

# PERTUSSIS REPORT

## October 2010 (Weeks 41-42)

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This report includes cases of pertussis reported in EpiSurv up to midnight 15 October 2010. Data was extracted from EpiSurv at 10.00 am 19 October 2010.

### Summary

In the past two weeks ending 15 October 2010, 29 (18 and 11, consecutively) new cases of pertussis were notified, an increase from 25 cases in the previous two weeks, including eight confirmed cases, 16 probable cases, and five cases still under investigation.

Three hospitalisations were reported in the last two weeks.

There have been a total of 729 cases of pertussis notified in EpiSurv since 26 December 2009 (the beginning of surveillance week 1 for 2010), including 373 confirmed cases, 321 probable cases, 18 suspect cases, and 17 cases still under investigation.

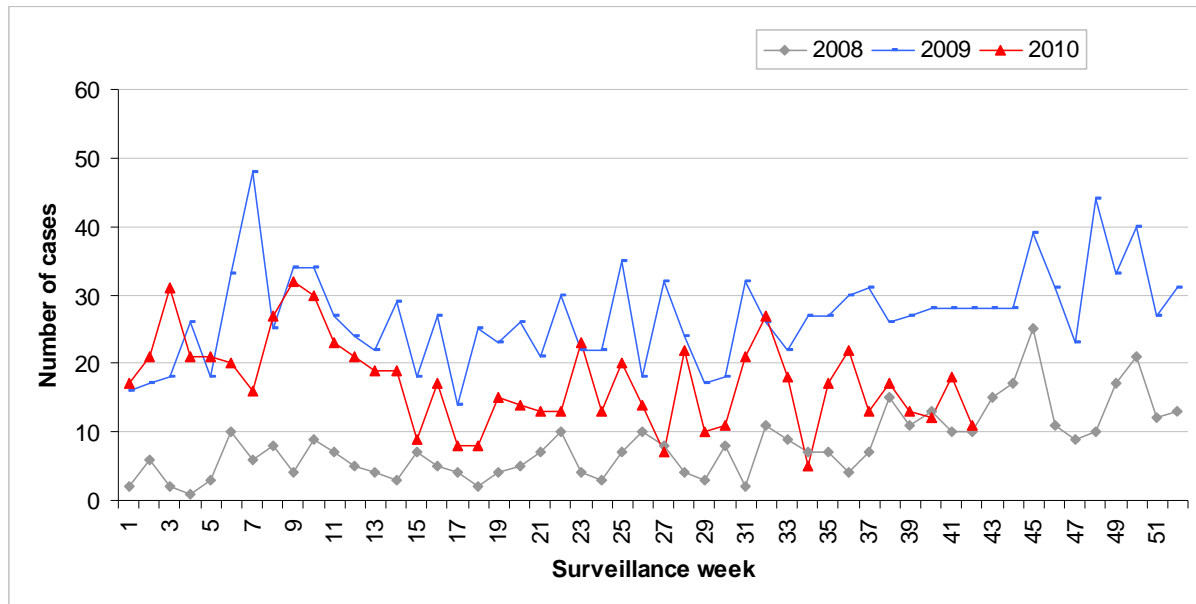
Seventy-seven hospitalisations and no deaths have been reported during this period.

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 (32.6 per 100 000, 94 cases), and Canterbury (29.9 per 100 000, 150 cases) DHBs. Canterbury DHB had the highest number of notifications (150 cases), followed by Capital and Coast DHB (94 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 hospitalisation and immunisation status. The case classification used in this report is specified in the appendix.

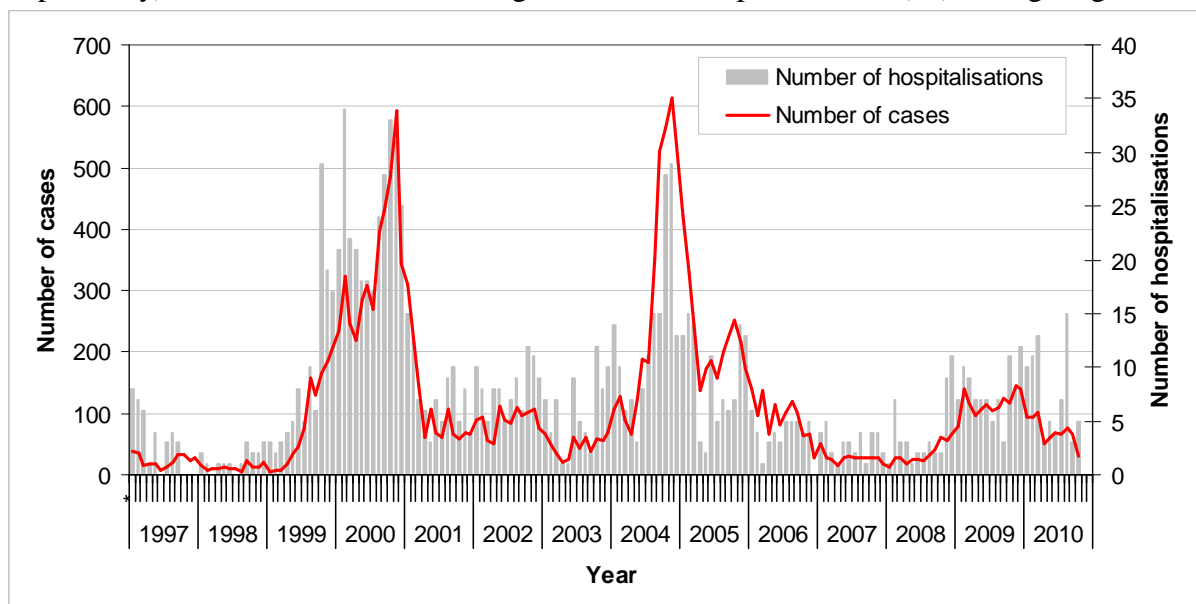
## Temporal distribution

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 was an increase in cases in the last three months (July to September – 67, 76, 66 respectively). In addition there was a high number of hospitalisations (15) during August.



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

## Age distribution

Figure 3 displays the 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 (111.0 per 100 000 population, 70 cases), followed by the 1 to 4 years (42.9 per 100 000, 104 cases) and 5 to 9 years (24.3 per 100 000, 70 cases) age groups. There have been 10 (1.4%) infants aged less than 6 weeks reported since 26 December 2009.

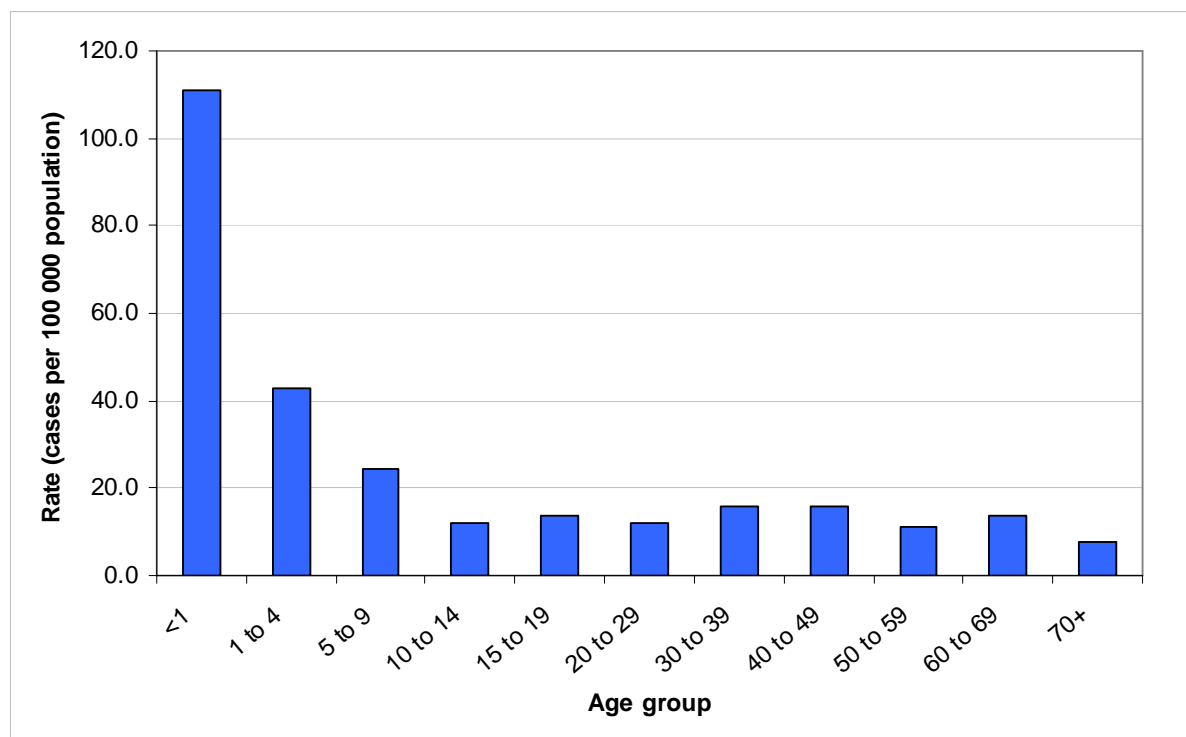


Figure 3: Age-specific rates (cases per 100 000 population) of cases reported since 26 December 2009

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

Age group (Years)	Cumulative <sup>2</sup> notifications			Last two weeks <sup>3</sup>	
	Cases	Rates <sup>1</sup>	Hosp	New cases	Hosp
<1	70	111.0	46	3	1
1 to 4	104	42.9	8	2	1
5 to 9	70	24.3	0	3	0
10 to 14	36	12.1	4	2	1
15 to 19	44	13.6	2	1	0
20 to 29	69	11.8	4	3	0
30 to 39	92	16.0	3	5	0
40 to 49	101	15.9	1	4	0
50 to 59	60	11.3	5	3	0
60 to 69	54	13.7	2	2	0
70+	29	7.6	2	1	0
Unknown	0		0	0	0
<b>Overall</b>	<b>729</b>	<b>16.9</b>	<b>77</b>	<b>29</b>	<b>3</b>

<sup>1</sup>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.

<sup>2</sup> Cumulative notifications between 26 December 2009 and 15 October 2010

<sup>3</sup> 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 25 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 (21.2 per 100 000 population, 48 cases), followed by those of European (20.2 per 100 000, 545 cases), and Maori (17.2 per 100 000, 97 cases) ethnicities.

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

Ethnicity	Cumulative <sup>2</sup> notifications			Last two weeks <sup>3</sup>	
	Cases	Rates <sup>1</sup>	Hosp	New cases	Hosp
Maori	97	17.2	23	3	1
Pacific Peoples	48	21.2	22	4	2
Other	15	4.0	2	1	0
European	545	20.2	29	17	0
Unknown	24		1	4	0
<b>Overall</b>	<b>729</b>	<b>18.1</b>	<b>77</b>	<b>29</b>	<b>3</b>

<sup>1</sup>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.

<sup>2</sup> Cumulative notifications between 26 December 2009 and 15 October 2010

<sup>3</sup> Rates for the last two weeks were not calculated because of small numbers (<5 cases) in majority of the categories

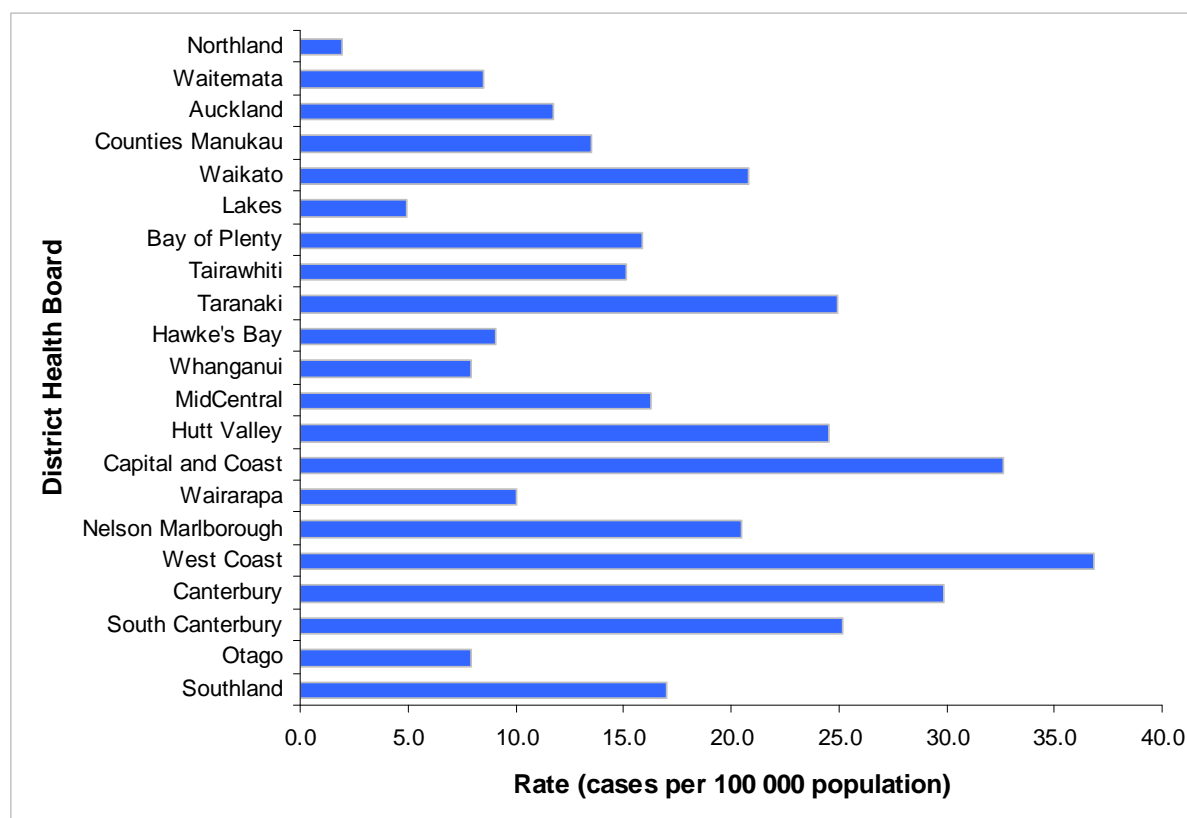
**Hosp**: hospitalisation counts

## Hospitalisations

In the last two weeks, three hospitalisations were reported. Two were Pacific Peoples (aged <1 and 1 to 4 years) and one was of Maori (10 to 14 years) ethnicities. There have been 77 hospitalisations reported in EpiSurv since 26 December 2009, including 15 hospitalisations reported in August 2010. Of the 77 hospitalisations, 46 (59.7%) were infants aged less than one year including eight cases aged less than six weeks. Counties Manukau DHB had the highest number of cumulative hospitalisations (20 cases). The distribution of hospitalisations by age group, ethnicity, and DHB is described in Table 1, Table 2 and Table 5 respectively. Of the confirmed cases with known hospitalisation status reported since 26 December 2009, the proportion of hospitalisations was highest in Pacific Peoples (73.1%, 19/26), followed by those of Maori (35.2%, 19/54), Other (16.7%, 1/6), and European (8.8%, 23/260) 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 (6 cases each) DHBs. 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 (32.6 per 100 000, 94 cases), Canterbury (29.9 per 100 000, 150 cases), and South Canterbury (25.2 per 100 000, 14 cases) DHBs. During this period, Canterbury DHB had the highest number of notifications (150 cases), followed by Capital and Coast DHB (94 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 eight confirmed cases reported in the last two weeks, five (62.5%) had a known vaccination status. Of these five cases, three were not vaccinated, one case had received one dose of vaccine and one case had received four doses of vaccine.

**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		Unknown
							(no dose info)	Not vaccinated	
<6wks	0	-	-	-	-	-	-	-	-
6wks - 2mths	1	1	0	0	0	0	0	0	0
3-4 mths	0	0	0	0	0	0	0	0	0
5mths - 3yrs	1	0	0	0	0	0	0	1	0
4 - 10yrs	0	0	0	0	0	0	0	0	0
11+ yrs	6	0	0	0	1	0	0	2	3
<b>Total</b>	<b>8</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>

Of the 373 confirmed cases reported since 26 December 2009, 251 (67.3%) had a known vaccination status (Table 4). Of these 251 cases, 134 were not vaccinated including nine cases aged less than six weeks and therefore not eligible for vaccination. Twenty-nine cases had received one dose of vaccine, eight cases had received two doses, 27 cases had received three

doses, 10 cases had received four doses, and 13 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		Unknown
							(no dose info)	Not vaccinated	
<6wks	10	-	-	-	-	-	-	9	1
6wks - 2mths	23	9	0	0	0	0	0	13	1
3-4 mths	16	6	4	0	0	0	1	4	1
5mths - 3yrs	56	1	3	15	0	0	5	28	4
4 - 10yrs	64	6	0	3	6	5	1	35	8
11+ yrs	204	7	1	9	4	8	23	45	107
Total	373	29	8	27	10	13	30	134	122

## Appendix

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

DHB	Cumulative notifications			Last two weeks <sup>3</sup>	
	Cases	Rates <sup>1</sup>	Hosp	Cases	Hosp
Northland	3	1.9	0	0	0
Waitemata	45	8.5	10	1	0
Auckland	52	11.7	7	6	1
Counties Manukau	65	13.5	20	4	2
Waikato	75	20.8	4	3	0
Lakes	5	4.9	0	1	0
Bay of Plenty	33	15.9	8	1	0
Tairāwhiti	7	15.2	1	0	0
Taranaki	27	24.9	5	1	0
Hawke's Bay	14	9.1	5	0	0
Whanganui	5	7.9	0	0	0
MidCentral	27	16.3	4	0	0
Hutt Valley	35	24.5	1	1	0
Capital and Coast	94	32.6	2	0	0
Wairarapa	4	10.0	1	0	0
Nelson Marlborough	28	20.5	0	3	0
West Coast	12	36.8	1	0	0
Canterbury	150	29.9	6	6	0
South Canterbury	14	25.2	1	0	0
Otago	15	8.0	1	1	0
Southland	19	17.0	0	1	0
<b>Total</b>	<b>729</b>	<b>16.9</b>	<b>77</b>	<b>29</b>	<b>3</b>

<sup>1</sup>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.

<sup>2</sup>Cumulative notifications between 26 December 2009 and 15 October 2010

<sup>3</sup>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

<b>Confirmed</b>	A clinically compatible illness that is laboratory confirmed by isolation of <i>Bordetella pertussis</i> from a pernasal swab, or epidemiologically linked to a confirmed case.
<b>Probable</b>	Cough lasting longer than two weeks and one or more of the following: <ul style="list-style-type: none"> <li>• Paroxysmal cough</li> <li>• Cough ending in vomiting or apnoea</li> <li>• Inspiratory whoop for which there is no other known cause.</li> </ul>
<b>Suspect</b>	In children under five years of age any paroxysmal cough with whoop, vomiting or apnoea for which there is no other known cause.
<b>Other</b>	Status recorded as <i>under investigation</i> or suspect case.
<b>Notifications</b>	Include confirmed cases, probable, and other as specified above.

This report is available on the internet from [www.surv.esr.cri.nz](http://www.surv.esr.cri.nz)