PERTUSSIS REPORT

September 2010 (Weeks 37-38)

This report includes cases of pertussis reported in EpiSurv up to midnight 17 September 2010. Data was extracted from EpiSurv at 10.00 am 21 September 2010.

Summary

In the past two weeks ending 17 September 2010, 29 (13 and 16, consecutively) new cases of pertussis were notified, a decrease from 39 cases in the previous two weeks, including nine confirmed cases, nine probable cases, and 11 cases still under investigation.

One hospitalisation was reported in the last two weeks.

There have been a total of 679 cases of pertussis notified in EpiSurv since 26 December 2009 (the beginning of surveillance week 1 for 2010), including 353 confirmed cases, 283 probable cases, 19 suspect cases, and 24 cases still under investigation.

Seventy hospitalisations and no deaths have been reported during this period.

The highest cumulative rates of cases reported since 26 December 2009 was recorded in West Coast (36.8 per 100 000 population, 12 cases), Capital and Coast (32.3 per 100 000, 93 cases), and Canterbury (28.1 per 100 000, 141 cases) DHBs. Canterbury DHB had the highest number of notifications (141 cases), followed by Capital and Coast DHB (93 cases).

This report incorporates the temporal distribution of cases, and the distribution of cases by age, ethnicity (prioritised), and district health board (DHB), as well as hospitalisations and immunisation status. The case classification used in this report is specified in the appendix.

Temporal distribution

Figure 1 shows number of pertussis cases notified by surveillance week for 2008, 2009 and 2010 (to date). After an initial peak in week 3, the 2010 trend has generally followed the 2009 trend but at slightly lower levels. As in previous years, a typical saw-tooth pattern is apparent from week 23 to date. After a drop during the previous fortnight, the number of cases has increased slightly in the past two weeks. However, the total number of cases may change as cases are investigated further.

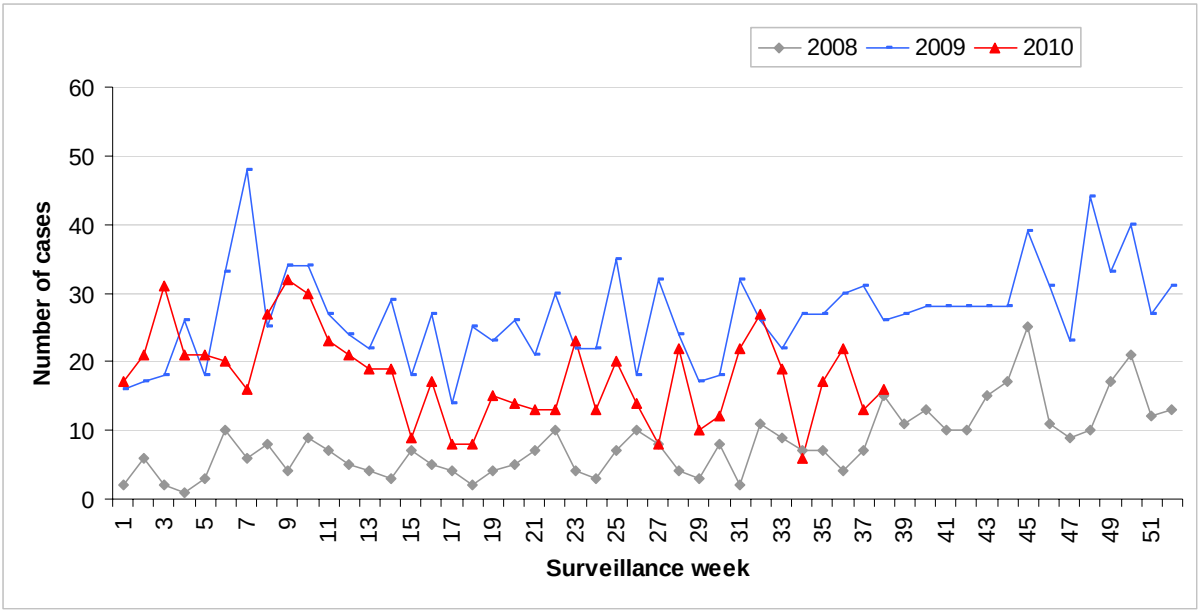

Figure 1: Comparative epidemic curves of total pertussis cases by week reported during years 2008, 2009 and 2010 (surveillance week = Saturday to Friday inclusive).

Figure 2 shows number of pertussis cases notified and hospitalisations by calendar month between January 1997 and August 2010. A four-year cycle can be seen with number of cases peaking in years 2000 and 2004. While the number of cases has been declining since the end of 2009, there has been a slight increasing trend in the last three months with higher hospitalisations during August.

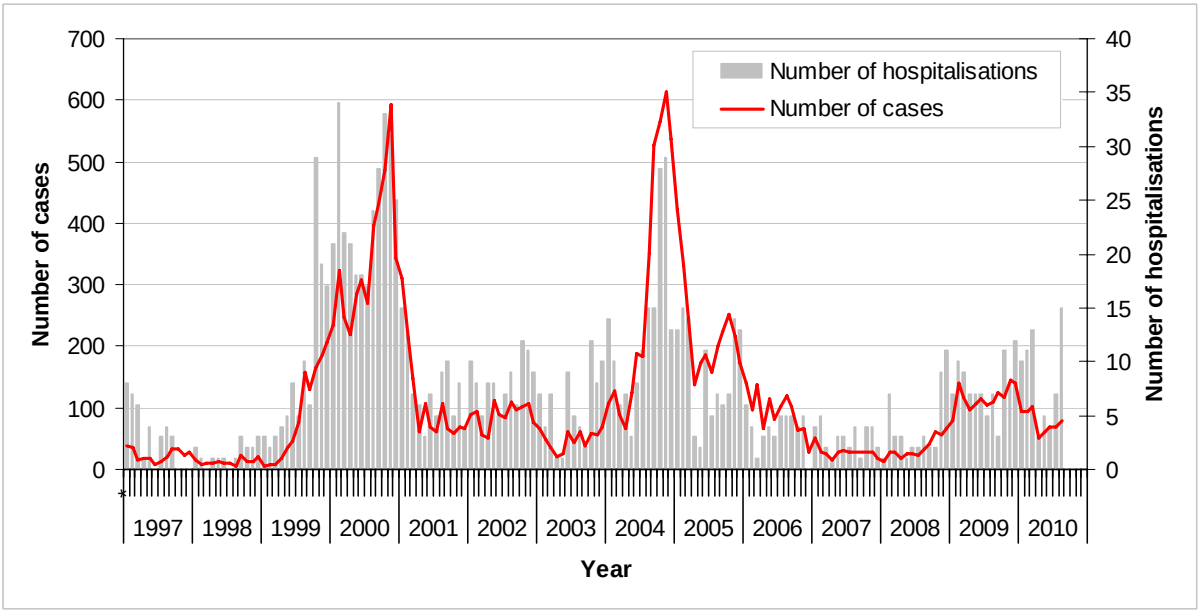

Figure 2: Epidemic curve of pertussis cases by calendar month-year since 1997 in New Zealand

Age distribution

Figure 3 displays age-specific cumulative rate of pertussis cases and Table 1 shows notifications and associated rates by age, including new cases for the past two weeks. Pertussis rates continue to increase across age groups. Of the cases reported since 26 December 2009, infants aged less than one year had the highest cumulative rate (98.3 per 100 000 population, 62 cases), followed by the 1 to 4 years (43.3 per 100 000, 105 cases) and 5 to 9 years (22.6 per 100 000, 65 cases) age groups. There have been eight (1.2%) infants aged less than 6 weeks reported since 26 December 2009.

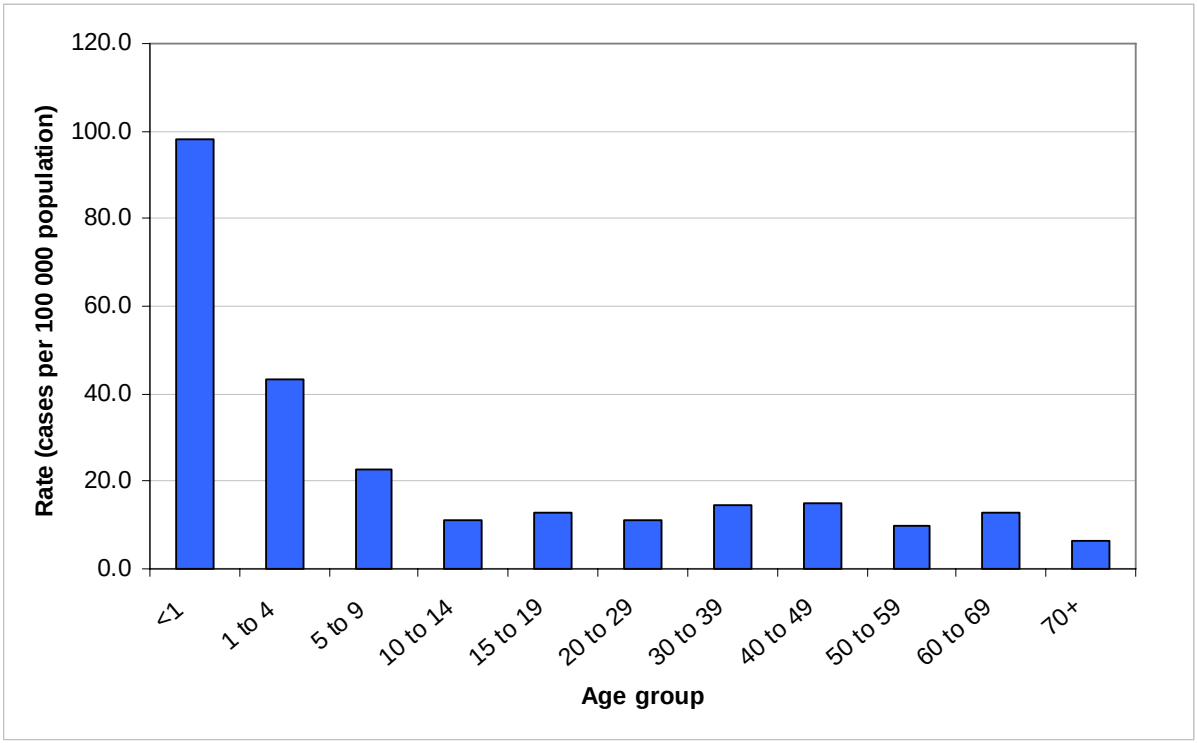

Figure 3: Age-specific rates (cases per 100 000 population) of cases reported since end of December 2009

Table 1: Pertussis cases and rates by age group since 26 December 2009, including new cases in the last two weeks

	Cumulative[2] notifications			Last two weeks[3]	
Age group (Years)	**Cases**	**Rates[1]**	**Hosp**	**New cases**	**Hosp**
<1	62	98.3	42	3	1
1 to 4	105	43.3	7	2	0
5 to 9	65	22.6	0	3	0
10 to 14	33	11.1	3	0	0
15 to 19	41	12.7	2	1	0
20 to 29	66	11.3	4	2	0
30 to 39	85	14.7	3	3	0
40 to 49	94	14.8	1	4	0
50 to 59	52	9.8	4	2	0
60 to 69	51	13.0	2	6	0
70+	25	6.6	2	3	0
Unknown	0	-	0	0	0
Overall	679	15.7	70	29	1

[1]Rate of pertussis cases per 100 000 population calculated using 2009 mid-year population estimates. Rates calculated on fewer than five cases are unstable and should be interpreted with caution.
[2] Cumulative notifications between 26 December 2009 and 3 September 2010
[3] Rates for the last two weeks were not calculated because of small numbers (<5 cases) in majority of the categories

Ethnicity

Rates and number of cases notified by ethnicity are shown in Table 2. Of the pertussis cases with known ethnicity reported in the past two weeks, those of European ethnicity had the highest number of cases reported (17 cases). Of the cases reported since 26 December 2009, the ethnic-specific rates were highest in Pacific Peoples (19.0 per 100 000 population, 43 cases), followed by those of European (18.7 per 100 000, 504 cases), and Maori (15.7 per 100 000, 89 cases) ethnicities.

Table 2: Pertussis cases and rates by ethnicity (prioritised) since 26 December 2009, including new cases in the last two weeks

	Cumulative[2] notifications			Last two weeks[3]	
Ethnicity	**Cases**	**Rates[1]**	**Hosp**	**New cases**	**Hosp**
Maori	89	15.7	21	2	1
Pacific Peoples	43	19.0	19	1	0
Other	13	3.5	1	1	0
European	504	18.7	28	17	0
Unknown	30	-	1	8	0
Overall	679	16.9	70	29	1

[1]Rate of pertussis cases per 100 000 population calculated using 2006 census data from the NZ statistics.
Rates calculated on fewer than five cases are unstable and should be interpreted with caution.
[2] Cumulative notifications between 26 December 2009 and 3 September 2010
[3] Rates for the last two weeks were not calculated because of small numbers (<5 cases) in majority of the categories
Hosp: hospitalisation counts

Hospitalisations

In the last two weeks, one hospitalisation was reported. The case was of Maori ethnicity and aged less than one year. There have been 70 hospitalisations reported in EpiSurv since 26 December 2009, including 15 hospitalisations reported in August 2010. Of the 70 hospitalisations, 42 (60.0%) were infants aged less than one year including six cases aged less than six weeks. Counties Manukau DHB had the highest number of cumulative hospitalisations (18 cases). The distribution of hospitalisations by age group, ethnicity, and DHB is described in Table 1, Table 2 and Table 3 respectively. Of the confirmed cases with known hospitalisation status reported since 26 December 2009, the proportion of hospitalisations was highest in Pacific Peoples (69.6%, 16/23), followed by those of Maori (34.6%, 18/52), Other (16.7%, 1/6) and European (8.7%, 23/265) ethnicities.

Geographic distribution

The cumulative rates of pertussis cases notified since 26 December 2009 by DHB can be seen in Figure 4 and Table 5 (appendix). In the last two weeks, the highest number of cases was reported in Auckland and Canterbury DHBs (4 cases each). Of the cases reported since 26 December 2009, the highest cumulative rate was recorded in West Coast DHB (36.8 per 100 000 population, 12 cases), followed by Capital and Coast (32.3 per 100 000, 93 cases), Canterbury (28.1 per 100 000, 141 cases), and Taranaki (24.0 per 100 000, 26 cases) DHBs. During this period, Canterbury DHB had the highest number of notifications (141 cases), followed by Capital and Coast DHB (93 cases).

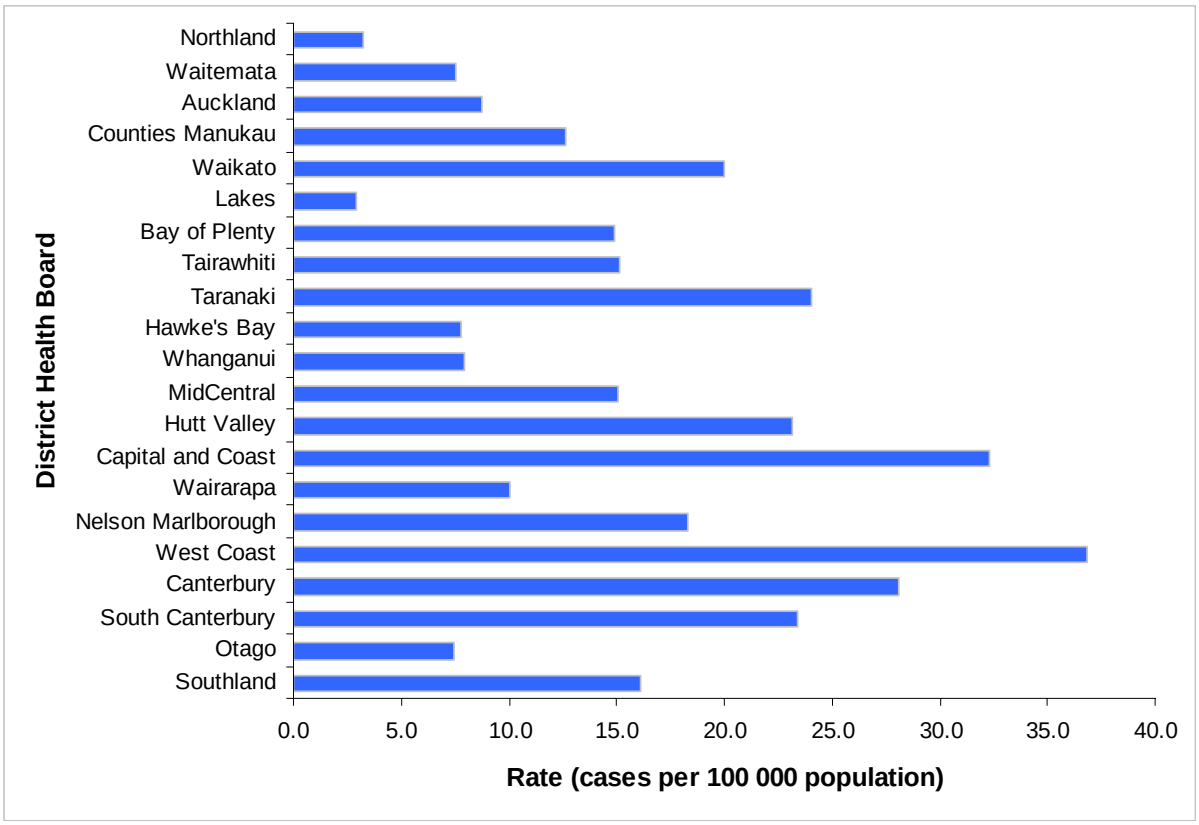

Figure 4: Geographic distribution of pertussis showing crude rates (cases per 100 000 population) of cases reported since 26 December 2009. Rates were calculated using 2009 mid-year population estimates. Rates calculated on fewer than five cases are unstable and should be interpreted with caution.

Immunisation status

The immunisation status for confirmed pertussis cases is shown in Table 3 and Table 4 for cases reported in the last two weeks and since the 26 December 2009, respectively. Of the nine confirmed cases reported in the last two weeks, five (55.6%) had a known vaccination status. Of these five cases, two were not vaccinated, two cases had received one dose of vaccine and one case was reported as being vaccinated but no dose information was available.

Table 3: Immunisation status of pertussis cases (confirmed) notified in the last two weeks

Age Group	Total cases	One dose	Two doses	Three doses	Four doses	Five doses	Vaccinated (no dose info)	Not vaccinated	Unknown
<6wks	0	-	-	-	-	-	-	-	-
6wks - 2mths	1	1	0	0	0	0	0	0	0
3-4 mths	1	1	0	0	0	0	0	0	0
5mths - 3yrs	1	0	0	0	0	0	1	0	0
4 - 10yrs	1	0	0	0	0	0	0	1	0
11+ yrs	5	0	0	0	0	0	0	1	4
Total	9	2	0	0	0	0	1	2	4

Of the 353 confirmed cases reported since 26 December 2009, 240 (68.0%) had a known vaccination status (Table 4). Of these 240 cases, 127 were not vaccinated including seven cases aged less than six weeks and therefore not eligible for vaccination. Twenty-eight cases had received one dose of vaccine, eight cases had received two doses, 27 cases had received three doses, eight cases had received four doses, and 12 cases reported having completed their pertussis vaccination. A further 30 cases reported being vaccinated but no dose information was available.

Table 4: Immunisation status of pertussis cases (confirmed) notified since 26 December 2009

Age Group	Total cases	One dose	Two doses	Three doses	Four doses	Five doses	Vaccinated (no dose info)	Not vaccinated	Unknown
<6wks	8	0	0	0	0	0	0	7	1
6wks - 2mths	20	8	0	0	0	0	0	12	0
3-4 mths	16	6	4	0	0	0	1	4	1
5mths - 3yrs	54	1	3	15	0	0	5	27	3
4 - 10yrs	61	6	0	3	6	4	1	34	7
11+ yrs	194	7	1	9	2	8	23	43	101
Total	353	28	8	27	8	12	30	127	113

Appendix

Table 5: Pertussis cases and rates by DHB since 26 December 2009, including new cases in the last two weeks

	Cumulative notifications			Last two weeks[3]	
DHB	**Cases**	**Rates[1]**	**Hosp**	**Cases**	**Hosp**
Northland	5	3.2	0	1	0
Waitemata	40	7.6	9	1	0
Auckland	39	8.8	4	4	0
Counties Manukau	61	12.7	18	2	0
Waikato	72	20.0	4	2	0
Lakes	3	2.9	0	1	0
Bay of Plenty	31	14.9	8	2	0
Tairawhiti	7	15.2	1	0	0
Taranaki	26	24.0	5	0	0
Hawke's Bay	12	7.8	4	0	0
Whanganui	5	7.9	0	0	0
MidCentral	25	15.1	4	1	1
Hutt Valley	33	23.1	1	1	0
Capital and Coast	93	32.3	2	3	0
Wairarapa	4	10.0	1	0	0
Nelson Marlborough	25	18.3	0	1	0
West Coast	12	36.8	1	0	0
Canterbury	141	28.1	6	4	0
South Canterbury	13	23.4	1	0	0
Otago	14	7.4	1	1	0
Southland	18	16.1	0	5	0
Total	679	15.7	70	29	1

[1]Rate of pertussis cases per 100 000 population calculated using 2009 mid-year population estimates.
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[2] Cumulative notifications between 26 December 2009 and 17 September 2010
[3] Rates for the last two weeks were not calculated because of small numbers (<5 cases) in majority of the categories.

Case classification for pertussis notification in New Zealand

Confirmed	A clinically compatible illness that is laboratory confirmed by isolation of *Bordetella pertussis* from a pernasal swab, or epidemiologically linked to a confirmed case.
Probable	Cough lasting longer than two weeks and one or more of the following: • Paroxysmal cough • Cough ending in vomiting or apnoea • Inspiratory whoop for which there is no other known cause.
Suspect	In children under five years of age any paroxysmal cough with whoop, vomiting or apnoea for which there is no other known cause.
Other	Status recorded as *under investigation* or suspect case.
Notifications	Include confirmed cases, probable, and other as specified above.

This report is available on the internet from www.surv.esr.cri.nz