

PERTUSSIS REPORT

January 2012

This report includes cases of pertussis reported in EpiSurv up to midnight 06 January 2012. Data were extracted from EpiSurv at 10.00 am 10 January 2012. Due to potential differential reporting over the holiday period we have considered the last three weeks for new cases instead of the customary two weeks.

Summary

In the past three surveillance weeks (17 Dec - 6 Jan 2012), 240 new cases of pertussis (109, 58 and 73 cases, respectively) were notified, including 93 confirmed cases, 92 probable cases, four suspect cases, and 51 cases still under investigation. Twelve hospitalisations were reported during this period (2, 3 and 7, respectively).

There has been a total of 2014 pertussis notifications reported in EpiSurv in 2011 (compared to 872 in 2010), including 898 confirmed cases, 1001 probable cases, 49 suspect cases, and 66 cases still under investigation. 127 hospitalisations and one death have been reported during this period.

The highest cumulative rate during 2011 was recorded in West Coast DHB (730.2 per 100 000 population, 239 cases), followed by Nelson Marlborough (328.7 per 100 000, 454 cases), Hutt Valley (120.3 per 100 000, 173 cases), Tairāwhiti (81.7 per 100 000, 38 cases), Hawke's Bay (78.6 per 100 000, 122 cases), and Capital and Coast (78.3 per 100 000, 228 cases) DHBs. The highest number of notifications was reported from Nelson Marlborough DHB (454 cases), followed by Canterbury (292 cases), West Coast (239), Capital and Coast (228), Hutt Valley (173), and Hawke's Bay (122) DHBs.

This report summarises pertussis notifications for 2011 (1 January - 31 December) and new cases in the last three weeks (ending 6 January 2012), and incorporates the temporal distribution of cases, the distribution of cases by age, ethnicity (prioritised), and 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 2010, 2011 and 2012 (to week ending 6 January). Notifications for the first week in 2012 are well above 2011 and 2010, though in 2011 they have been running above 2010 levels since week 34 (ending 26 August 2011) and have been rising more or less consistently. Weekly notifications have decreased in the past three weeks compared to the previous ones. Note the total number of notifications may change as cases are investigated further and some are found not to meet the case definition. There was one death reported since the beginning of 2011 and this was in the less than 6 weeks age group.

Figure 1: Comparative epidemic curves of total pertussis notifications by week reported during years 2010, 2011 and 2012 (surveillance week = Saturday to Friday inclusive).

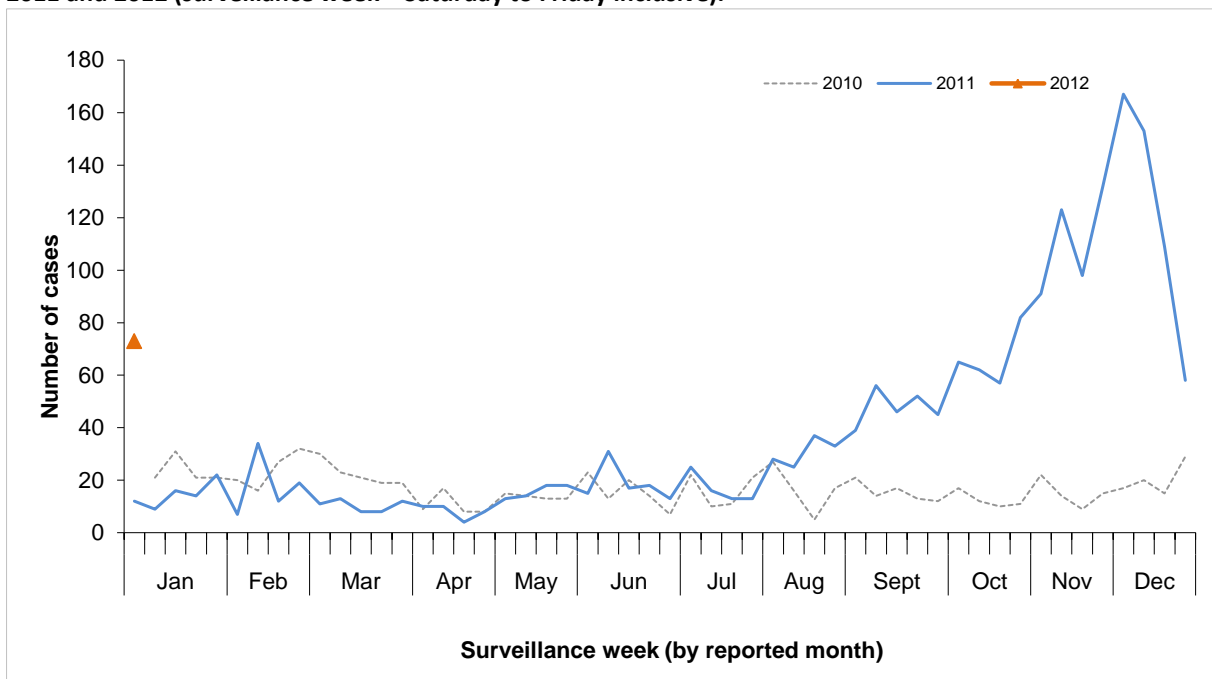
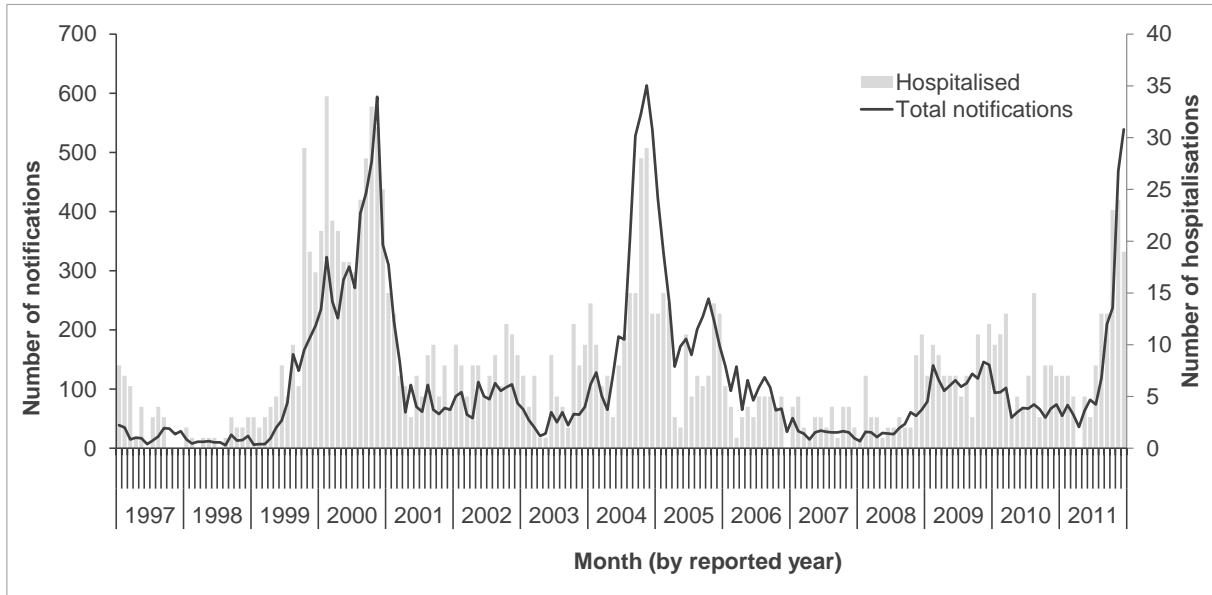


Figure 2 shows pertussis notifications and hospitalisations by calendar month between 1 January 1997 and 31 December 2011. A four to five-year cycle can be seen with large peaks in notifications in years 2000 and 2004 and a much smaller peak in 2009. However, notifications have been rising again since May 2011. Increases in hospitalisations show a similar cycle, although peaks in hospitalisations do not always coincide with peaks in notifications. There have been 539 cases and 19 hospitalisations reported in December 2011.

Figure 2: Pertussis notifications and hospitalisations by calendar month-year since 1997 up to 31 December 2011



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 last three weeks. Pertussis rates varied across age groups. Of the cases reported in 2011, infants aged less than one year had the highest cumulative incidence of pertussis cases (197.7 per 100 000 population, 126 cases), followed by the 1 to 4 years (111.6 per 100 000, 277 cases), and 5 to 9 years (106.0 per 100 000, 304 cases) age groups. Of the 2011 cumulative cases with known age, 17 (0.8%) were infants under 6 weeks of age.

Figure 3: Age-specific pertussis cases per 100 000 populations in 2011

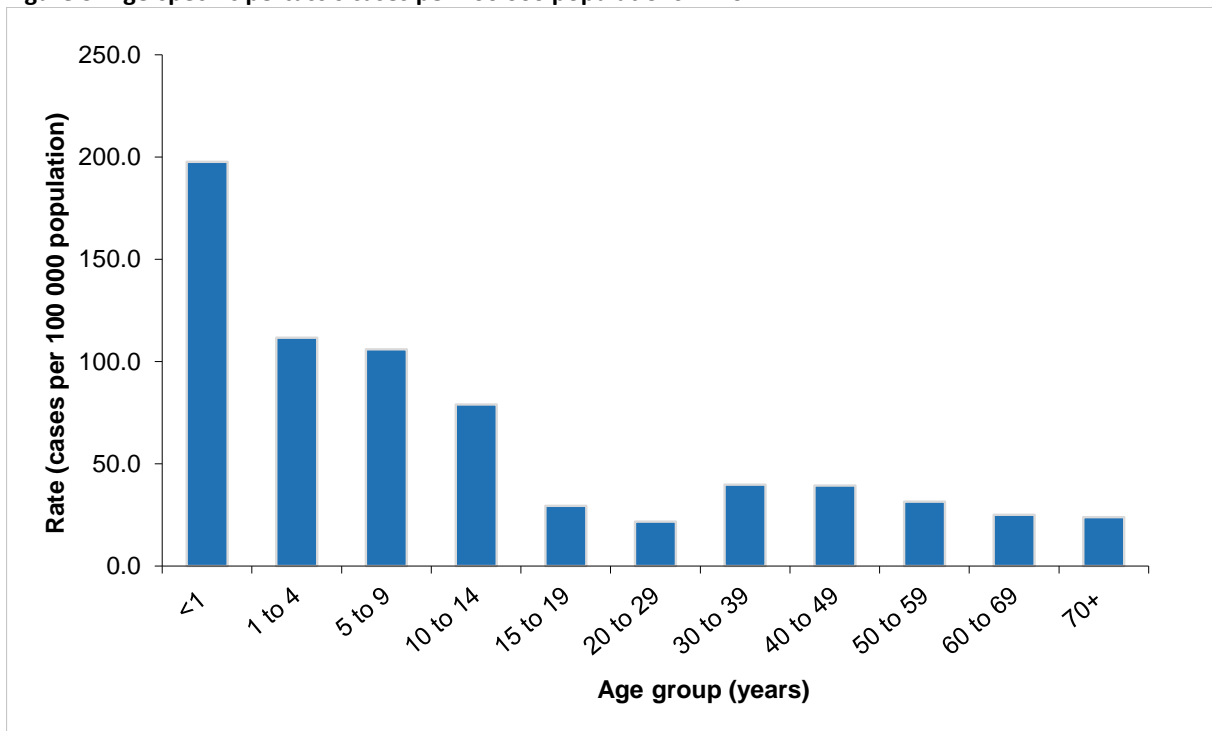


Table 1: Pertussis cases and rates by age group in 2011, and new cases in the last three weeks

Age group (Years)	Cumulative ² notifications			Last three weeks ³	
	Cases	Rates ¹	Hosp	New cases	Hosp
<1	126	197.7	77	18	7
1 to 4	277	111.6	13	35	1
5 to 9	304	106.0	4	38	0
10 to 14	234	79.1	6	21	1
15 to 19	95	29.5	1	8	0
20 to 29	131	21.7	3	10	1
30 to 39	227	39.8	6	24	1
40 to 49	250	39.4	2	34	0
50 to 59	171	31.5	6	19	0
60 to 69	102	25.1	3	17	0
70+	94	23.9	6	16	1
Unknown	3		0	0	0
Overall	2014	46.1	127	240	12

¹Rate of pertussis cases per 100 000 population calculated using 2010 mid-year population estimates.

²Cumulative notifications between 1 January and 31 December 2011

³Notifications between 17 December and 6 January 2012

Hosp: hospitalisation counts

Ethnicity

Pertussis notifications and rates by ethnicity are shown in Table 2. Of the pertussis cases with known ethnicity, the European ethnic group had the highest numbers reported in the last three weeks (181 cases), followed by Māori (25 cases). Of the total notifications during 2011, the ethnic-specific rates were highest for the European ethnic group (57.4 per 100 000, 1546 cases), followed by Māori (45.5 per 100 000, 257 cases) and Pacific Peoples (27.8 per 100 000, 63 cases).

Table 2: Pertussis cases and rates by ethnicity (prioritised) in 2011, and new cases in the last three weeks

Ethnicity	Cumulative ² notifications			Last three weeks ³	
	Cases	Rates ¹	Hosp	New cases	Hosp
Maori	257	45.5	36	25	2
Pacific Peoples	63	27.8	18	7	2
Other	63	16.8	5	6	2
European	1546	57.4	64	181	4
Unknown	85		4	21	2
Overall	2014	50.0	127	240	12

¹Rate of pertussis cases per 100 000 population calculated using 2006 census data from the NZ statistics.

²Cumulative notifications between 1 January and 31 December 2011

³Notifications between 17 December and 6 January 2012

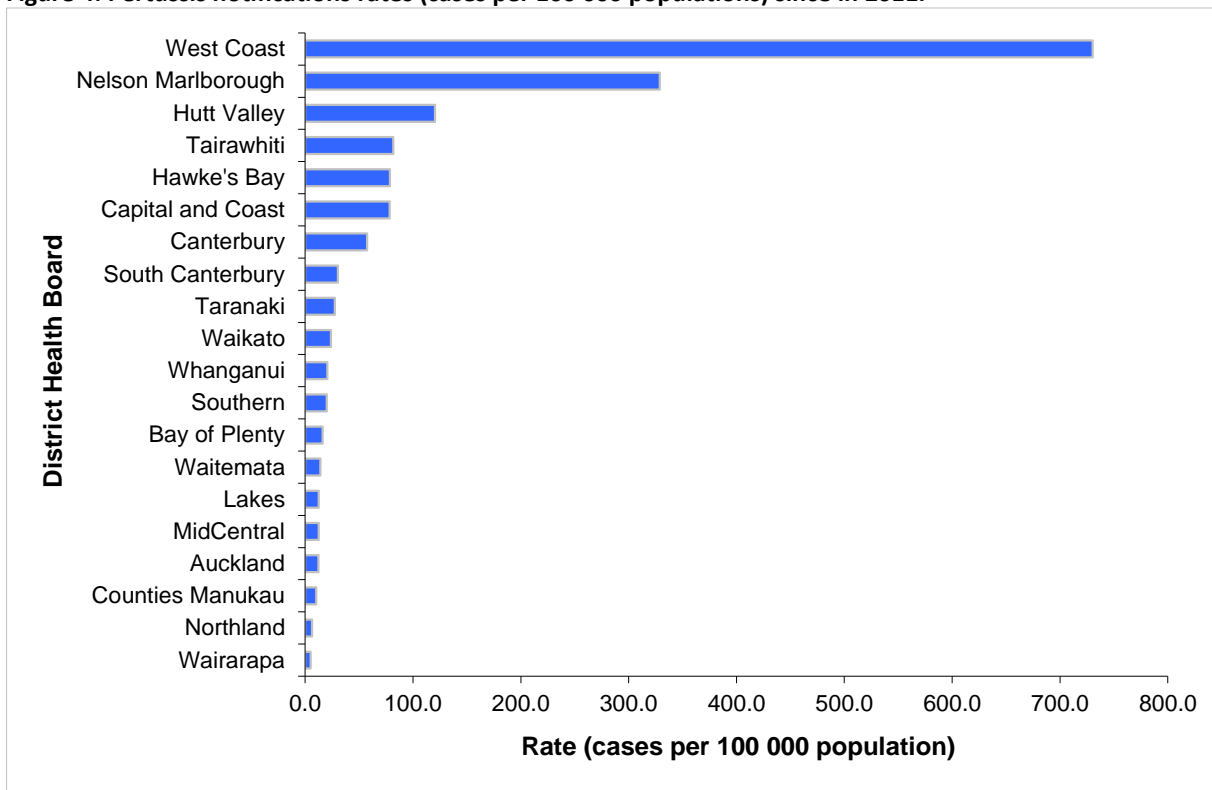
Hospitalisations

The distribution of hospitalisations by age group, ethnicity, and DHB is described in Table 1, Table 2 and Table 3 respectively. In the last three weeks, 12 hospitalisations were recorded in the following age groups: less than 1 year (7 cases), 1-4 years, 10-14 years, 20-29 years, 30-39 years and 70 years and over (1 case each). There have been 127 hospitalisations reported in EpiSurv in 2011. Seventy-seven (60.6%) of these were infants aged less than one year including 16 cases aged less than six weeks. Canterbury DHB had the highest number of cumulative hospitalisations (23 cases), followed by Hawke's Bay (21 cases) and Counties Manukau (18 cases) DHBs. Based on confirmed cases with known hospitalisation status reported in 2011, the ethnic-specific proportion of hospitalisations was highest in Pacific Peoples (46.9%, 15/32), followed by those of Māori (22.0%, 29/132), Other (16.0%, 4/25), and European (6.9%, 42/613) ethnicities.

Geographic distribution

The rates of pertussis notifications by DHB can be seen in Figure 4 and Table 5 (appendix). In the last three weeks, the highest number of notifications was reported in Nelson Marlborough DHB (89 cases). The highest cumulative rate during 2011 was recorded in West Coast DHB (730.2 per 100 000 population, 239 cases), followed by Nelson Marlborough (328.7 per 100 000, 454 cases), Hutt Valley (120.3 per 100 000, 173 cases), Tairāwhiti (81.7 per 100 000, 38 cases), Hawke's Bay (78.6 per 100 000, 122 cases), and Capital and Coast (78.3 per 100 000, 228 cases) DHBs. The highest number of notifications was reported from Nelson Marlborough DHB (454 cases), followed by Canterbury (292 cases), West Coast (239), Capital and Coast (228), Hutt Valley (173), and Hawke's Bay (122) DHBs.

Figure 4: Pertussis notifications rates (cases per 100 000 populations) since in 2011.



Rates were calculated using 2010 mid-year population estimates. Rates calculated on fewer than five cases are unstable and should be interpreted with caution (see Appendix for table).

Immunisation status

The immunisation status for confirmed pertussis cases with known age is shown in Table 3 and Table 4 for the last three weeks and for 2011, respectively. Of the 93 confirmed cases reported in the last three weeks, 54 (58.1%) had a known vaccination status. Of these 54 cases, 12 were not vaccinated including one case aged less than 6 weeks and therefore not eligible for vaccination. One case had received one dose of vaccine, two had received two doses, three had received three doses, 12 had received four doses, and 11 cases reported having completed pertussis vaccination. Thirteen cases reported being vaccinated but no dose information was available.

Table 3: Immunisation status of pertussis cases (confirmed) notified in the last three weeks (17 December to 6 January 2012)

Age Group	Total cases	One dose	Two doses	Three doses	Four doses	Five doses	Vaccinated (no dose info)	Not vaccinated	Unknown
<6wks	2	0	0	0	0	0	0	1	1
6wks - 2mths	1	0	0	0	0	0	0	0	1
3-4 mths	1	0	0	0	0	0	0	0	1
5mths - 3yrs	10	0	1	3	1	0	1	1	3
4 - 10yrs	28	1	1	0	10	5	1	6	4
11+ yrs	51	0	0	0	1	6	11	4	29
Total	93	1	2	3	12	11	13	12	39

Of the 897 confirmed cases with known age reported during 2011, 649 (72.4%) had a known vaccination status (Table 4). Of these 649 cases, 226 were not vaccinated including 15 cases aged less than six weeks and therefore not eligible for vaccination. Forty-three cases had received one dose of vaccine, 12 cases had received two doses, 65 cases had received three doses, 75 cases had received four doses, and 101 cases reported having completed pertussis vaccination. A further 127 cases reported being vaccinated but no dose information was available.

Table 4: Immunisation status of pertussis cases (confirmed) notified from 1 January to 31 December 2011

Age Group	Total cases	One dose	Two doses	Three doses	Four doses	Five doses	Vaccinated (no dose info)	Not vaccinated	Unknown
<6wks	16	0	0	0	0	0	0	15	1
6wks - 2mths	37	17	0	0	0	0	0	16	4
3-4 mths	10	4	2	0	0	0	0	4	0
5mths - 3yrs	124	4	3	46	12	1	5	46	7
4 - 10yrs	244	6	4	13	52	61	26	65	17
11+ yrs	466	12	3	6	11	39	96	80	219
Total	897	43	12	65	75	101	127	226	248

Appendix

Table 5: Pertussis cases and rates by DHB in 2011, and new cases in the last three weeks

DHB	Cumulative ² notifications			Last three weeks ³	
	Cases	Rates ¹	Hosp	Cases	Hosp
Northland	10	6.4	4	2	0
Waitemata	75	14.0	9	10	0
Auckland	55	12.2	7	5	2
Counties Manukau	50	10.2	18	7	2
Waikato	87	23.9	8	5	2
Lakes	13	12.7	2	2	0
Bay of Plenty	34	16.2	4	2	0
Tairāwhiti	38	81.7	0	9	1
Taranaki	30	27.5	3	0	0
Hawke's Bay	122	78.6	21	7	1
Whanganui	13	20.6	1	0	0
MidCentral	21	12.6	2	2	0
Hutt Valley	173	120.3	6	18	0
Capital and Coast	228	78.3	3	25	0
Wairarapa	2	5.0	0	2	0
Nelson Marlborough	454	328.7	6	89	0
West Coast	239	730.2	2	10	0
Canterbury	292	57.5	23	34	1
South Canterbury	17	30.4	2	3	0
Southern	61	20.1	6	8	3
Total	2014	46.1	127	240	12

¹Rate of pertussis cases per 100 000 population calculated using 2010 mid-year population estimates.

Rates calculated on fewer than five cases are unstable and should be interpreted with caution.

²Cumulative notifications between 1 January and 31 December 2011

³Notifications between 17 December and 6 January 2012

Case classification for pertussis notification in New Zealand

Confirmed	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.
Probable	Cough lasting longer than two weeks and one or more of the following: <ul style="list-style-type: none"> • 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 <i>under investigation</i> or suspect case.
Notifications	Include confirmed cases, probable, and other as specified above.

This report will be available at: <http://www.surv.esr.cri.nz/surveillance/PertussisRpt.php>.