, Family: Flivoviridae/filamentous virus, Outbreak species: Zaire. www.cdc.gov

Readiness in New Zealand

Key areas of Regional Public Health's EVD response planning have comprised: working with the Ministry of Health (MoH) to provide information to professionals and the public; border response work including managing returning aid workers; and ensuring robust procedures are in place for disease surveillance, case management and contact tracing.

Ebola is a notifiable disease under the viral haemorrhagic fever category and public health requires immediate notification of a case **upon suspicion**. As of 31st August 2014, Ebola has also become a quarantinable disease in New Zealand.

As an evolving epidemic, the MoH and public health units around the country are closely following international events, managing high information flow and disproportionate risk perceptions. Regular national and sub/regional interagency meetings are ongoing, and Regional Public Health (RPH) has contributed to three evening Ebola information and Personal Protective Equipment sessions provided to Primary Health Organisations in the Greater Wellington Region. For up-to-date community Ebola management information see 3D HealthPathways under RPH's web links below.

Wellington Hospital is the designated regional Ebola treatment centre. However, all health services are expected to be able to manage suspected cases safely until transfer to a designated facility can occur. New Zealand now has

four mobile isolation pods (isopods) to assist air transfers. There are 200 negative pressure isolation rooms among the four designated treatment hospitals nationally.

To date, and in collaboration with the MoH, RPH have managed four returning Ebola aid workers. Twice daily temperature and symptom monitoring is required for 21 days following the last potential EVD exposure. Much of this monitoring period (greater than the typical incubation period) is spent overseas prior to repatriation. Public Health staff meets returning aid workers at the border.

As yet there have been no cases of suspected EVD presenting at Wellington's entry ports. Nationally, the numbers of passengers arriving from affected countries is very low.

As at 3rd December 2014, New Zealand has no travel and trade restrictions with West Africa. However, travel to these countries, unless through a reputable aid agency or via Government deployment, is not advised. As always, all New Zealand nationals travelling internationally should be advised to register on the Safe Travel website to enable speedy Consular support if required (**www.safetravel.govt.nz**).

New Zealand's health professional regulatory bodies set standards of practice expected of doctors and nurses during pandemics[6,7]. Find links to these via RPH's website below.

Quick Q & As

When should we suspect EVD?

Keep up to date with the case definition found here: **www.health.govt.nz/our-work/diseases-and-conditions/ebola-updates/case-definitions-ebola-virus-disease**

How infectious is the current strain of EVD?

The basic reproductive number (R0; average number of people a single case is likely to infect) for EVD is approximately 2, comparable to Hepatitis C[8]. Infection requires direct contact with infected body fluids. It is not airborne and not expected to become so.

Ebola can survive for several hours on dry surfaces, and potentially several days in excreted body fluids at room temperature. However, the virus is deactivated by hospital-grade disinfectants, including bleach solution[1]. Good infection prevention control procedures are key to disease control. (See MoH information[1] and the RPH web links below).

What are the chances of an EVD outbreak in New Zealand?

Extremely low[1]. There is also a very low risk of an infected traveller arriving in the country.

How long is this epidemic likely to last?

The epidemic is likely to continue for several months at least[2].

Are there any effective treatments on the horizon?

Various options are under development[9]. These include convalescent plasma, chimeric mouse-human antibodies (ZMapp), hyperimmune globulin, and anti-virals. There are two recombinant vaccines in Phase 1 clinical trials, with another expected to commence clinical trials in Jan 2015.

Where do I find the latest information?

Key links can be found on the RPH webpage: **www.rph.org.nz** → Health Professionals → Ebola Information.

These links include:

- 3D HealthPathways – **http://3d.healthpathways.org.nz/** → Ebola
- MoH – **www.health.govt.nz/our-work/diseases-and-conditions/ebola-updates**
- SafeTravel – **www.safetravel.govt.nz**
- **MCNZ** and **NZNO** websites[6,7].

References

1. Ministry of Health New Zealand. Updated information for health professionals: Ebola virus disease (EVD). Ministry of Health New Zealand; 25 November 2014.
2. World Health Organization. Ebola Response Roadmap Situation Report. Geneva: World Health Organization; 26 November 2014.
3. Alexander K, Sanderson C, Marathe M, Lewis B, Rivers C. What factors might have led to the emergence of Ebola in West Africa? PLoS Negl Trop Dis. 2014; Nov. Pending print version, available from: **http://blogs.plos.org/speakingofmedicine/2014/11/11/factors-might-led-emergence-ebola-west-africa/**
4. Baize S, Pannetier D, Oestereich L, Rieger T, Koivogui L, Magassouba N. Emergence of Zaire Ebola Virus Disease in Guinea. N Engl J Med. 2014;371:1418–25.
5. Mahanty S, Bray M. Pathogenesis of filoviral haemorrhagic fevers. Lancet Infect Dis. 2004;4:487–98.
6. Medical Council of New Zealand. Note from Council's Chairman regarding Ebola virus concerns. Medical Council of New Zealand. [Website cited 3 Dec 2014]. Available from: **https://www.mcnz.org.nz/assets/News-and-Publications/Statements/Advice-on-standards-expected-of-doctors-during-a-pandemic.pdf**
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8. Althaus C. Estimating the Reproductive Number of Ebola Virus (EBOV) During the 2014 Outbreak in West Africa. PLOS Curr Outbreaks. 2014;1:1–9.
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TEN YEARS OF OUTBREAKS IN THE HUTT VALLEY, WAIRARAPA AND WELLINGTON

Outbreaks of illness can require a substantial public health response to protect the contacts of a case and the population at large.

An example of such a response occurred in February 2014, when six cases of hepatitis A in the Hutt Valley were notified to Regional Public Health, with one person hospitalised for seven days. The cases developed in an extended family group following the infection of the index case. This baby was most likely infected while in Samoa and was in retrospect mildly symptomatic for several weeks before the other family members became unwell. 96 contacts were assessed, resulting in 68 people (adults and children) being vaccinated by public health nurses, who arranged vaccine clinics for an early childhood centre, workplace and for the extended family. Hygiene, cleaning and disinfection advice was given to involved households, an early childhood centre and workplaces, with cases advised to be excluded from work until seven days after the onset of jaundice. No further cases developed.

This article summarises some characteristics of outbreaks identified in Wellington, Wairarapa and the Hutt Valley in the ten years from November 2004 to October 2014.

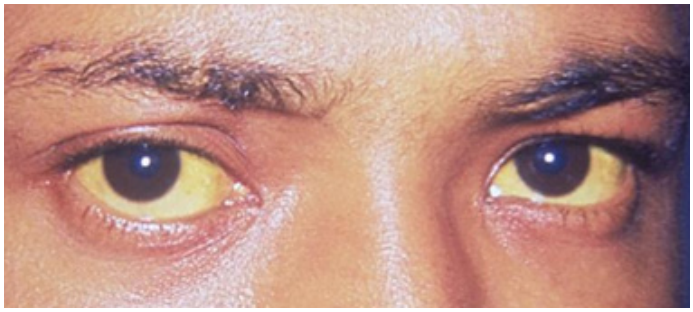


Figure 2. Dr. Thomas F. Sellers[4].

Over the ten year period Regional Public Health responded to between two and seventeen outbreaks per month with an outbreak defined as a localised increase in cases of a condition "clearly in excess of that normally expected"[1].

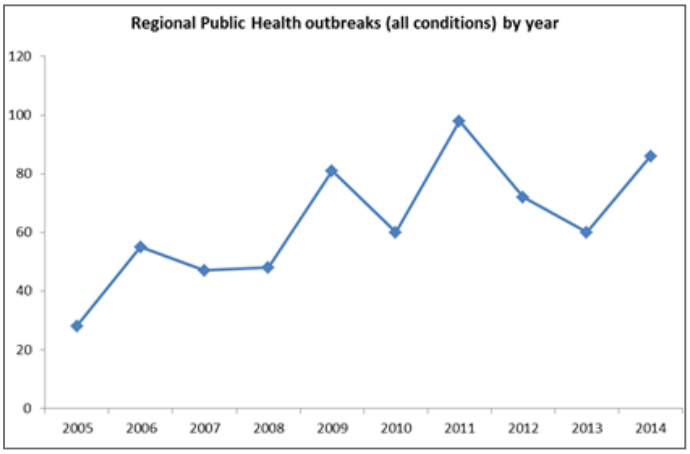


Figure 3.

Note that the 2014 figures are year up to 31/10/2014.

Most outbreaks require investigation of the conditions that have led to the outbreak, while the response needed varies according to the initial findings. A response may include, for example, provision of advice and educational material to early childhood centres and institutions, visits to homes and commercial premises, and the clinical assessment of cases and potential contacts for contact tracing purposes.

Outbreak size

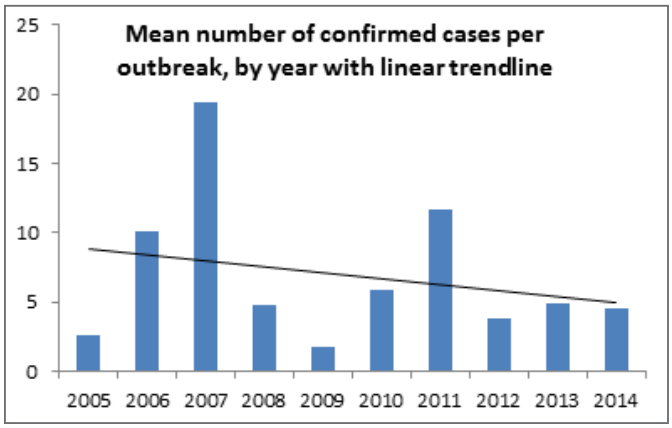


Figure 4.

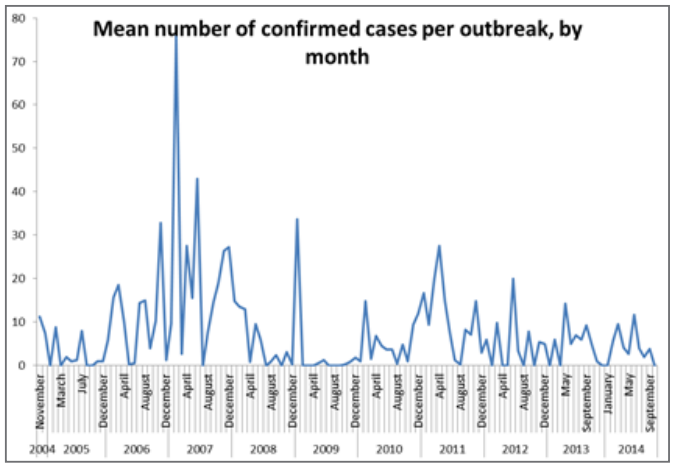


Figure 5.

Note – large outbreaks of norovirus and 'gastroenteritis-unknown cause' in 2006-2007 and 2011 were responsible for the large peaks observed.

Overall, the number of outbreaks identified each year has been progressively rising (Fig. 3), but on average outbreaks are getting smaller (Fig. 4 and 5). Note that some outbreaks are based on probable cases which are not included in the charts above.

Interpreting the trends of reported outbreaks can be complex as a number of factors can influence whether RPH is notified of an outbreak e.g. reporting bias due to raised institutional awareness of the requirement to report outbreaks, or media reports raising awareness; ease of laboratory testing to confirm communicable diseases. The increasing frequency of outbreaks may reflect an increasing population size but could also suggest that the environment is becoming more conducive to the initiation of outbreaks.

However, the smaller size of outbreaks could suggest improved management of outbreaks once they develop.

Pathogens

Most outbreaks are of gastrointestinal illness, with enteric pathogens accounting for 83% of outbreaks and 90% of cases (Fig. 6).

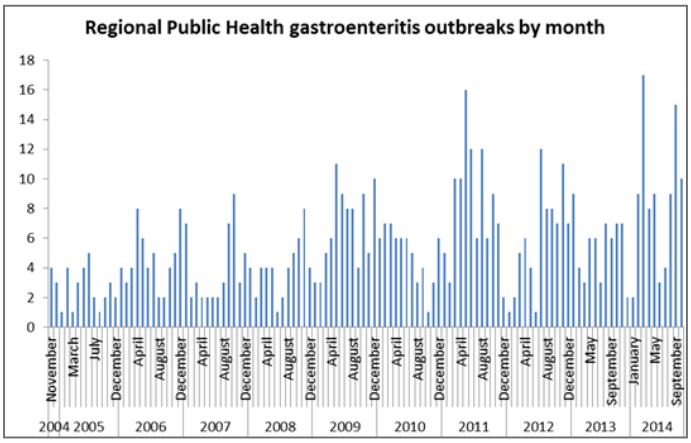


Figure 6.

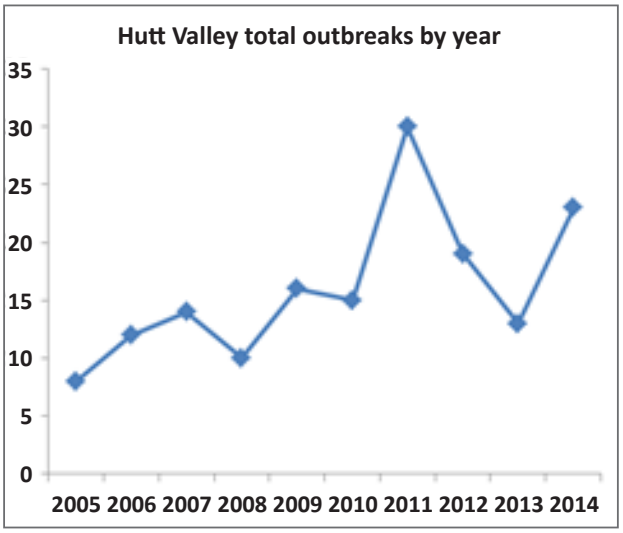
In a ten year period, 1/11/2004 - 31/10/2014 outbreak pathogens, when identified, have included a wide range of organisms and toxins, with viral enteric pathogens responsible for a large proportion of outbreaks (Table 2):

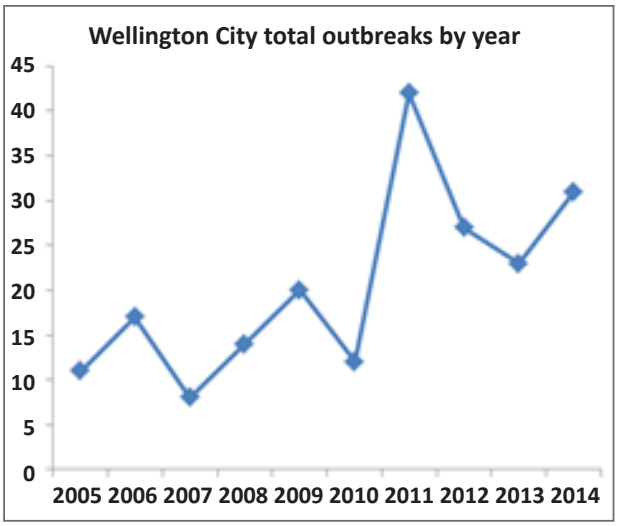
Pathogen / Condition	Number of outbreaks	Total number of linked cases	Total number of confirmed cases linked to outbreak
Enteric Totals	**533**	**9866**	**4060**
Norovirus	222	6029	2655
Gastroenteritis - unknown pathogen	193	2405	1003
Rotavirus	51	859	257
Campylobacter	25	167	56
Salmonella	11	110	7
Clostridium	5	78	23
Cryptosporidium	5	45	6
Shigella	4	26	13
Hepatitis virus	3	10	
Sapovirus	3	63	18
Astrovirus	2	10	
Bacillus	2	5	2
Giardia	2	29	
Yersinia	2	11	5
Ciguatera fish poisoning	1	6	6
Escherichia Coli	1	4	
Histamine (scombroid) fish poisoning	1	9	9
Non-Enteric Totals	**109**	**1340**	**368**
Bordetella pertussis	48	344	64
Influenza virus	29	777	161
Mycobacterium	17	66	16
Influenza-like illness	4	55	70
Mycoplasma	2	29	
Varicella zoster	2	21	21
Carbon monoxide poisoning	1	4	3
Chlorine	1	30	30
Lead poisoning	1	3	
Leptospirae	1	3	1
Measles virus	1	3	2
Neisseria	1	2	
Staphylococcus	1	3	
Grand Total	**642**	**11206**	**4428**

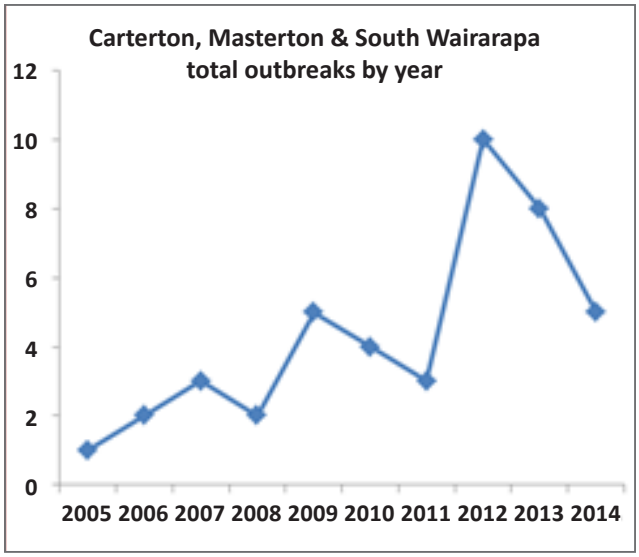
Table 2.

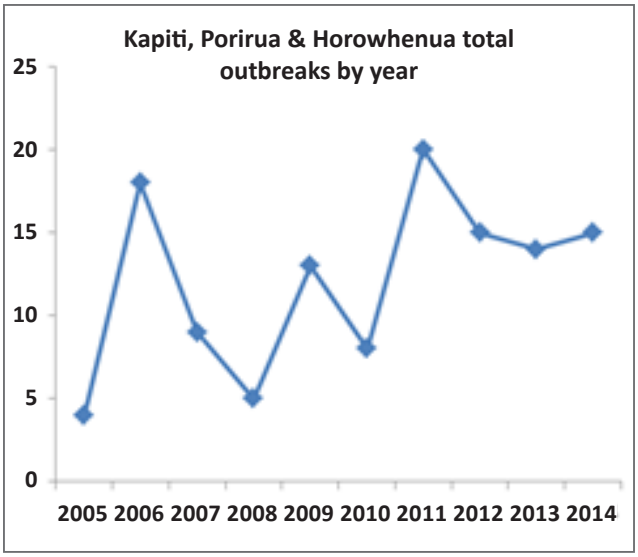
Geographical trends over time

The number of outbreaks have been increasing across the region as illustrated by the following graphs:









Note that the 2014 figures are for the year up to 31/10/2014.

Enteric infections predominated in all districts with the larger centres experiencing outbreaks caused by a wider variety of pathogens (Table 3).

Outbreaks by territorial authority and causative agent November 2004 to October 2014

	Enteric infections	Bordetella pertussis	Carbon Monoxide	Chlorine	Influenza virus	Lead	Leptospira	Measles virus	Mycobacterium	Mycoplasma	Staphylococcus	Varicella zoster
Carterton District	4											
Horowhenua District	1											
Kapiti Coast District	60	2			3					1		
Lower Hutt City	100	7			6				1	1	1	1
Manawatu District	1											
Masterton District	28						1					
Porirua City	45	2		1	4				2			
South Wairarapa District	9				1							
Upper Hutt City	43								1			
Wellington City	183	6	1		14	1			2			

Table 3.

Hospitalisations and deaths associated with outbreaks

Most outbreaks do not result in hospitalisation of cases (Fig. 7). However, cases who become ill while hospitalised (or in hospital level care in a long term care facility) as a result of an institutional outbreak, would not be captured by these statistics.

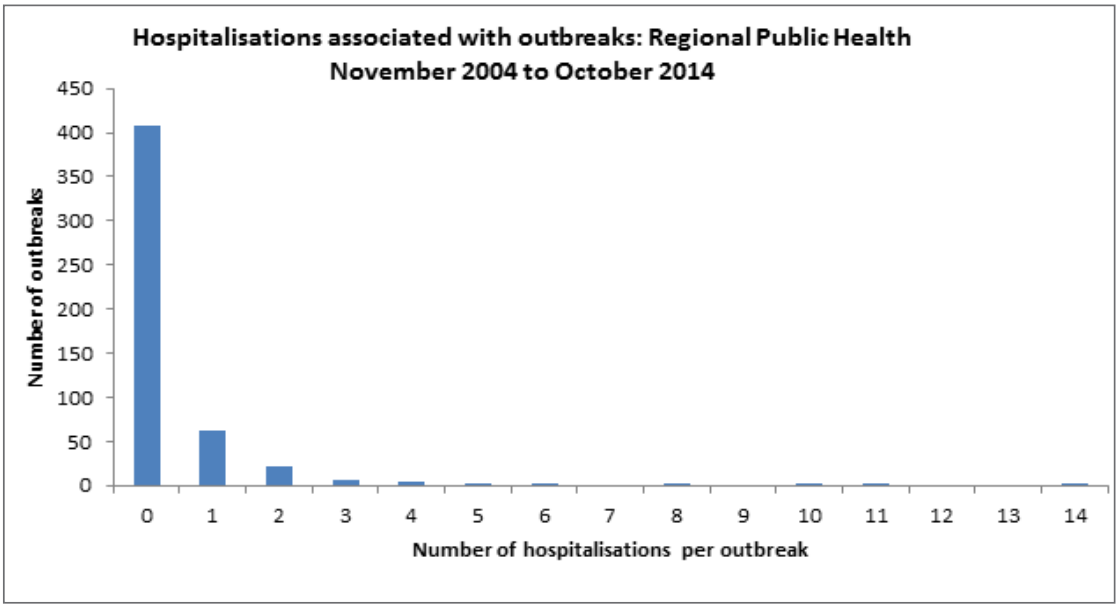


Figure 7.

Deaths associated with outbreaks are rare, on average two per year over the last 10 years, and may be associated with comorbidities rather than the outbreak illness itself. Where a link is not clear the Medical Officer of Health decides whether the death is attributable to the outbreak itself and data are recorded accordingly. Pathogens linked to deaths during outbreaks from November 2004 to October 2014 included influenza viruses, gastrointestinal infections, and in one case, mycobacterium tuberculosis.

Outbreak management requires good systems and cooperation between agencies and the public

Effectively managing outbreaks of communicable diseases to protect the population relies on cooperation between health agencies, the public, commercial interests and governmental agencies. Current trends suggest that we will continue to experience outbreaks but actions such as early implementation of control measures can keep the number of people sick per outbreak low.

Investigation of outbreaks helps to ensure timely control measures are implemented to reduce the spread of illness. In addition, these investigations help to inform what can be done to both prevent and reduce the amount of spread for future outbreaks.

Primary care doctors and nurses can be in a good position to notice unusual links between their cases. Early notification of a possible outbreak assists Regional Public Health to limit the extent of an outbreak.

Regional Public Health would like to thank all those who have assisted with investigations in the past and those who will continue to do so in the future.

Sources

1. Guidelines for the Investigation and Control of Disease Outbreaks. Porirua: Institute of Environmental Science & Research Limited; Updated 2011.
2. ESR. Episurv database of notifiable conditions accessed 15/12/2014.
3. Regional Public Health case notes.
4. "Jaundice eye" CDC/Dr. Thomas F. Sellers/Emory University. Centers for Disease Control and Prevention's Public Health Image Library (PHIL), identification number #2860. **http://commons.wikimedia.org/wiki/File:Jaundice_eye.jpg#mediaviewer/File:Jaundice_eye.jpg**

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/content/510fd7e9-eba9-4e7b-93f2-3e2718b13838.html**

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). For a list of urgent vs. non-urgent notifications go to **http://www.rph.org.nz/content/77725edc-9633-4143-b161-75a4ca3d2c2b.cmr**
3. Complete all sections of the form found at **http://www.rph.org.nz/content/9bb56554-2f2d-4b09-ad05-bc22074eb102.html**, 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**

WHAT CAN RPH OFFER FOR PRIMARY CARE?

Dr. Oz Mansoor, public health physician and former general practitioner, has joined RPH with a focus on developing synergies with primary care. We are seeking ideas from practice staff, practice nurses and general practitioners on how your public health unit can help with your work. If you have any suggestions, or would be interested to meet with Oz to discuss, you can contact him by phone **04 587 2632**, or email **osman.mansoor@huttvalleydhb.org.nz**

WHAT ARE YOU REPORTING

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

Notifiable Condition	Number of cases (confirmed cases only)			
	Hutt	Wairarapa	Wellington	Totals
Campylobacteriosis	43	17	153	**213**
Cryptosporidiosis	4	7	13	**24**
Dengue fever			2	**2**
Gastroenteritis - unknown cause	1		1	**2**
Gastroenteritis/foodborne intoxication	46		80	**126**
Giardiasis	15	5	28	**48**
Hepatitis A	2		1	**3**
Hepatitis B	2			**2**
Invasive pneumococcal disease	6	1	8	**15**
Leprosy	1			**1**
Measles			1	**1**
Meningococcal disease			1	**1**
Mumps			1	**1**
Pertussis (additional probable in brackets)	3 (1)		16 (6)	**19 (26)**
Rheumatic fever - initial attack	1	1	1	**3**
Salmonellosis	6	4	6	**16**
Shigellosis			4	**4**
Taeniasis			1	**1**
Tuberculosis disease - new case	4		2	**6**
Yersiniosis	10	1	34	**45**
Totals	**144**	**36**	**353**	**530**

Table 4. Notifiable cases in the Hutt Valley, Wairarapa and Wellington 1/09/2014 - 30/11/2014.

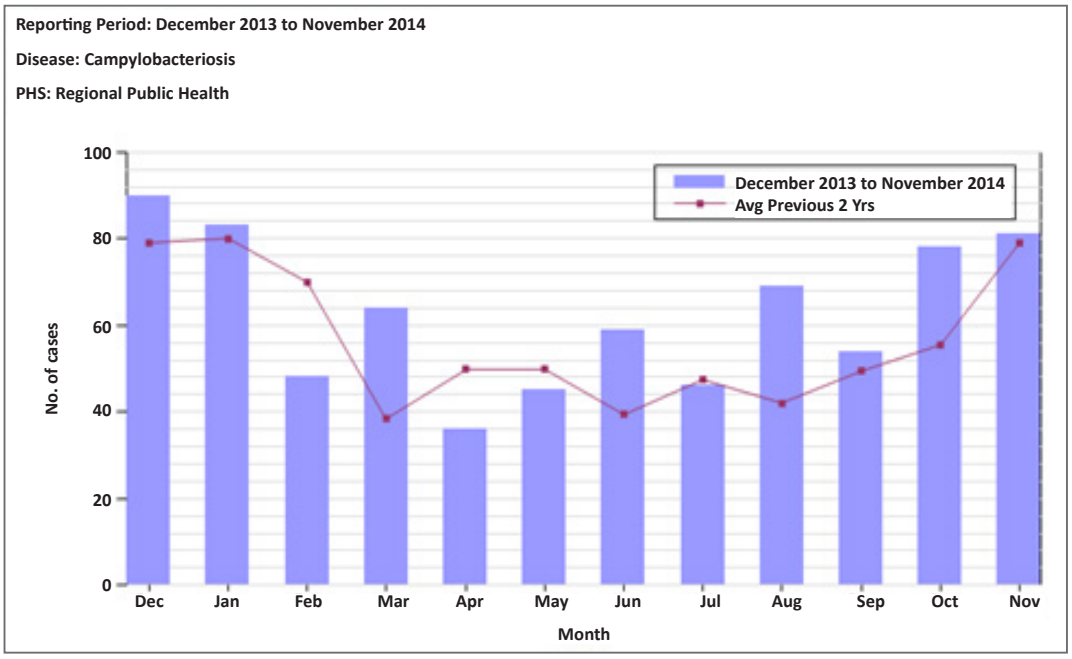


Figure 8.

Notes on Table 4:

- Campylobacter case numbers are high compared with the previous three month period, consistent with the average trend for the previous 2 years (Fig. 8). Overall despite the large number of cases relative to other notifications, rates of campylobacter remain low compared to pre 2008 as illustrated by the following charts (Fig. 9).

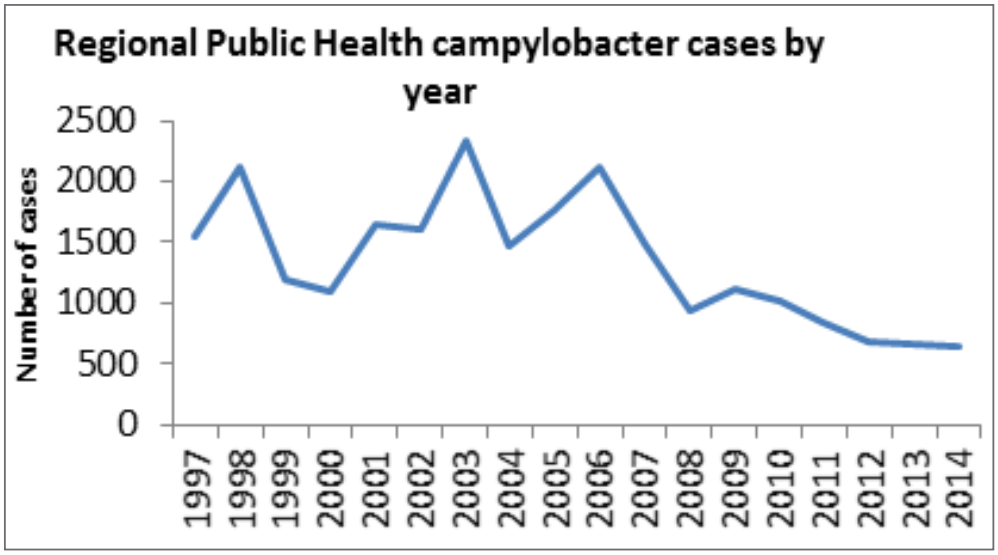


Figure 9.

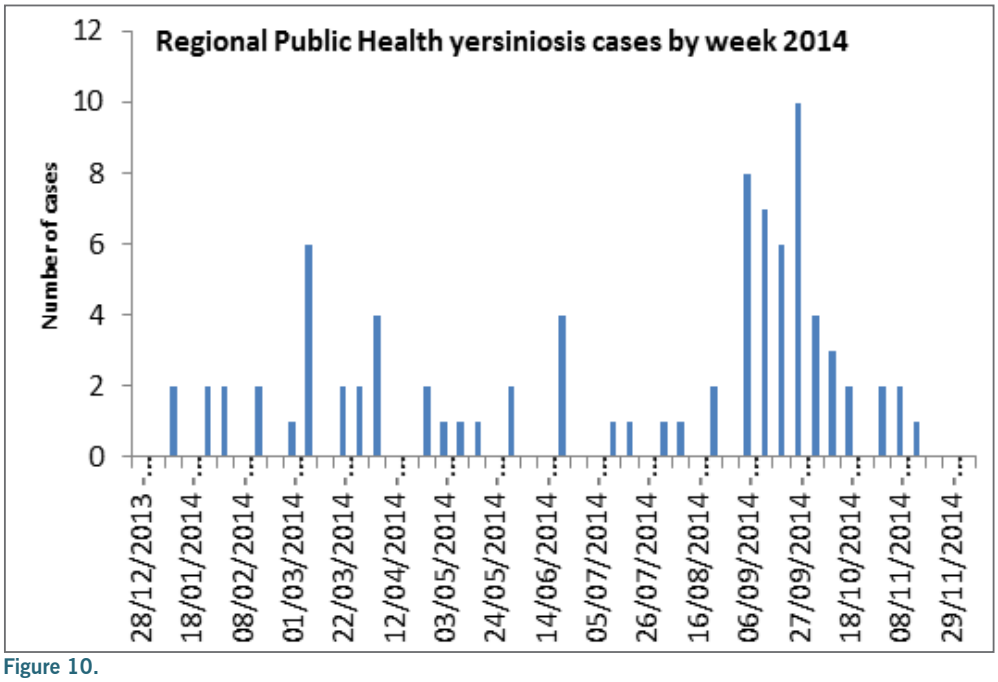


Figure 10.

- The leprosy case in the Hutt Valley is not known to be linked to the leprosy outbreak in the Wellington region in 2012-2013, but there are some shared risk factors which are being investigated.
- The 45 yersiniosis cases include the Greater Wellington contribution to the recent national outbreak of Yersinia pseudotuberculosis linked to nationwide fresh produce (Fig. 10).

Sources

1. ESR. Episurv database of notifiable conditions accessed 1/12/2014.
2. Regional Public Health case notes.

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**

Produced by: Regional Public Health
Private Bag 31-907, Lower Hutt 5040
Ph: 04 570 9002 Fax 04 570 9211

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.**