

9.1 At a glance

During the past 150 years, the improved control of infectious disease has contributed significantly to better health both in New Zealand and in other developed countries. Health gains have been achieved through improved sanitation, safe water and food supplies; improved housing and working conditions, and immunisation. However, despite improvements, infectious diseases still accounts for around 6% of deaths in New Zealand¹.

9.2 Introduction

This *Future Focus* section contains data and information related to notifiable diseases in the Waikato DHB region. Notifiable diseases are monitored by Population Health who assess the circumstances surrounding the occurrence and determine the appropriate control measures for cases and their contacts. The conditions in which we live and work have an important influence on health and on the prevention or spread of communicable disease. Hand hygiene continues to be a health priority for the Waikato DHB and is a well established method for preventing the transmission of disease. Population Health has developed other programmes such as *Keeping Families and Communities Well* as a way of addressing basic communicable disease transmission across the Waikato DHB region. All of Population Health's disease work follows national guidelines and the Communicable Disease Control Manual 1998 (new updated manual is in draft form).

Information is discussed under the following headings.

[9.3 Notifiable diseases](#)

[9.4 Waikato DHB health priorities](#)

[9.5 Service networks](#)

[9.6 Living and working conditions](#)

[9.7 Overarching environment](#)

[9.8 Evidence-based interventions](#)

9.3 Notifiable diseases

Waikato District Health Board (Waikato DHB) Population Health notifiable disease work is directed by the Integrated Approach to Infectious Disease, the Communicable Disease

Control Manual 1998², the Guidelines for Tuberculosis Control in New Zealand 2003³ and other relevant national and international guidance.

Under the Health Act (1956) and the Tuberculosis Act (1948), health professionals are required to inform their local Medical Officer of Health (MOoH) of any notifiable disease that they suspect or diagnose. In addition since December 2007, laboratories under direct laboratory notification are expected to notify. These notifications provide the basis for surveillance and hence the control of these diseases⁴.

Population Health produces a monthly bulletin which contains data and relevant information on notifiable diseases for the Waikato region. This is accessible via the Waikato DHB intranet and internet. All of the notifiable diseases (Table 1) have associated guidelines and standard operating procedures (SOPs) which are audited regularly to improve the quality of data collection and analysis leading to better management and prevention.

In 2010, 1705 individual cases of notifiable diseases were reported to Population Health; similar to 2009 (1745) (Table 1).

Table 1: Notifiable disease by number and rate per 100,000. Waikato DHB 2007-2010

Disease	Number of cases				Rate per 100,000 population			
	2007	2008	2009	2010	2007	2008	2009	2010
Brucellosis	0	1	0	0	0	0.3	0	0.0
Campylobacteriosis	1080	574	660	678	305.9	161.1	183.4	199.9
Chemical poisoning -environment	2	0	4	2	0.6	0	1.1	0.6
Chikungunya fever	0	0	0	0	0	0	0	0.0
Cholera	0	0	0	0	0	0	0	0.0
Cryptosporidiosis	182	113	109	141	51.6	31.7	30.3	41.6
Cysticercosis	1	0	0	0	0.3	0	0	0.0
Dengue fever	6	2	6	9	1.7	0.6	1.7	2.7
Diphtheria	0	0	0	0	0	0	0	0.0
Gastroenteritis - unknown cause	34	31	23	24	9.6	8.7	6.4	7.1
Gastroenteritis- food intoxication	0	0	1	5	0	0	0.3	1.5
Giardiasis	118	113	148	180	33.4	31.7	41.1	53.1
Haemophilus influenzae type b	1	0	2	2	0.3	0	0.6	0.6
Hazardous substances injury	0	3	0	0	0	0.8	0	0.0
Hepatitis A	1	4	3	4	0.3	1.1	0.8	1.2
Hepatitis B	5	1	1	1	1.4	0.3	0.3	0.3
Hepatitis C	1	1	0	0	0.3	0.3	0	0.0
Hepatitis NOS	0	0	0	1	0	0	0	0.3
Hydatid disease	0	0	0	0	0	0	0	0.0
Invasive pneumococcal disease	0	15	82	46	0	4.2	22.8	13.6
Lead absorption	5	22	24	17	1.4	6.2	6.7	5.0
Legionellosis	0	6	1	6	0	1.7	0.3	1.8
Leprosy	0	0	0	0	0	0	0	0.0
Leptospirosis	10	16	17	15	2.8	4.5	4.7	4.4
Listeriosis	1	4	0	1	0.3	1.1	0	0.3
Listeriosis - perinatal	0	0	4	0	0	0	1.1	0.0
Malaria	3	0	3	1	0.8	0	0.8	0.3
Measles	0	0	1	0	0	0	0.3	0.0
Meningococcal disease	12	11	9	7	3.4	3.1	2.5	2.1
Mumps	7	9	7	2	2	2.5	1.9	0.6
Murine Typhus	1	6	1	7	0.3	1.7	0.3	2.1
Non seasonal influenza A (H1N1)	0	0	180	256	0	0	50	75.5
Paralytic shellfish poisoning	0	0	0	0	0	0	0	0.0
Paratyphoid fever	2	3	2	1	0.6	0.8	0.6	0.3
Pertussis	71	85	233	93	20.1	23.9	64.7	27.4
Rheumatic fever - initial attack	10	27	18	18	2.8	7.6	5	5.3
Rheumatic fever - recurrent attack	0	5	4	3	0	1.4	1.1	0.9
Rickettsial disease	0	0	1	0	0	0	0.3	0.0
Ross River virus infection	0	0	0	1	0	0	0	0.3
Rubella	0	0	0	0	0	0	0	0.0
Salmonellosis	137	126	104	90	38.8	35.4	28.9	26.5
Shigellosis	13	5	7	11	3.7	1.4	1.9	3.2
Taeniasis	0	0	0	0	0	0	0	0.0
Tetanus	1	0	1	0	0.3	0	0.3	0.0
Toxic shellfish poisoning	0	0	0	2	0	0	0	0.6
Tuberculosis - latent infection	28	35	18	0	7.9	9.8	5	0.0
Tuberculosis disease - new case	19	17	12	20	5.4	4.8	3.3	5.9
Tuberculosis disease - reactivation	2	1	2	2	0.6	0.3	0.6	0.6
Tuberculosis infection - preventive	0	2	1	0	0	0.6	0.3	0.0
Typhoid fever	0	1	1	2	0	0.3	0.3	0.6
VTEC/STEC infection	22	18	27	24	6.2	5.1	7.5	7.1
Yersiniosis	37	33	28	32	10.5	9.3	7.8	9.4
Total	1812	1290	1745	1705				

Source: EpiSurv notifiable disease database, Environmental Science and Research Ltd (ESR). Retrieved from: <http://www.surv.esr.cri.nz/episurv/index.php>

Diseases most frequently reported or with a substantial increase or decrease on the corresponding period in 2009 and 2010 are discussed below¹.

Campylobacteriosis

There were 678 cases notified in 2010 (a crude rate of 199.9 per 100,000 population); a slight increase on 2009 (660; 183.4 per 100,000). However, the rate was still approximately half that of rates pre 2008. This is the most frequently reported disease.

Cryptosporidiosis

A total of 141 cases (41.6 per 100,000) were notified in 2010. This is an increase from 2009 (109). There were 11 outbreaks of Cryptosporidiosis reported, mostly involving families with a range of risk factors including drinking untreated water and contact with farm animals.

VTEC (E coli 0157) infection

In 2010, there were 24 cases (7.1 per 100,000) notified compared to 27 in 2009. There were three outbreaks identified.

Giardiasis

There were 180 cases (53.1 per 100,000) notified in 2010; an increase compared to the preceding two years (113 and 148). An increase in the first half of 2010 was investigated and findings were published both in the Population Health bulletin and the New Zealand public health surveillance report. No single risk factor was identified, but many cases had untreated drinking water supplies. Overall there were 20 outbreaks reported mostly involving households.

Meningococcal disease

Only seven cases were notified in 2010, in comparison to nine cases in 2009; down from 27 cases in 2006. Since 2006 the rate has declined from 8.0 to 2.1 per 100,000. Of the seven; three were Maori (43%), four European, and four (58%) were aged under 5 years, the remainder under 25 years. A rate of three cases per 100,000 is recognised as a general background rate of disease for developed countries. A report detailing Waikato DHB meningococcal epidemiology from 2001 to present day is available on request from Population Health.

¹ Where ethnicities are not presented, this is due to either low numbers or the skewed nature of many of the notifiable diseases, particularly enteric, which are dependant on individual access and utilisation of health services.

Pertussis

There were 93 cases (27.4 per 100,000) notified in 2010 compared to 233 in 2009. There was an increase in pertussis cases nationally and locally in late 2009, but this did not continue into the middle of 2010. Approximately 81 cases (80%) were European and eight Maori (7%). A summary of a report on the epidemiology of Waikato pertussis cases from 2000 to 2009 is presented later in this chapter.

Tuberculosis

There were 22 cases of acute tuberculosis disease notified in 2010 (6.0 per 100,000); a slight increase on 2009 (14) but a similar number to 2007 and 2008. Of these nine (50%) were born overseas, six (32%) were European and three (15%) Maori. Approximately 75% cases were aged between 25-64 years.

Nineteen cases of latent infection were diagnosed in 2010, mostly through contact tracing, which is similar to 2009 (20). The number of latent tuberculosis cases reflects the number of active tuberculosis cases, their infectivity and the number of contacts they have. A report detailing tuberculosis epidemiology from 2005 to present day is available on request from Population Health.

Leptospirosis

There were 15 cases diagnosed in 2009 (4.4 per 100,000); similar to 2008 and 2009. A report on Leptosporidiosis epidemiology over the last six years is available in draft form from Population Health.

9.3.1 Outbreaks 2010

During 2010, Population Health was notified of and investigated 82 outbreaks involving a notifiable disease. The majority (73, 92%) were gastroenteritis outbreaks some with an unknown pathogen.

Of the 54 gastroenteritis outbreaks where a pathogen was identified, 20 (37%) involved *Giardia*, eight *Campylobacter*, five *Norovirus*, two *Salmonella*, and two *Rotavirus*. Of the nine non gastroenteritis outbreaks, the pathogens involved included Pertussis (3), Influenza (2), and Dengue Fever, *Rickettsia typhi*, Leptosporidiosis and chemical poisoning (one each).

Approximately half of the 82 outbreaks involved only two people and the majority less than five, but the numbers affected ranged from 2-47. For over half of the outbreaks the exposure happened within the home (30); 11 at childcare, 12 in a hospital or rest home, nine at a farm, and five involved food premises.

9.3.2 Giardia report

The summary below of an investigation into an observed increase early in 2009 of notified giardiasis cases, was published in the New Zealand Public Health Surveillance Report (NZPHR) 2011 spring edition⁵.

Giardiasis is the most commonly notified waterborne disease in New Zealand. It is a gastrointestinal disorder caused by the protozoan *Giardia lamblia*. Symptoms include diarrhoea, abdominal cramps, bloating, flatulence, nausea, weight loss and malabsorption. The incubation period is between 3 and 25 days and the disease is communicable throughout the period of infection. Outbreaks have been associated with recreational water,³ drinking infected water and attendance at day-care. New Zealand has a high incidence of giardiasis in comparison with other developed countries and the most commonly identified risk factor is contact with recreational water i.e. swimming in commercial and non-commercial pools, freshwater and the sea.

Waikato Population Health noted an increased number of giardiasis cases notified in the Waikato DHB region during the period January to April 2010 in comparison to the previous 5 years. An investigation was commenced to establish any common source or risk factors.

The investigation carried out during August 2010 examined 76 notified cases of giardiasis in the January to April 2010 period. This represented an increase of approximately 50% compared to the same time period in any of the previous five-years. The lack of routinely-collected data hampered the investigation and only 53 of the 76 cases contained complete risk factor information.

The investigation showed that almost all of the 53 cases with complete risk factor information involved more than one potential risk factor for giardiasis transmission e.g. drinking untreated water, contact with farm animals or animal faeces, overseas travel within the incubation period and person-to-person contact with another case of giardiasis. As such, a single aetiology could not be determined. However, common features among cases during this time period were consumption of untreated drinking water and links to outbreaks.

The study identified the need for improvements in the investigation for giardiasis cases to enable identification of risk factors and prevention measures, particularly through improved completion of questionnaires and use of a specific Waikato Population Health questionnaire on household drinking water supplies.

9.3.3 Pertussis report

A review of pertussis cases between 2000 and 2009 in the Waikato DHB region was carried out in 2010 and was published in the New Zealand Medical Journal⁶. Below is a summary of the review.

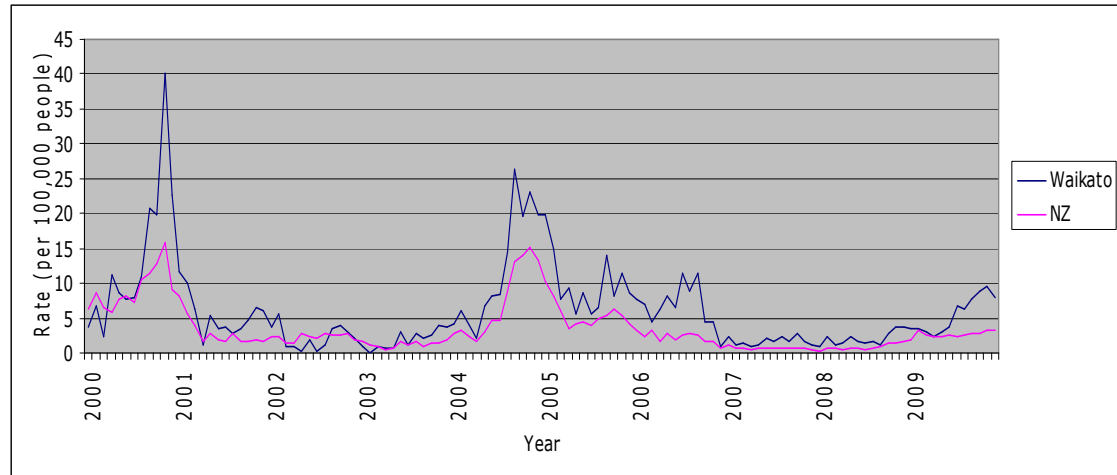
The aim of the review was to describe the epidemiology of pertussis in the region and identify any differences in case characteristics between epidemic and non-epidemic periods. Pertussis notification rates in the Waikato were higher than national rates but followed a similar yearly pattern (Figure 1). National pertussis epidemics were identified in the years 2000 and 2004. The age distribution of pertussis cases changed over the decade with an increasing percentage in older age groups (5-24 years).

Notification rates were higher in Europeans than Maori and in those living in the least deprived NZdep areas. This suggests that notifications may not be representative of the actual burden of disease, but associated with those who access and utilise health care, particularly primary care, more readily. In contrast hospitalisation rates were higher in Maori than Europeans and in the most deprived NZdep groups. No clear differences in case characteristics were identified between an epidemic and non-epidemic period.

Overall, the epidemiology of notified pertussis in the Waikato is similar to that reported elsewhere in New Zealand. Further studies are required to clearly identify whether there are differences in case characteristics between epidemic and non-epidemic periods.

The pertussis review findings highlight the continued need to immunise children against vaccine preventable diseases especially focussing to improve the coverage for those who are more vulnerable⁷.

Figure 1 Pertussis notification rates for Waikato and New Zealand, 2000 to 2009



9.3.4 Pandemic Influenza

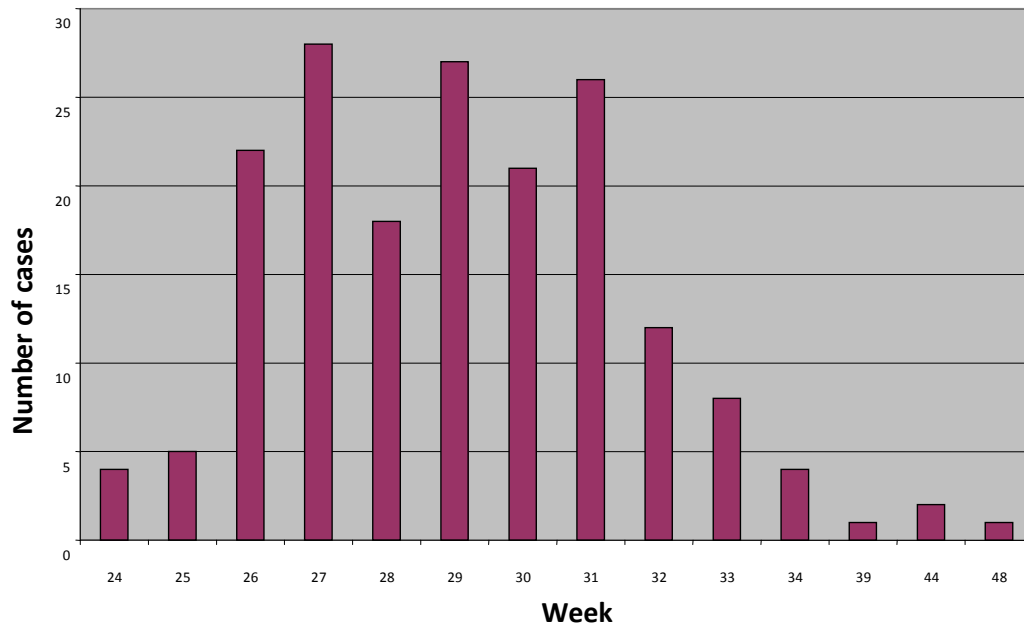
The World Health Organisation (WHO) declared a public health emergency of worldwide concern regarding a novel influenza virus (H1N1) on April 25 2009, and thus marked the beginning of the spread of the first influenza pandemic of the 21 century. What started as clusters of cases with influenza like illness in Mexico and the USA rapidly spread to almost all countries around the globe. Fortunately this pandemic for most was not severe; however it was a reminder to all the speed with which influenza can spread and the potential impact of a more severe influenza pandemic.

New Zealand followed international health alerts and enacted their National Pandemic Plan. The first stage, “Keep it out” involved management of air passengers (border control) and local active case finding with isolation of contacts. Once it became obvious that for the majority of cases the influenza was not severe, NZ moved to a management phase (22 June 2009) involving messages to the public regarding the illness, what to do and how to keep themselves healthy, and messages to health professionals regarding diagnosis and treatment of the disease.

Regarding notification data, it should be noted that after NZ went to the “manage it” phase, only those with more severe disease, significant co-morbidities or admitted to hospital were swabbed and if positive notified. Thus notified cases will not be a true representation of the amount of disease in the community and probably represents only the ‘tip of the iceberg’.

The first Waikato non seasonal influenza (H1N1) case was notified on 11 June 2009 and a total of 180 cases of non-seasonal influenza (H1N1) were notified in 2009 (figure 2).

Figure 2: Epidemic curve, number of notified cases of non seasonal influenza, by week, Waikato DHB, 2009



Over 50% of notified cases were aged between 5 and 24 years, but rate of disease was highest in those aged under one year (200 per 100,000 population) (Table 2). No cases were aged over 65 years, which is the opposite of what is generally observed with seasonal influenza.

Table 2: Number, percent and rate of notified cases of non seasonal influenza by age group Waikato DHB, 2009

Age group (yrs)	Number of cases	%	Rate per 100,000
<1	10	5.6	200.8
1 to 4	15	8.3	77.3
5 to 14	23	23.3	43.4
15 to 24	42	31.7	85.8
25 to 44	57	18.3	63.2
45 to 64	33	12.8	41.2
Total cases	180	100	

Overall, the burden of disease was similar for males and females. However, there was some variation between gender and age groups (Table 3). About a third of notified cases were Maori, a third NZ European, and 10% Pacific. Fifty percent of cases lived in Hamilton City TA. The TA rate was highest in Ruapehu (300 per 100,000) (Table 4).

Table 3: Number, and percent of notified cases of non seasonal influenza by age group and gender, Waikato DHB, 2009

Age group	Female		Male		Total
	No. of cases	%	No. of cases	%	
<1	1	1.1	9	10.7	10
1 to 4	10	10.5	5	6	15
5 to 14	12	12.6	11	13.1	23
15 to 24	28	29.5	14	16.7	42
25 to 44	27	28.4	30	35.7	57
45 to 64	17	17.9	15	17.9	33
Total	95	100	84	100	180

Approximately a quarter of cases (50) required hospitalisation; 15 cases (8.3%) had pneumonia, seven (3.9%) Adult Respiratory Distress Syndrome (ARDS), and seven cases died from or a complication of influenza. Thirty two cases (18%) had a respiratory disease such as asthma, 11 were diabetic, eight were obese and four were pregnant.

Table 4: Number, percent and rate of notified cases of non seasonal influenza by Territorial Authority, Waikato DHB, 2009

TA	No of cases	%	Rate per 100,000
Hamilton City	90	50.0	69.6
Hauraki District	6	3.3	34.9
Matamata-Piako District	8	4.4	26.2
Otorohanga District	1	0.6	11
Ruapehu District	26	14.4	298.4
South Waikato District	7	3.9	30.9
Thames-Coromandel District	5	2.8	19.3
Waikato District	21	11.7	47.8
Waipa District	9	5.0	21.2
Waitomo District	7	3.9	74.2
Total cases	180	100	

Approximately a quarter of cases were prescribed an antiviral. However, antiviral were only recommended if diagnosis was made within the first 72 hours of onset of symptoms. A fifth of cases had had a seasonal influenza virus, but the 2009 seasonal influenza vaccine did not contain the pandemic strain and thus was not expected to offer any protection.

The first weeks of the pandemic was associated with a significant workload for Population Health providing information to communities, health professionals and the media; investigating, controlling, managing single cases of disease and their contacts; and maximising efforts to contain the disease.

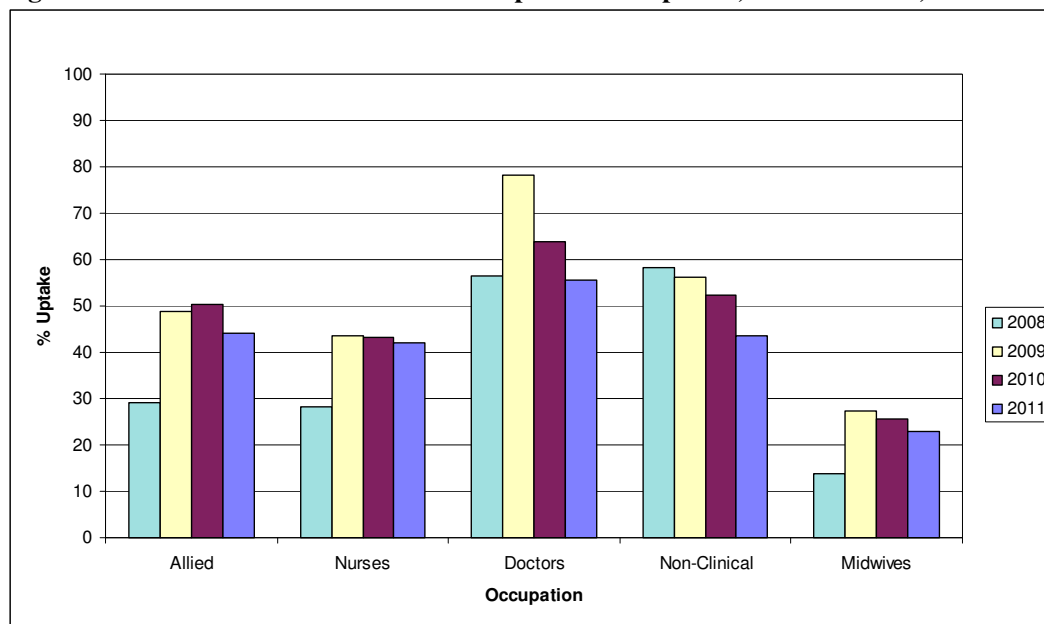
In 2010 there were 256 cases (75.5 per 100,000) notified compared to 180 cases in 2009. The majority of cases were notified between May and September. A case was diagnosed by a positive swab result and sick individuals were only swabbed if severely unwell, had a chronic disease and/or admitted to hospital.

9.3.5 Influenza vaccination update

Influenza is a respiratory illness that is associated with complications including pneumonia and the exacerbation of underlying medical conditions. During the 2010 influenza season 727 New Zealanders were hospitalised with influenza.

Vaccination for health sector staff is encouraged and provided free as staff are potentially at risk of contracting influenza and passing it on to vulnerable patients. A sustained promotion programme for influenza vaccine uptake among staff of the Waikato DHB is initiated approximately one month prior to the start of each influenza season. Population Health, along with other stakeholders, is part of the implementation team. The graph below shows uptake is variable between occupational groups. Uptake was also influenced by heightened awareness during the first and second wave of the 2009 H1N1 epidemic.

Figure 3: Seasonal Influenza Vaccination Uptake / Occupation, Waikato DHB, 2011



In New Zealand the influenza vaccines have been provided free to those who are 65 years and over or have chronic medical conditions. It is also encouraged that the population as a whole is given the vaccine and in a large number of cases is offered free to people in their workplace. In 2009 nearly 900,000 doses of vaccine were distributed. Uptake in the Waikato was lower than average in 2010 but is increasing.

9.3.6 Hepatitis B – antenatal

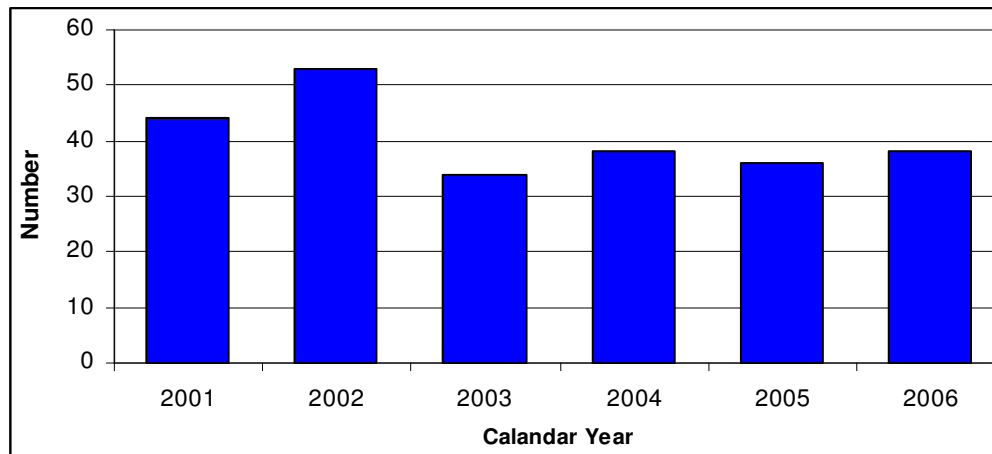
Pregnant women are routinely offered antenatal screening, which includes testing for the hepatitis B virus. If a woman is found to be a carrier of the hepatitis B virus, there is a

substantial risk (20 - 90%, depending on infectivity) of the virus being passed onto the infant at birth. Lead maternity carers (LMCs) are expected to administer hepatitis B virus immunoglobulin to provide passive immunity via antibodies and the first dose of a hepatitis B virus vaccine to the infant at birth. The remaining three doses of the hepatitis B virus vaccine course are then delivered to the child at six weeks, three and five months of age (and at five months a blood test to check for sero-conversion) in primary care.

Population Health is informed, via a completed form, from the hospital or lead maternity carer in attendance at the delivery that both the immunoglobulin and the first dose of hepatitis B virus vaccine has been given.

In 2006, 38 infants of hepatitis B virus-carrier mothers were given hepatitis B virus immunoglobulin and hepatitis B virus vaccine. These numbers are similar to the preceding three years (Figure 3).

Figure 3: Number of babies given immunoglobulin and hepatitis B vaccine at birth, Waikato DHB, 2001 - 2006.



Source: Waikato DHB, Public Health Unit Database.

Population Health is carrying out a review of the procedures around antenatal hepatitis B virus. It will also examine the procedure around the delivery of immunoglobulin and subsequent course of vaccine and the blood testing. It is thought not all babies who should complete their full course of hepatitis B virus vaccine do.

9.3.7 Rheumatic fever

Rheumatic fever is a major public health problem in the Waikato DHB region. This disease places a significant burden on the communities and resources of this region and in particular on Māori and the socioeconomically deprived. Thus, rheumatic fever also

contributes significantly to health inequality. Acute rheumatic fever is preventable and the results and recommendations of the clinical audit presented here should be used to inform the development and implementation of a programme aimed at reducing both the rates of acute rheumatic fever and rheumatic heart disease in the Waikato DHB.

A recent review of notified cases of Rheumatic fever was carried out:

Between 2006 and 2010 a total of eighty cases of acute rheumatic fever have been notified to Waikato DHB, Population Health. This represents an average of 20 cases a year (Table 5). Approximately 55% of cases were aged between 5 to 15 years old and 80% of cases were Maori (Table 6).

Table 5: Number and percent of total of notified acute rheumatic fever cases by year, Waikato DHB, 2006- 2010

Age group (years)	2006	2007	2008	2009	2010	Total	%
<1	0	0	1	0	0	1	1
1 to 4	0	1	1	1	0	3	4
5 to 14	10	5	21	11	13	60	75
15 to 24	0	4	2	6	3	15	19
25 to 44	0	0	1	0	0	1	1
Total	10	10	26	18	16	80	100

Table 6: Number of notified acute rheumatic fever cases by ethnicity and year, Waikato DHB, 2006- 2010

Ethnicity	2006	2007	2008	2009	2010	Total	%
European	1	2	4	0	1	8	10
Maori	8	6	22	16	13	65	81
Pacific Peoples	1	2	0	2	2	7	9
Total	10	10	26	18	16	80	100

Three quarters of cases were living in area of high NZ dep (quintile 4 or 5). The average annual rate in those aged under 45 years was 7.4 with almost 24 times the rate of disease in Maori compared to European and double compared to Pacific Peoples. Almost 40% of cases lived in Hamilton City TA, and 24% Waikato District TA (Table 7). No significant area clusters were observed.

Table 7: Number of notified acute rheumatic fever cases by TA and year, Waikato DHB, 2006- 2010

TA	2006	2007	2008	2009	2010	Total	% total
Hamilton City	4	6	10	8	3	31	39
Hauraki District	1	1	0	1	1	4	5
Matamata-Piako District	0	1	4	4	1	10	13
Otorohanga District	0	0	0	0	1	1	1
Ruapehu District	0	0	1	0	0	1	1
South Waikato District	1	1	0	1	4	7	9
Thames-Coromandel District	0	0	0	0	1	1	1
Waikato District	4	1	7	3	4	19	24
Waipa District	0	0	3	1	0	4	5
Waitomo District	0	0	1	0	1	2	3
Total	10	10	26	18	16	80	100

There were no recurrent attacks of rheumatic fever notified in 2006 or 2007. Since 2008 there have been 12 recurrent cases notified. Recurrence tends to occur in a slightly higher age group than cases with 50% of recurrence cases aged 15-24 years. The annual Waikato recurrence rate of rheumatic fever was 1.2 per 100,000 aged under 45 years.

To enhance primary prevention there must be greater awareness within the population that sore throats can cause heart disease⁸. For example, a public health campaign in Northland, New Zealand, in 2000, involved the development of strong links between Māori health providers and the local Māori community, a rheumatic fever information week and the launch of compact discs and videos to improve rheumatic fever awareness (P. Atatoa-Carr, personal communication February 18, 2008). Population Health has the opportunity to raise awareness and advocate for effective and appropriate throat culture services throughout the communities of need. It is appropriate that the development of services be directed by the national guideline on Streptococcal Sore Throat Management and Rheumatic Fever Primary Prevention.

The rate of recurrent rheumatic fever in the Waikato DHB is an indication of failed secondary prevention. Effective register-based management programmes have been shown to reduce recurrence rates of Rheumatic Heart Disease. In August 2004, the Waikato Rheumatic Fever Group was established and a register re-instated. After refinement of the register and positioning of it within a coordinated management programme, an audit of Rheumatic Fever cases in 2008 found that 14% of acute cases were still not known to the Register. It is important to ensure that all relevant cases are known to the register, so the register can record the duration of prophylaxis received by each case and that recurrences are clearly highlighted within the register. Additionally, management of the register in the Waikato assists in the coordination of communications between hospital and community services relating to the secondary follow up required for

patients. Awareness and endorsement of the register across the continuum of care is likely to improve prophylaxis delivery and significantly reduce the rate of recurrences experienced in this region.

9.3.8 Sexually transmitted infections

Chlamydia

Population Health has been working closely with Dr Jane Morgan, Sexual Health Physician at Waikato DHB who has been carrying out research into Chlamydia epidemiology in the Waikato. The following is taken from summary paper prepared by Dr. Jane Morgan.

Chlamydia *trachomatis* infection (Chlamydia) is a significant public health problem, and untreated infection may lead to salpingitis, tubal scarring, ectopic pregnancy and subfertility in some women⁹. It remains the most common reported bacterial sexually transmitted infection in New Zealand¹⁰; the rate of hospital admissions for Chlamydia-related pelvic infections in women aged 15-24 years is rising¹¹. In addition, data suggests disparities for Māori, with sentinel surveillance clinic rates of Chlamydia infections being 2.5 times that of non-Māori. Uncertainty continues over the merits of a screening programme however, with randomised evaluations of different screening approaches ongoing in the Netherlands and in Australia¹². In 2008, the New Zealand Ministry of Health drafted the first national guideline for Chlamydia management which emphasised targeted testing of those with risk factors¹³. Three district health boards (DHBs), including Waikato DHB, were chosen to assess the impact of guideline implementation during 2009 with particular interest in laboratory test volumes. Below are findings from the research carried out.

Project Planning and Implementation

Waikato DHB had an estimated resident population of 357,000 in 2008, of whom approximately 21% were Māori compared with 15% nationally, serviced by approximately 300 GPs. A local multi-disciplinary project advisory group identified likely barriers and enablers to changing clinical practice from focus groups with local primary care providers and by reviewing published literature^{14,15,16}. Baseline information within Waikato DHB was gathered; this included Chlamydia testing and case detection and an audit of cases managed during 2008, with providers from 19 participating settings providing detailed information on 415 cases. The primary care audit occurred in June and July 2009.

In summary, baseline Chlamydia test uptake for women under 25 years of age was much higher than expected, with testing rates for Māori equitable with non-Māori. Among tests from 15-24 year old females, 14% of tests were positive with positivity double amongst Māori, 24.2% vs. 12.5%¹⁷. The case management audit found a high standard of documented care on some indicators, such as appropriate choice of antibiotic and timely treatment, but other aspects of care, such as partner notification, were not well documented¹⁸. Also, non-Māori were more likely to have clear documentation of receiving antibiotic treatment¹⁹. The audits also highlighted the significant role of practice nurses in testing and treatment. Participants provided helpful feedback as to ways in which their clinical practice improved subsequently and this information was included in the continuing medical education (CME) sessions.

Focus groups requested improvements to national Chlamydia-specific print resources, which were then adapted according to national guidance²⁰. A hard copy one-page health provider summary flowchart of Chlamydia management was disseminated and made available as a downloadable file on Waikato DHB's website²¹. Health promoters facilitated a rangatahi Māori focus group, who designed a youth-friendly Chlamydia patient information leaflet. Social marketing was an explicit funding exclusion.

Three continuing medical education (CME) face-to-face meetings were planned within existing primary care CME networks. The meetings occurred during late September–mid November 2009. Content, which included results of the baseline audits, was reviewed with a local GP clinical advisor. Local primary health organisation (PHO) staff facilitated the meetings, with the same speaker (JM) on each occasion. One CME meeting was recorded and made available as a CD Rom and as a password-protected webcast on a local PHO website.

The research group is in the process of comparing the initial testing volumes with another two periods June Nov 2009 during and June-Nov 2010 after the guideline implementation process and a repeat audit of practices to look at improvement in testing and management of Chlamydia case after a guideline implementation. These will be reported on once available.

9.3.9 Food safety

Those involved in the preparation of food have a direct impact on people's health and wellbeing. Food handling and hygiene practices need to be maintained at very high standards to ensure that foods prepared are safe for consumption. The aim is to prevent foodborne illness like salmonella, E.coli 0157 and campylobacter (refer section 9.2.1).

Council's Environmental Health Officers (EHOs) and the Waikato DHB's Health Protection Officers (HPOs) work collaboratively to address food safety at a commercial level across the region. This includes commercial kitchens like restaurants, takeaways and other food manufacturers. Designated Officers under the Food Act 1981 have specific powers to investigate and take appropriate actions to ensure foods are fit for consumption. Officers typically investigate incidents such as foods having caused illness, contamination of foods, foreign matter found in foods and other provisions of food legislation. There are times when enforcement actions are required to ensure the safety to the public.

EHOs conduct routine inspections of food premises to ensure compliance with the law and the risk assessment system evaluates everything from a premises' physical environment, food preparation and handling practices, cleaning/sanitising procedures and staff training; to the type of food being handled on the premises and the manner in which it is processed²².

There are approximately 760 food businesses in Hamilton ranging from sports clubs to fruit and vegetable shops and the corner superette to cafes, restaurants, supermarkets and manufacturing premises. Hamilton City's annual Food Safety Award, initiated in 1995, recognises operators who maintain a standard of excellence over and above that required by legislation and provides an indication to customers of the standard of food safety they can expect at food premises. In 2009, 136 Hamilton food businesses received a Food Safety Award; 76 businesses received excellence awards and 60 received merit awards²³.

Food safety in the home is also a key aspect of public health. Of the estimated 200,000 foodborne illnesses reported each year, at least 80,000 (40%) are said to be attributed to food handling, preparation or storage in the home. The New Zealand Food Safety Authority recommends the 3cs; clean, cook, and chill along with hand washing to prevent food being contaminated by pathogens (bacteria, viruses). Within our population groups those with advanced cancer or undergoing chemotherapy; pregnant women, premature babies and sick children are at higher risk of getting foodborne illnesses due largely to a suppressed immune system or low stomach-acid levels.

9.3.10 Hand hygiene

In New Zealand, infectious diseases accounted for 6% of deaths between 1980 and 1998, and for 12% of admissions made to hospitals from 1988 - 2000²⁴. Hand hygiene is now well established as an important method of prevention of transmission of infection. Soap and education have been shown to reduce impetigo by 34%, diarrhoea by 53%

and pneumonia by 50% in studies in third world countries²⁵. Other studies have found that teaching and modelling hand washing can reduce illness and absenteeism in schools by up to 50%^{26,27,28,29}. The term 'hand hygiene' includes the important step of effective hand drying. Research has demonstrated that correct hand drying can reduce transmission of bacteria by 94 - 99%³⁰. Townsend and Simmons noted the importance of good hand hygiene in New Zealand as a public health measure is emphasised by the threat of a pandemic and also highlighted its place as a key theme in the New Zealand Foodsafe Partnership³¹.

Review of hand hygiene behaviour has suggested that patterns of behaviour are established in early life³². Improving compliance later in life therefore means modifying a behaviour pattern that has already been practised for decades and continues to be reinforced in community situations. Furthermore, the perceived protective nature of hand hygiene may be based on emotive sensations including feelings of unpleasantness, discomfort and/or disgust rather than knowledge of micro-organisms being present. This highlights the need to fix good hand hygiene practice based on sound evidence in the childhood period.

The Population Health "Hands Up for Health" hand hygiene campaign in 2007 was an education package supplemented by hand hygiene resources including two small stickers, a large double-sided hand and a fridge magnet with key hygiene messages on them. The package was delivered by public health nurses and resources distributed to children through schools and early childhood centres in the Waikato DHB region³³.

Evaluation findings showed that the hand hygiene resources helped stimulate conversation and understanding of the importance of hand hygiene and 62% of households surveyed reported an increase in children's hand hygiene behaviour. No differences were noted between the effects on Māori compared to non-Māori or between levels of socioeconomic status although it was noted that having resources printed in Māori would be useful³³. A copy of the evaluation of the 'Hands up for health' hand hygiene education campaign report, including recommendations regarding continuation of this work, can be sourced from Population Health.

9.3.11 Keeping families and communities well

Young children are particularly vulnerable to illness. Resistance to infection takes time and develops only after exposure to a multitude of germs. Infants and young children who spend time in a group child-care setting have in general, a higher number of illnesses than those kept at home. Common childhood illnesses that keep children from child-care or school include colds, gastroenteritis (stomach flu), ear infections, pink eye,

and sore throats. Other common childhood illnesses are chicken pox, ringworm, head lice, and impetigo. Infectious diseases of a more serious nature include meningococcal disease, measles, hepatitis and HIV/AIDS (MoH, 2001).

Hands are the primary avenue for the transportation of germs into the body and subsequently hand washing is the number one way to prevent the spread of communicable disease.

The *Keeping Families and Communities Well* (KFCW) project is a Population Health initiative developed during 2010 to address the prevention of communicable disease across the Waikato DHB region. The KFCW project arose from the success of the Hand Hygiene *Hands up for Health* education campaign which was delivered by public health nurses to children throughout schools and early childhood centres. As a result of the *Hands up for Health* campaign, early childhood centres were interested in learning more about communicable diseases and their prevention and what level of support and resource Population Health could provide.

Initially, KFCW was intended for delivery to early childhood centres, but the scope has now been broadened to encompass primary, secondary and tertiary educational settings, workplaces and marae. Four modules have been developed to date; immunisation, oral health, rheumatic fever and managing childhood illnesses.

A multi-disciplinary team including health protection officers, health promotion, clinical nurses, public health nurses, public health medicine specialists and other health experts have been involved in developing and delivering the modules. Modules link and compliment the Treaty of Waitangi and Te Whariki early childhood curriculum.

9.4 Waikato DHB Health priorities

Population Health has identified the following service priorities in relation to reducing the incidence of infectious disease:

- Support of projects to improve housing and air quality (refer to *Future Focus* Healthy Environments), due to causal links with respiratory infections such as influenza, rheumatic fever and tuberculosis;
- Investigation, control and management of single cases and outbreaks of notifiable diseases; and
- Continue to audit guidelines and processes for infectious disease (gastrointestinal disease, influenza-like illness, food and waterborne diseases, tuberculosis) and to update these against the upcoming revised national Communicable Disease Manual,

- Research using data gathered with an inequalities focus to identify areas of work for prevention, control and management in the future.
- Promotion of sexual health to reduce the prevalence of sexually transmitted infections.
- The continued development of multidisciplinary networks and guidelines that will control and manage the spread of rheumatic fever and improve the management of individual cases.
- Support of immunisation that encompasses childhood immunisations, influenza vaccinations and new vaccines that are introduced.

9.5 Service networks

Health services that support reducing the incidence of infectious disease across the Waikato DHB region include services at primary, secondary and tertiary services. The majority of services are provided at a primary care level. Refer to the *Future Focus Appendix* section for a stock take of current Ministry of Health funded service provision related to reducing the incidence of infectious disease across the Waikato DHB region.

9.6 Living and working conditions

It is widely known that the social, economic, and cultural factors have the greatest influence on health. These include income and poverty, employment and occupation, education, housing, culture, ethnicity and social cohesion or social connectedness³⁴. In consideration of these factors, studies also indicate that in regard to infectious disease, poverty plays a key role to much of the problem of infectious disease³⁵. The gains in public health however, have evolved due to improved housing conditions and sanitation. The decrease in most infectious diseases has corresponded to improved socio-economic conditions³⁶.

9.7 Overarching environment

Better physical health forms one of the goals in the New Zealand Health Strategy³⁷. In order to realise this objective the Ministry of Health has developed guidelines, namely, *An Integrated Approach to Infectious Disease: Priorities for Action 2002 – 2006*³⁸. These guidelines complement and reinforce a number of other key goals and objectives in the New Zealand Health Strategy, providing accessible and appropriate healthcare services, creating a healthy physical environment and reducing inequalities in health status. An

Integrated Approach to Infectious Disease: Priorities for Action 2002 – 2006 defines the priorities and strategies for management of infectious disease, based on a broad, multi-sectoral view of infectious disease transmission and control. The goal of the document is to address, compliment and reinforce the objectives of the New Zealand Health Strategy³⁷.

In addition to An Integrated Approach to Infectious Disease: Priorities for Action 2002 – 2006, the Communicable Disease Control Manual, 1998³⁹ provides information on the prevention and control of communicable disease in New Zealand. Further documentation exists to support specific infectious disease control functions, including guidelines for the control of diseases such as tuberculosis. In summary, infectious disease control is both comprehensive and well supported by national regulatory policies and strategies.

The Waikato DHB District Strategic Plan⁴⁰ defines a specific focus on infectious disease in two key populations: children and Pacific peoples. The Waikato DHB recognises the actual and potential prevalence of infectious disease in these two populations and has specific strategies in place to reduce prevalence. For children, the Waikato DHB intends to address a range of factors that impact on children's health. This will include working across sectors to influence issues such as household crowding to reduce the incidence of infectious disease. For the Pacific population, the Waikato DHB's medium to long term objective as stated in the Waikato DHB District Strategic Plan is to "reduce the rate of infectious diseases among Pacific peoples through the development and implementation of programmes targeting families at risk within available resources"⁴⁰.

Infectious disease public health activities have been aimed at involving the community in developing a focus on high risk groups. Transferring infectious disease knowledge to the community supports community-led prevention activities that are sustainable and long term. In order to target the right communities in an effective way, health inequalities data and methods to identify where infectious disease prevention and promotion is most needed.

Population Health infectious disease work follows national guidelines, as described in An Integrated Approach to Infectious Disease: Priorities for Action 2002 – 2006 and the Communicable Disease Control Manual 1998³⁹ in a way that is relevant in the Waikato DHB region.

9.8 Evidence-based interventions

All notifiable diseases are investigated, controlled and managed according to relevant best practice (evidence-based guidelines). Internal procedures are regularly audited and reviewed to best practice guidelines where not available nationally.

Review of the individual disease over a number of years will enable better investigation as data quality and data gathering will be assessed. Risk factor analysis will enable further appropriate data to be gathered to allow more targeted prevention measures for those at high risk based on best available evidence.

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