Regional Public Health
Better Health For The Greater Wellington Region

Communicable Disease Bulletin

Circular letter to: General Practitioners and Practice Nurses

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Rift Valley Fever

With the football World Cup in South Africa in the news, some media have picked up on recent reports of Rift Valley Fever in South Africa. Seven of the nine provinces of South Africa have been affected with Limpopo and KwaZulu-Natal the only areas with no confirmed animal cases. The ten World Cup venues are distributed throughout the country and so may be in the areas affected. Most cases are in domestic animals, with few identified in wild animals. 203 human cases were identified to 21 April 2010 with 20 fatalities. Most cases have been in Free State and Northern Cape.

Direct contact with infected animal tissue or bodily fluids was established for most cases. The South African National Institute for Communicable Diseases advise that mosquito transmission may occur and tourists visiting farms or game parks should take appropriate preventive measures.

South Africa has been affected before, with the last major outbreak occurring in 1974-76 during prolonged heavy rains, causing 10,000 to 20,000 human cases. Sporadic outbreaks and human infections have been documented since then.

Rift Valley Fever is an arbovirus (a virus transmitted by arthropods). Transmission is by mosquitoes, aerosol or most commonly by direct contact with infective blood. Infections of Rift Valley Fever are often associated with the handling of animal tissues during necropsy or butchering No human to human transmission has been reported previously.

Symptoms include; fever, headache, malaise, arthralgia or myalgia, nausea and vomiting and sometimes conjunctivitis and photophobia. Fever may be diphasic. Retinal disease may develop in 0.5 – 2% of cases, meningoencephalitis in <1% and hepatitis / haemorrhagic fever in <1% of cases. The overall mortality is <1% although in those who develop the haemorrhagic form the mortality is as high as 50%. Sub-clinical and mild disease are common

The incubation period is usually 2-5 days and infections generally lead to immunity. The short incubation means that cases are unlikely to suddenly develop after tourists return to New Zealand unless they have very recently arrived. However with the usual variability and uncertainty about incubation times, possible exposure within the fortnight before the onset of illness is relevant information. There are no licensed human vaccines available but vaccines for livestock are part of the control measures used for an outbreak. Treatment for individual cases is usually supportive. Diagnostic or management advice when required should be sought from an infectious disease specialist.

Control measures include notification, blood and body fluid precautions, mosquito bite prevention measures, mosquito eradication, care with slaughtering when animals may be infected, vaccination of livestock and restriction of livestock movements to clean areas

Comprehensive up to date information is available on the South African National Institute for Communicable Diseases website: www.nicd.ac.za

Sources:

1. Rift Valley Fever Interim Report, South African National Institute for Communicable Diseases Communique, 2010. 14 May 2010.
2. Rift Valley Fever Outbreak. 2010 15/04/2010 (cited 03/04/2010); Available from www.nicd.ac.nz
3. Heymann, D.L. Control of Communicable Diseases Manual. 18th ed. 2004, Washington DC: APHA

INSIDE

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Gastroenteritis Outbreaks in Residential Care Facilities

Managing viral gastroenteritis outbreaks in institutions is challenging for all involved. The viruses responsible are endemic in the community and institutions can become a point of amplification. Residential care facilities make a lot of effort to reduce their exposure by requesting visitors with current or recent illness not visit, and by encouraging hand-washing and hand sanitiser use.

Regional Public Health investigates gastroenteritis outbreaks in residential care facilities to ensure that they are appropriately controlled. In doing this, infection control measures are checked and reviewed and the progression of the outbreak is monitored daily. Regional Public Health also facilitates diagnosis of the microbial cause of the outbreak.

Institutions receive specialist infection control advice from their District Health Board. This usually involves advice from health protection officers and infection control nurses. In the Capital and Coast District Health Board area a Community Infection Control Nurse role has been particularly valuable.

Five years of data (2004-2009) from Episurv Outbreak Reports were analysed to summarise recent events and to look at how residential care facilities with multiple outbreaks did on the second and subsequent events with respect to length of outbreak and attack rates (the number contracting the infection divided by the number potentially exposed). Some information was further analysed using Epi info.

Figure 1: Outbreak in residential care facilities in Wellington, Hutt Valley and Wairarapa 01/04/2004 - 31/12/2009

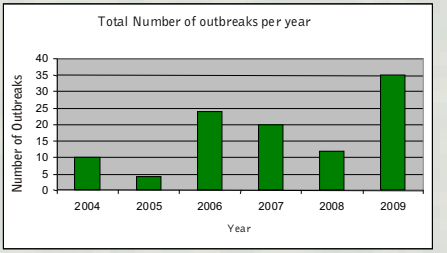
Residential Care Facilities with	No. of Residential Care Facilities	Outbreaks
One Outbreak	28 (49.2%)	28
Two Outbreaks	16 (28%)	32
More Than Two Outbreaks	13 (22%)	45
Totals	**57**	105

There were 105 gastroenteritis outbreaks in regional residential care facilities in the last five years. 48 (46%) of the outbreaks occurred in residential care facilities which had previously been affected by a similar outbreak in the five year period being looked at. To put it another way 77 (73%)of the outbreaks occurred in residential care facilities which had more than one outbreak notified within the five years.

Norovirus was the most common pathogen, being positively identified in 70 out of the 105 outbreaks. One outbreak was identified as being caused by rotavirus and the remaining 34 had no pathogen confirmed.

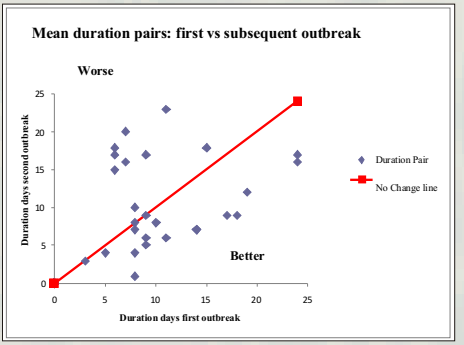
For those confused by the nomenclature changes over the years, norovirus used to be called Norwalk-like viruses (NLVs) and before that small round structured viruses (SRSVs).

Figure 2: Total number of outbreaks per year



However, institutions with more than one outbreak tended to do better with respect to the attack rate and marginally better with respect to the duration, during a subsequent outbreak:

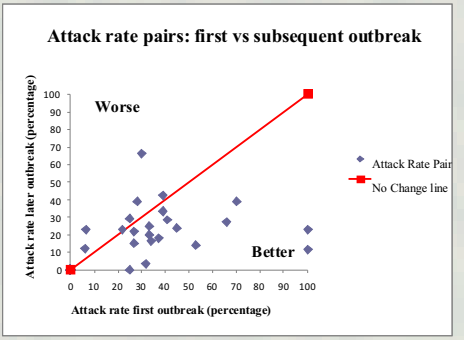
Figure 3: Duration of first and subsequent outbreak, same pathogens, for residential care facilities with more than one outbreak



Of the 27 institutions that had a repeat outbreak of the same pathogen, 15 institutions had shorter and 12 had the same or longer outbreak duration for the subsequent outbreak. The average duration of a 'first' outbreak was 10.9 days and the average duration of a subsequent outbreak was 10.8 days.

A higher proportion of those institutions with longer first outbreaks did better with subsequent outbreaks. For those institutions with a first duration of more than 14 days the average duration decreased from 19.5 days to 13.5 days for the subsequent attack. For those with a first duration of less than or equal to 14 days the average duration increased from 8.4 days to 10.0 days for the second attack.

Figure 4: Attack rate of first and subsequent outbreak, same pathogens, for rest homes with more than one outbreak



Of the 27 institutions that had a repeat outbreak of the same pathogen: 16 had a lower attack rate and 7 had the same or worse. The remaining 4 had attack rate data missing for at least one of the outbreaks and so could not be compared. All of the institutions with an attack rate in their first outbreak of greater than 40% showed much lower attack rates in subsequent outbreaks. The average attack rate for all of these outbreaks was 32%, with an average of 40% for a 'first' outbreak and an average of 24% for a subsequent outbreak. If the first outbreak had an attack rate of greater than 40% then the average attack rate dropped from 67.9% for the first outbreak to 23.6% for the second outbreak. If the first outbreak had an attack rate of less than or equal to 40% the average attack rate dropped from 27.8% to24.2%.

It appears that a more severe outbreak initially results in greater improvement in both duration of outbreak and attack rate for a subsequent outbreak.

Relationship with residential care facility size

The mean duration of outbreaks depending on the size of the institution was analysed. Those institutions with ≤ 100 total exposed staff and residents were arbitrarily considered a small institution and those with ≥ 100 exposed staff and residents a big institution. Big institutions had outbreaks with a mean duration of 12.3 days while outbreaks in small institutions had a mean duration of 8.6 days. This difference was statistically significant (p value = 0.0038).

The same investigation was done for the attack rate. Big institutions had a lower attack rate (mean 25.57) and small institutions had a higher attack rate (mean 39.44). This difference was statistically significant (p value = 0.0074).

A mixed picture

So the picture for gastroenteritis outbreaks in residential care facilities is a mixed one. 2009 was a bad year with a large number of outbreaks reported. No conclusions have been made regarding a cause for this rise.

Typically large residential care facilities have a lower proportion of residents affected, but they take longer to clear the infection. Small residential care facilities have a higher proportion of residents affected but clear the infection faster. This intuitively makes sense.

Most institutions managed to have a lower proportion of their residents affected in subsequent outbreaks perhaps indicating that some messages and processes dealing with the 'first' outbreak helped.

However there was only marginal difference overall in their ability to clear the outbreaks faster with subsequent outbreaks.

Those institutions with longer 'first' outbreaks on average improved with respect to duration for subsequent outbreaks, compared with those with shorter 'first' outbreaks which on average did marginally poorer with respect to duration subsequently. Those institutions with a higher proportion of their residents affected in a 'first' outbreak had a much greater improvement with respect to attack rate in subsequent outbreaks than those institutions with a lower proportion affected in the first outbreak. This could suggest that more is learned from a more severe outbreak, which is also intuitive.

There were a number of limitations to the interpretation of these results, including the low numbers and establishing statistical significance for some of the findings. Overall there was some good news but clearly with plenty of room to do better, in particular with reducing the overall incidence of outbreaks.

Regional Public Health are happy to work with any general practices or institutions wanting to improve their preparedness to manage and prevent gastroenteritis outbreaks in their patient populations. Please contact Quentin Ruscoe, Health Protection Officer, Disease Investigation and Control, Regional Public Health. Phone 5709002, Email quentin.ruscoe@huttvalleydhb.org.nz.

Guidelines produced by Auckland Regional Public Health Service are also available online and are referenced below.

Sources

1. Norovirus/Gastroenteritis outbreaks in resthomes year analysis (2004-2009) internal report 17/05/2010 Loushy Mangalasseril, Health Protection Officer, Communicable Diseases, Regional Public Health.

2. Guidelines for the management of norovirus outbreaks in hospitals and elderly care institutions. April 2008. Auckland regional public health service. www.arphs.govt.nz/notifiable/downloads/norovirus_guidelines_2008.pdf

3. Esr episurv database

Invasive Pneumococcal Disease

In October 2008 invasive pneumococcal disease became a notifiable disease. The reason for this was principally to monitor the circulating serotypes of pneumococci to ensure good vaccine coverage.

From June 2008 the seven-valent pneumococcal conjugate vaccine Prevenar was added to the New Zealand Childhood Immunisation Schedule, to be given at six weeks, three months, five months and fifteen months of age for all babies born from 1st January 2008.

In New Zealand, 2002 survey data showed that the seven serotypes in Prevenar would have covered 91% of invasive isolates found in children under the age of two years and 80% of invasive isolates found in children aged two to five years.

The 23-valent Pneumovax 23 is indicated for people over two years old with specific conditions such as a history of splenectomy, and may be given for other indications. Polysaccharide vaccines such as Pneumovax 23 produce immunity via mechanisms that are usually immature in children under the age of two years old, with variable response to different serotypes in children up to five years (2).

Campylobacter Notifications

Please remember that with all notifications of infectious gastroenteritis, the up to date occupation of the case and their worksite are very important pieces of information. Public Health staff use this to determine how rapid and how extensive a follow up is required.

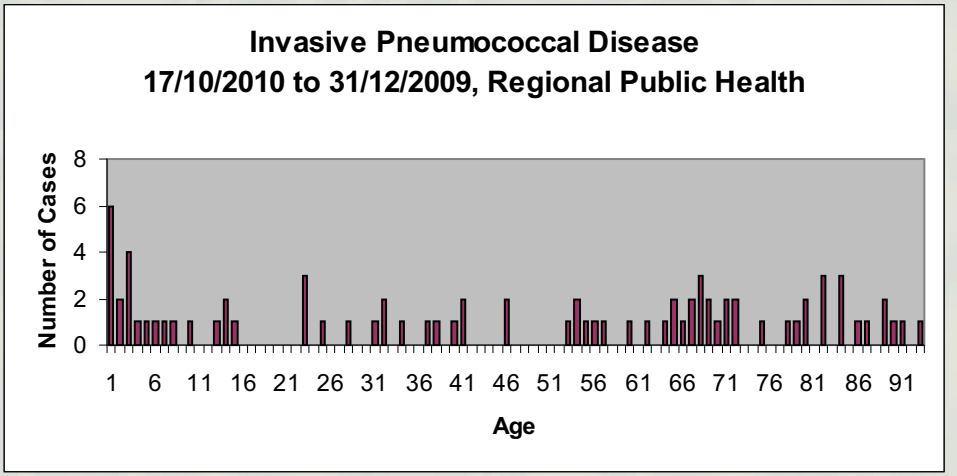
Notifications

Most notifications come from the laboratory, with relatively few from clinicians.

The data from 17/10/2008 to 31/12/2009 for Regional Public Health is now available. There were 80 regional cases within the time period, compared with 824 nationally. 41 were in males and 39 in females. 56 were cases of pneumonia with 11 cases of meningitis and smaller numbers for other sites of infection. There was a wide spread of ages (1).

Of the 80 cases, five were confirmed as partially or fully immunised for their age, 74 were confirmed as unimmunised and of these 71 were outside the age range for vaccination under the New Zealand Childhood Immunisation Schedule, and had not received any adult pneumococcal vaccination. Immunisation status was unknown for one case. Nine cases were fatal (1).

Serotypes of the invasive pneumococcal disease pathogens is monitored at a national level to inform future vaccination recommendations. The ongoing notification of this illness will help to monitor progress.



Sources

1. ESR Episurv database.
2. Ministry of Health. 2006. Immunisation Handbook 2006. Wellington:Minsitry of Health
3. www.moh.govt.nz accessed 24/5/2010
4. Medsafe datasheet: Prevenar, prepared November 2008 (for subtype information)
5. Medsafe datasheet: Pneumovax 23, prepared December 2008 (for subtype information)

Measles Update

Recently Regional Public Health received several notifications of suspected measles (fever and respiratory symptoms with rash). The majority of these were not confirmed to be measles once testing was complete. Two cases were laboratory confirmed (serology and /or measles PCR positive) and another one was considered a probable case. All three cases were from the Kapiti Coast. One confirmed case had link with the recent outbreak in Northland, which involved 35 cases but the source of the other confirmed case is unknown.

The best way of preventing a larger measles outbreak, such as the one in Christchurch in 2009, is by having a very high coverage with MMR vaccine at the population level and by investigating and managing suspected cases promptly at the individual level. Regional Public Health recommends the following guide for investigations and would like to remind practitioners to record on the laboratory form the date of rash onset, and if the person has ever been vaccinated against measles. This enables the laboratory to choose the best test.

Testing for measles

Days since rash onset	Recommended laboratory test for measles
0 - 3 days	Blood for measles IgG **and** either swab for PCR (throat and nasopharyngeal) **or** urine for PCR
3 - 7 days	Blood for measles IgM serology **and** swab for PCR (throat and nasopharyngeal) **or** urine for PCR
More than 7 days	Blood for measles IgG **and** IgM

Notes

1. Swabs for PCR are done using an influenza swab in viral transport medium.
2. Not all swabs or urine samples taken concurrently with blood for serology will be processed – this will depend on serological results.