

# PERTUSSIS REPORT

## July 2010 (Weeks 33-34)

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This report includes cases of pertussis reported in EpiSurv up to midnight 20 August 2010. Data was extracted from EpiSurv at 10.00 am 24 August 2010.

### Summary

In the past two weeks ending 20 August 2010, 25 (18 and 7 consecutively) new cases of pertussis were notified, a substantial decrease (51.0%) from the previous two weeks (51 cases), including 13 confirmed cases, six probable cases, one suspect case, and five cases still under investigation.

Four hospitalisations were reported in the last two weeks.

There has been a total of 613 pertussis notifications reported in EpiSurv since 26 December 2009 (the beginning of surveillance week 1 for 2010), including 327 confirmed cases, 252 probable cases, 16 suspect cases, and 18 cases still under investigation.

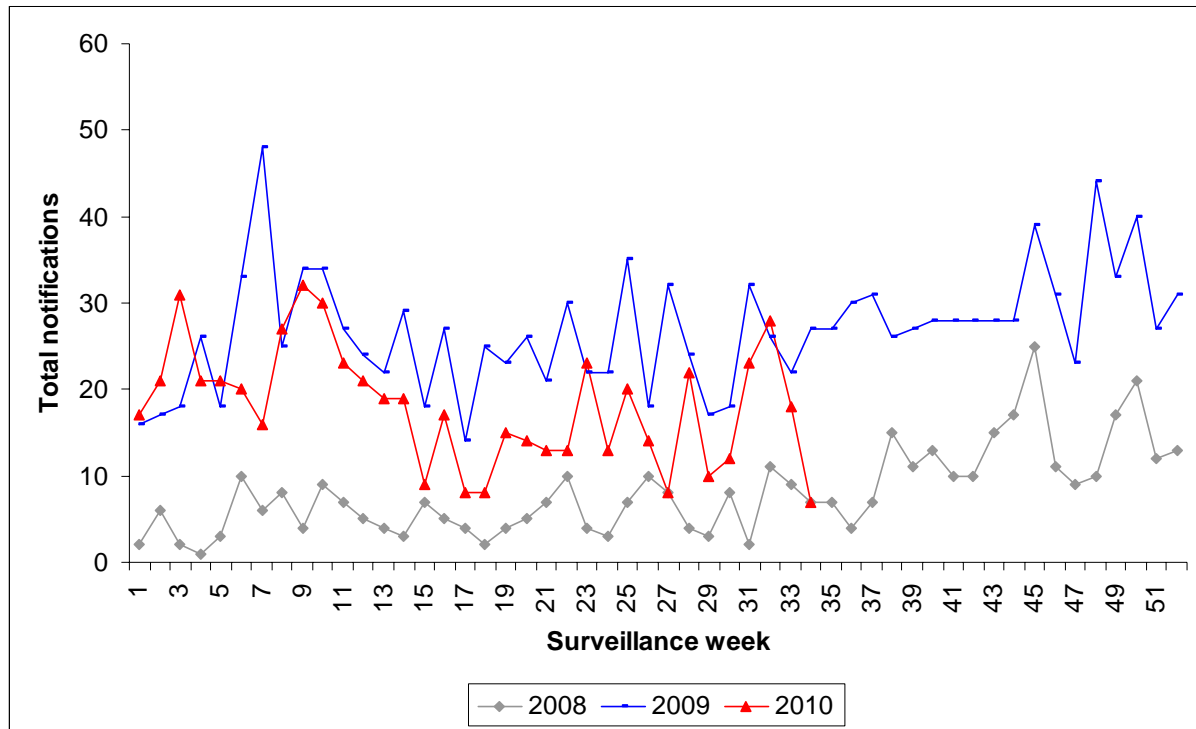
Sixty-two hospitalisations and no deaths have been reported during this period.

The highest cumulative rate since 26 December 2009 was recorded in West Coast DHB (36.8 per 100 000 population, 12 cases), followed by Capital and Coast (28.5 per 100 000, 82 cases), Canterbury (26.3 per 100 000, 132 cases), Taranaki (24.0 per 100 000, 26 cases) and South Canterbury (23.4 per 100 000, 13 cases) DHBs.

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.

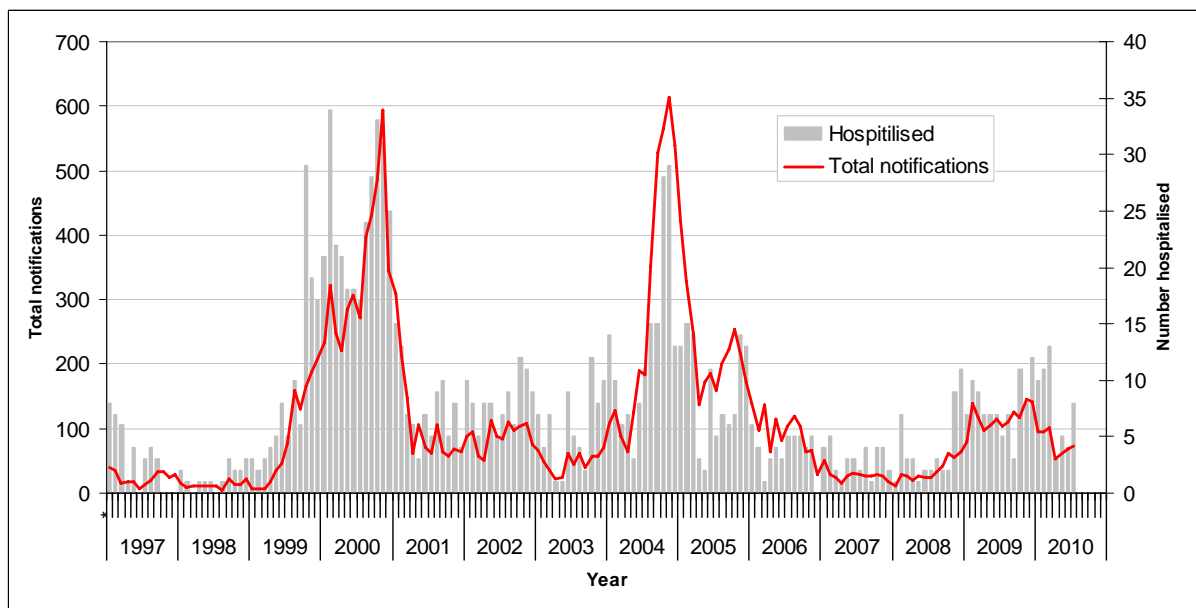
## Temporal distribution of pertussis cases

Figure 1 shows weekly total pertussis notifications for 2008, 2009 and 2010 (to date). After an initial peak in week 3, notifications have generally followed the 2009 trend but at slightly lower levels. The number of cases has decreased substantial in the past two weeks to the same level as 2008 for week 34. However, the total number of notifications may change as cases are investigated.



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

Figure 2 shows pertussis notifications and hospitalisations by calendar month between January 1997 and July 2010. A four-year cycle can be seen with notifications peaking in years 2000 and 2004. While a slight reduction in the number of cases has been recorded since the end of 2009, monthly notifications have begun to increase in the last three months.



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

## Age distribution of cases

Figure 3 displays age-specific cumulative incidence of pertussis cases and Table 1 shows notifications and associated rates by age, including new cases for the past two weeks. Infants aged less than one year had the highest cumulative incidence of pertussis cases since 26 December 2009 (84.0 per 100 000 population, 53 cases), followed by the 1 to 4 years (38.4 per 100 000, 93 cases) and 5 to 9 years (21.2 per 100 000, 61 cases) age groups. Of all the 613 cumulative cases, nine were infants under 6 weeks of age.

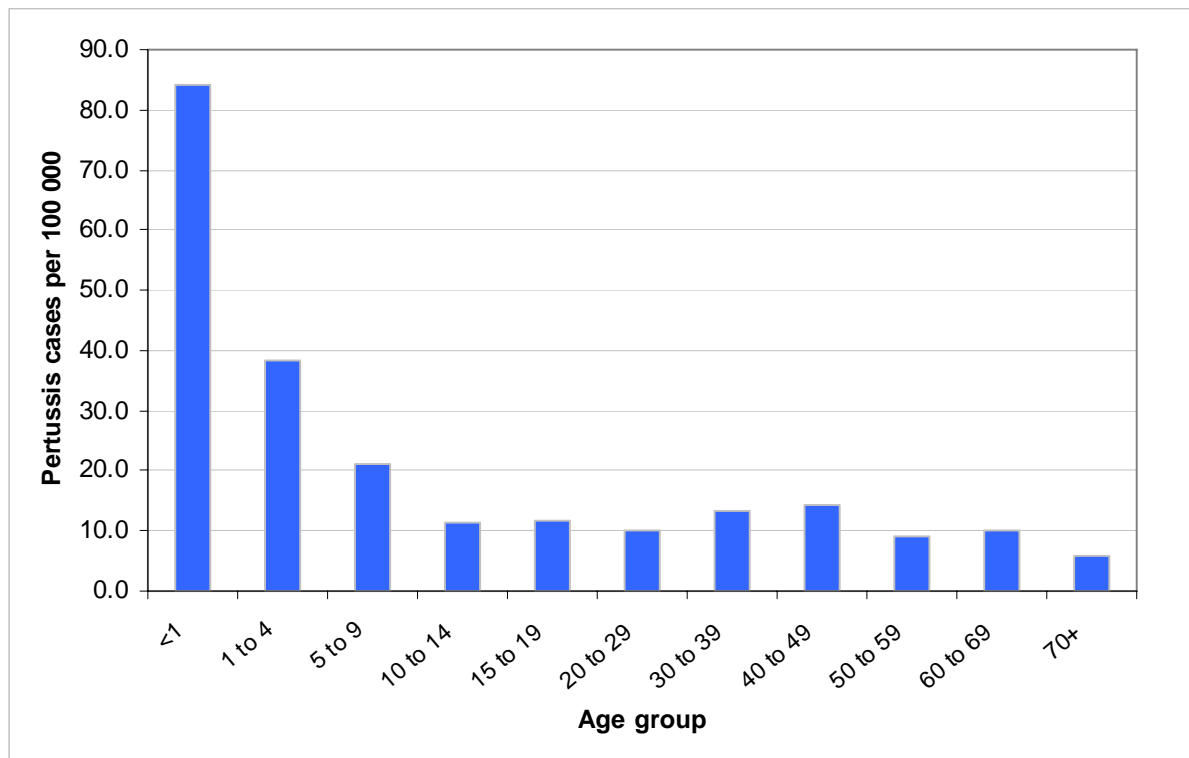


Figure 3: Age-specific pertussis cases per 100 000 populations since end of December 2009

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

Age group (Years)	Cumulative <sup>2</sup> notifications			Last two weeks <sup>3</sup>	
	Cases	Rates <sup>1</sup>	Hosp	New cases	Hosp
<1	53	84.0	37	4	1
1 to 4	93	38.4	6	3	0
5 to 9	61	21.2	0	1	0
10 to 14	34	11.4	3	1	0
15 to 19	38	11.8	2	0	0
20 to 29	58	9.9	4	1	1
30 to 39	77	13.4	2	1	0
40 to 49	90	14.2	1	7	0
50 to 59	48	9.0	3	4	1
60 to 69	39	9.9	2	1	0
70+	22	5.8	2	2	1
Unknown	0		0	0	0
<b>Overall</b>	<b>613</b>	<b>14.2</b>	<b>62</b>	<b>25</b>	<b>4</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 20 August 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

Pertussis notifications and rates by ethnicity are shown in Table 2. Of the pertussis cases with known ethnicity in the past two weeks, Europeans had the highest numbers of cases (15 cases), followed by Maori (3 cases). Of the total notifications since 26 December 2009, the ethnic-specific rate was highest in Europeans (16.9 per 100 000, 456) and Pacific Peoples (16.8 per 100 000, 38 cases), followed by Maori (14.5 per 100 000, 82 cases).

**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	82	14.5	18	3	0
Pacific Peoples	38	16.8	17	1	1
Other	10	2.7	1	0	0
European	456	16.9	26	15	3
Unknown	27		0	6	0
<b>Overall</b>	<b>613</b>	<b>15.2</b>	<b>62</b>	<b>25</b>	<b>4</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 20 August 2010

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

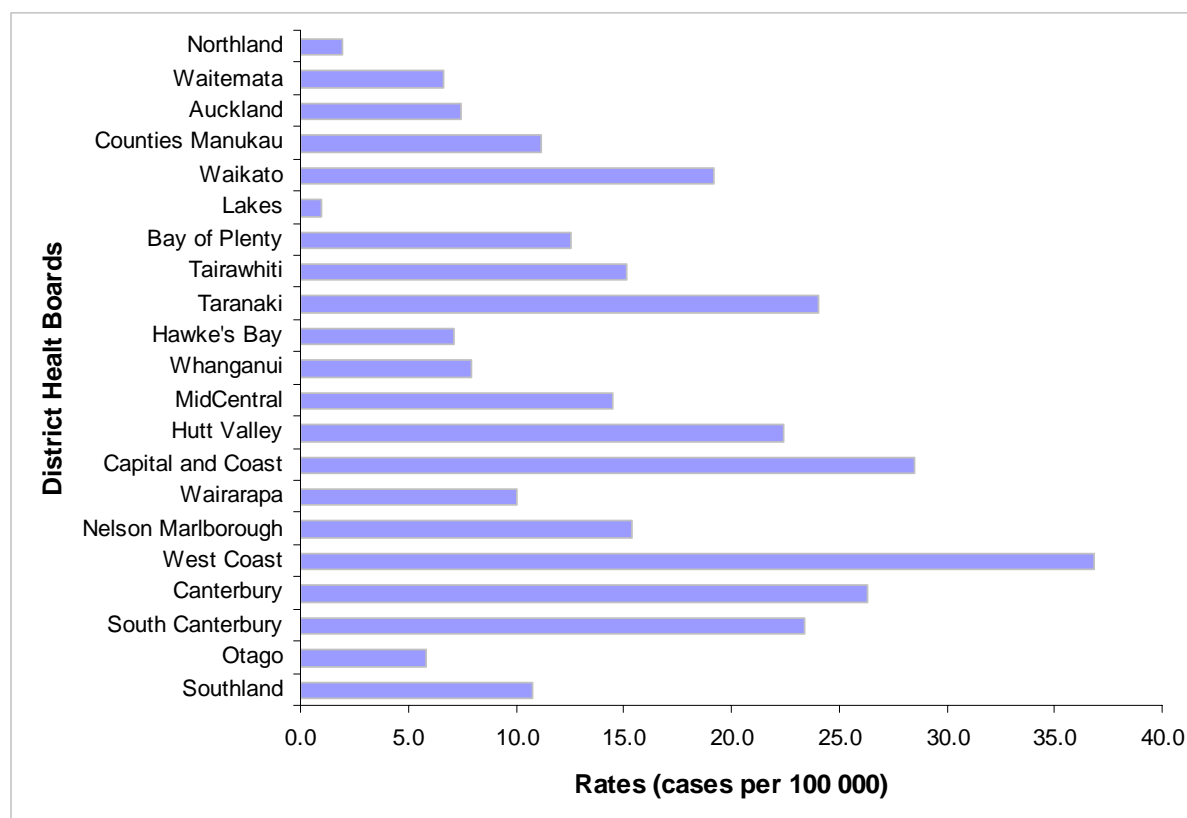
**Hosp:** hospitalisation counts

## Hospitalisations

In the last two weeks, four hospitalisations were recorded in the following age groups: less than 1 year, 20 to 29 years, 50 to 59 years and 70+ years (1 case each). There have been 62 hospitalisations reported in EpiSurv since 26 December 2009. Thirty-seven (59.7%) of these were infants aged less than one year including seven cases aged less than six weeks. Counties Manukau and Waitemata DHBs had the highest number of cumulative hospitalisations (16 and 7, respectively). The distribution of hospitalisations by age group, ethnicity, and DHB are described in Table 1, Table 2 and Table 3 respectively. Based on confirmed cases with known hospitalisation status reported since 26 December 2009, the proportion of hospitalisations was highest in Pacific Peoples (70.0%, 14/20), followed by those of Maori (32.6%, 15/46), Other (14.3%, 1/7) and European (9.1%, 21/230) ethnicities.

## Geographic distribution

The rates of pertussis notifications by DHB can be seen in Figure 4 and Table 5 (appendix). In the last two weeks, the highest number of notifications was reported in Counties Manukau (5 cases) and Waikato (4 cases) DHBs. The highest cumulative rate since 26 December 2009 was recorded in West Coast DHB (36.8 per 100 000 population, 12 cases), followed by Capital and Coast (28.5 per 100 000, 82 cases), Canterbury (26.3 per 100 000, 132 cases), Taranaki (24.0 per 100 000, 26 cases) and South Canterbury (23.4 per 100 000, 13 cases) DHBs. Canterbury DHB reported the highest number of notifications (132 cases) over this period followed by Capital and Coast DHB (82 cases).



**Figure 4: Geographic distribution of pertussis showing crude rates (cases per 100 000 populations) 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 the last two weeks and since the end of December, respectively. Of the 13 confirmed cases reported in the last two weeks, eight (61.5%) had a known vaccination status. Of these eight cases, seven were not vaccinated, and one case reported 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	Vaccinated					Five doses	Vaccinated (no dose info)	Not vaccinated	Unknown
		One dose	Two doses	Three doses	Four doses					
<6wks	1	-	-	-	-	-	-	-	1	-
6wks - 2mths	0	-	-	-	-	-	-	-	-	-
3-4 mths	1	0	0	-	-	-	-	-	1	-
5mths - 3yrs	3	0	0	0	0	0	-	-	3	-
4 - 10yrs	0	-	-	-	-	-	-	-	-	-
11+ yrs	8	0	0	0	0	0	1	-	2	5
<b>Total</b>	<b>13</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>7</b>	<b>5</b>

Of the 327 confirmed cases reported since 26 December 2009, 220 (67.3 %) had a known vaccination status (Table 4). Of these 220 cases, 116 were not vaccinated including seven cases aged less than six weeks and therefore not eligible for vaccination. Twenty-six cases had received one dose of vaccine, seven cases had received two doses, 25 cases had received three doses, eight cases had received four doses, and 11 cases reported having completed pertussis vaccination. A further 27 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	-	-	-	-	-	-	7	1
6wks - 2mths	17	7	0	0	-	-	-	10	-
3-4 mths	13	5	3	0	0	0	1	3	1
5mths - 3yrs	49	1	3	13	0	0	4	24	4
4 - 10yrs	56	6	0	3	6	4	1	30	6
11+ yrs	184	7	1	9	2	7	21	42	95
<b>Total</b>	<b>327</b>	<b>26</b>	<b>7</b>	<b>25</b>	<b>8</b>	<b>11</b>	<b>27</b>	<b>116</b>	<b>107</b>

## 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	35	6.6	7	2	0
Auckland	33	7.4	4	1	0
Counties Manukau	54	11.2	16	5	2
Waikato	69	19.2	4	4	2
Lakes	1	1.0	0	0	0
Bay of Plenty	26	12.5	6	0	0
Tairāwhiti	7	15.2	1	2	0
Taranaki	26	24.0	5	0	0
Hawke's Bay	11	7.1	3	0	0
Whanganui	5	7.9	0	0	0
MidCentral	24	14.5	3	0	0
Hutt Valley	32	22.4	1	1	0
Capital and Coast	82	28.5	2	1	0
Wairarapa	4	10.0	1	0	0
Nelson Marlborough	21	15.4	0	3	0
West Coast	12	36.8	1	1	0
Canterbury	132	26.3	6	3	0
South Canterbury	13	23.4	1	1	0
Otago	11	5.8	1	0	0
Southland	12	10.7	0	1	0
<b>Total</b>	<b>613</b>	<b>14.2</b>	<b>62</b>	<b>25</b>	<b>4</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 10 August 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)