

PERTUSSIS REPORT

March 2012

This report includes cases of pertussis reported in EpiSurv up to midnight 02 March 2012. Data were extracted from EpiSurv at 10.00 am 06 March 2012.

Summary

In the past two surveillance weeks (18 Feb – 02 Mar 2012), 218 new cases of pertussis (124 and 94 cases, respectively) were notified, including 62 confirmed cases, 90 probable cases, nine suspect cases, and 57 cases still under investigation. Fourteen (6.4%) of the notified cases were aged less than 1 year. Seven hospitalisations were reported during this period.

There has been a total of 930 pertussis notifications reported in EpiSurv since the first surveillance week of 2012 (compared to 145 the same time in 2011), including 389 confirmed cases, 427 probable cases, 17 suspect cases, and 97 cases still under investigation. Sixty-nine (7.4%) of the cases were in the less than 1 year age group. 40 hospitalisations and no deaths have been reported during this period.

In the last two weeks, the highest number of notifications (excluding cases under investigation) was reported in Canterbury (41 cases) and Capital and Coast (28 cases) DHBs. The highest cumulative rate in 2012 was recorded in Nelson Marlborough (118.0 per 100 000, 163 cases), followed by West Coast (113.0 per 100 000, 37 cases) and Tairāwhiti (60.2 per 100 000, 28 cases) DHBs. The highest number of cases was also reported from Canterbury DHB (180 cases), followed by Nelson Marlborough (163 cases), Capital and Coast (106), Hutt Valley (59) and Counties Manukau (43) DHBs. Of the 66 cases in the under 1 year age group, highest numbers were reported from Counties Manukau (12) and Nelson Marlborough (10) DHBs.

This report summarises pertussis notifications for 2012 (first surveillance week starts on 31 December 2011) and new cases in the last two weeks (ending 02 March 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 2 March). Notifications for the past two weeks of 2012 remain well above 2011 and 2010 levels, 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 last week compared to the previous one. Note the total number of notifications may change as cases are investigated further and some are found not to meet the case definition. No deaths have been reported since the beginning of this year. Figure 5 (appendix) shows weekly pertussis notifications for confirmed, suspect and probable cases only for 2010, 2011 and 2012.

Figure 1: Comparative trend of pertussis notifications by week reported during years 2010, 2011 and 2012

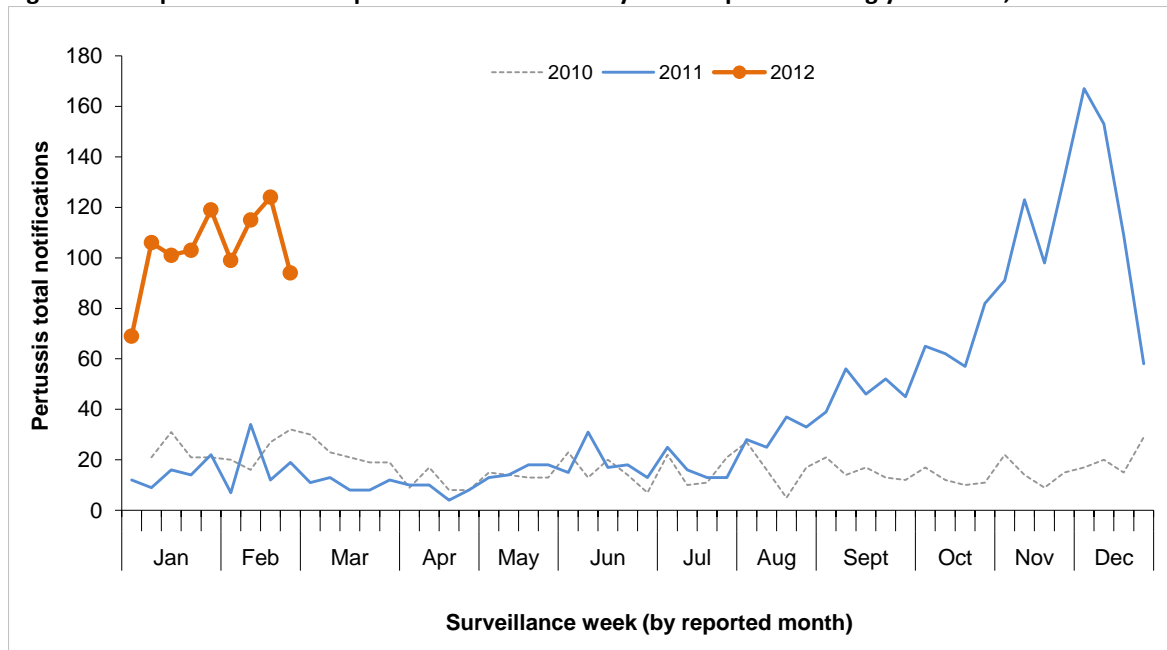
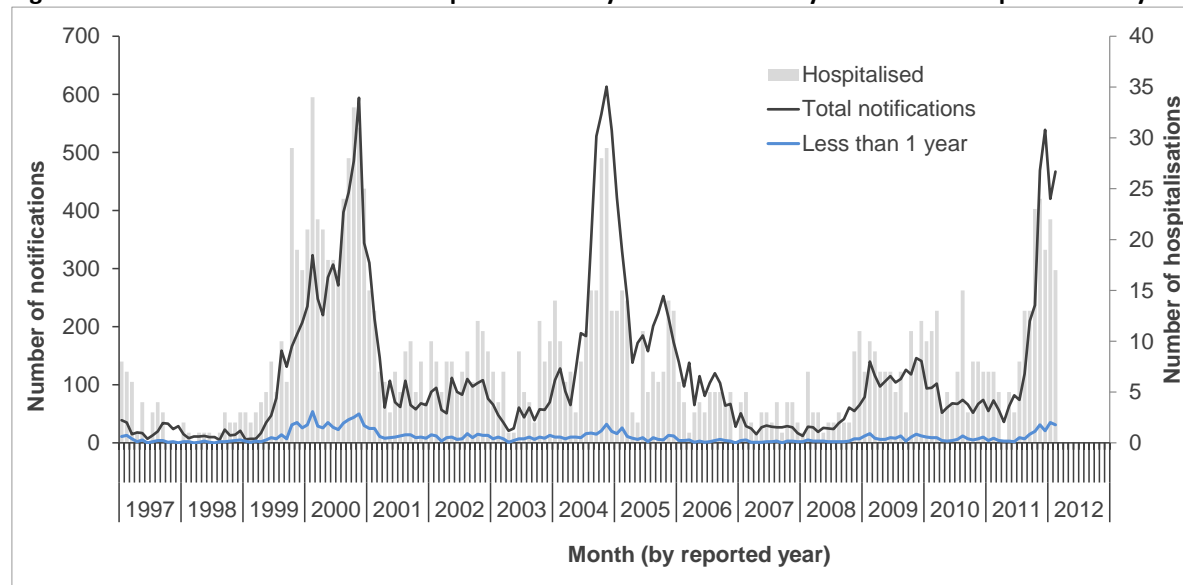


Figure 2 shows pertussis notifications and hospitalisations by calendar month, and notifications in those aged less than 1 year between 1 January 1997 and 2 March 2012. A four to five-year cycle can be seen with large peaks in notifications in years 2000 and 2004 and a much smaller peak in 2009. However, 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. Figure 6 shows annual rates in the less than 1 year age group over 1997-2011.

Figure 2: Pertussis notifications and hospitalisations by calendar month-year since 1997 up to February 2012

In the following sections all analyses exclude cases still under investigation. Therefore, “cases” refer to those classified as confirmed, probable, or suspect.

Age distribution of cases

Table 1 shows notifications and associated rates by age, including new cases for the last two weeks. Pertussis rates varied across age groups. Of the cases reported in 2012, infants aged less than one year had the highest cumulative incidence of pertussis cases (103.6 per 100 000 population, 66 cases), followed by the 1 to 4 years (58.8 per 100 000, 146 cases), and 5 to 9 years (32.1 per 100 000, 92 cases) age groups. Of the 831 cumulative cases with known age, six (0.7%) were infants under 6 weeks of age. Figure 3 shows the cumulative incidence of pertussis cases by age group and ethnicity in 2012.

Table 1: Pertussis cases and rates by age group in 2012, and new cases in the last two weeks

Age group (Years)	Cumulative ² notifications			Last two weeks ³	
	All cases	Rates ¹	Hosp	New Cases	Hosp
<1	66	103.6	25	12	2
1 to 4	146	58.8	2	38	0
5 to 9	92	32.1	2	14	0
10 to 14	65	22.0	0	9	0
15 to 19	34	10.5	1	8	1
20 to 29	67	11.1	0	15	0
30 to 39	103	18.1	3	24	0
40 to 49	119	18.8	1	18	1
50 to 59	60	11.1	4	6	1
60 to 69	41	10.1	1	11	1
70+	38	9.7	0	6	0
Unknown	2		0	0	0
Overall	833	19.1	39	161	6

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

²Cumulative notifications (excluding cases under investigation) since 31 December 2011

³Notifications between 18 February and 02 March 2012 inclusive

Hosp: hospitalisation counts

Ethnicity

Pertussis cases 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 two weeks (118 cases), followed by Māori (10 cases). Of the cases in 2012, the ethnic-specific cumulative rates were highest for the European ethnic group (23.5 per 100 000, 633 cases), followed by Māori (15.9 per 100 000, 90 cases) and Pacific Peoples (9.7 per 100 000, 22 cases). Figure 3 shows European had the highest rates across all age groups, followed by Māori. The ethnic distribution of cases in the under 1 year age group is also shown below.

Table 2: Pertussis cases and rates by ethnicity (prioritised) in 2012, and new cases in the last two weeks

Ethnicity	Cumulative ² notifications				Last two weeks ³		
	All cases	Rates ¹	Hosp	<1 year*	New Cases	Hosp	<1 year*
Māori	90	15.9	14	16	10	3	2
Pacific Peoples	22	9.7	4	5	4	0	1
Other	19	5.1	1	2	1	0	0
European	633	23.5	19	37	118	3	6
Unknown	69		1	6	28	0	3
Overall	833	20.7	39	66	161	6	12

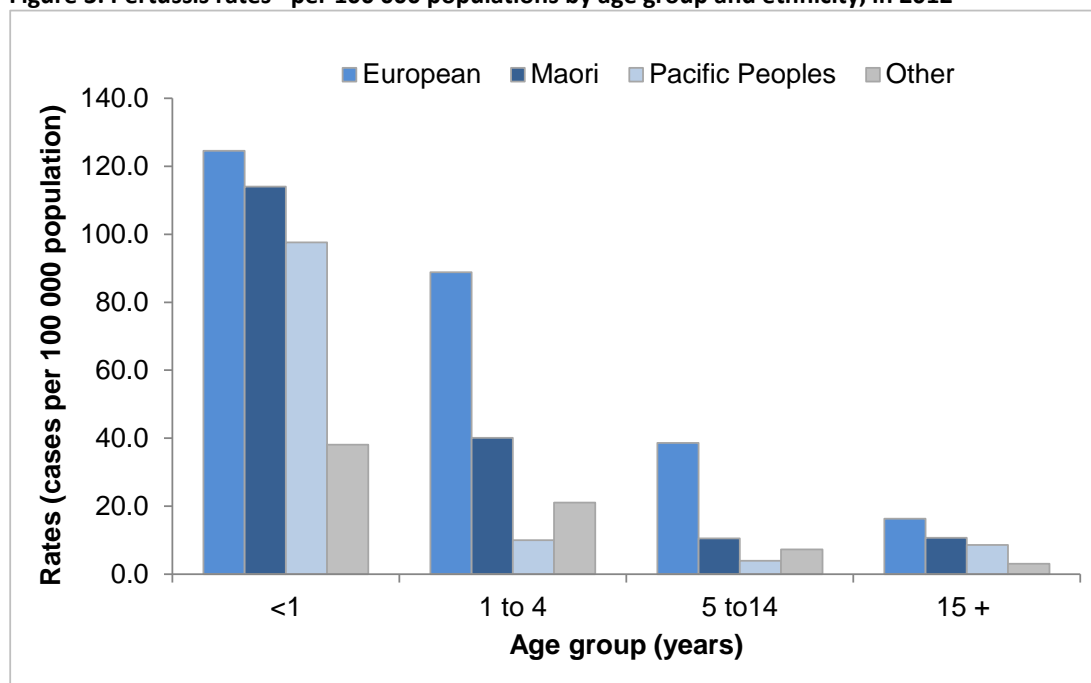
¹Rate of pertussis cases per 100 000 population calculated using Census 2006 usually resident populations.

²Cumulative notifications (excluding cases under investigation) since 31 December 2011

³Notifications between 18 February and 02 March 2012 inclusive

*Cases in the less than 1 year age group

Figure 3: Pertussis rates* per 100 000 populations by age group and ethnicity, in 2012



Rate of pertussis cases per 100 000 population calculated using Census 2006 usually resident populations
Rates calculated on fewer than five cases are unstable and should be interpreted with caution.

Figure 7 (appendix) shows the trend of cumulative pertussis rates (per 100 000 population) by age group and ethnicity for years 2003 to 2012. Rates of pertussis have been highest among Pacific Peoples in the less than 1-year age group, while in other age groups rates have been highest in the European ethnic group.

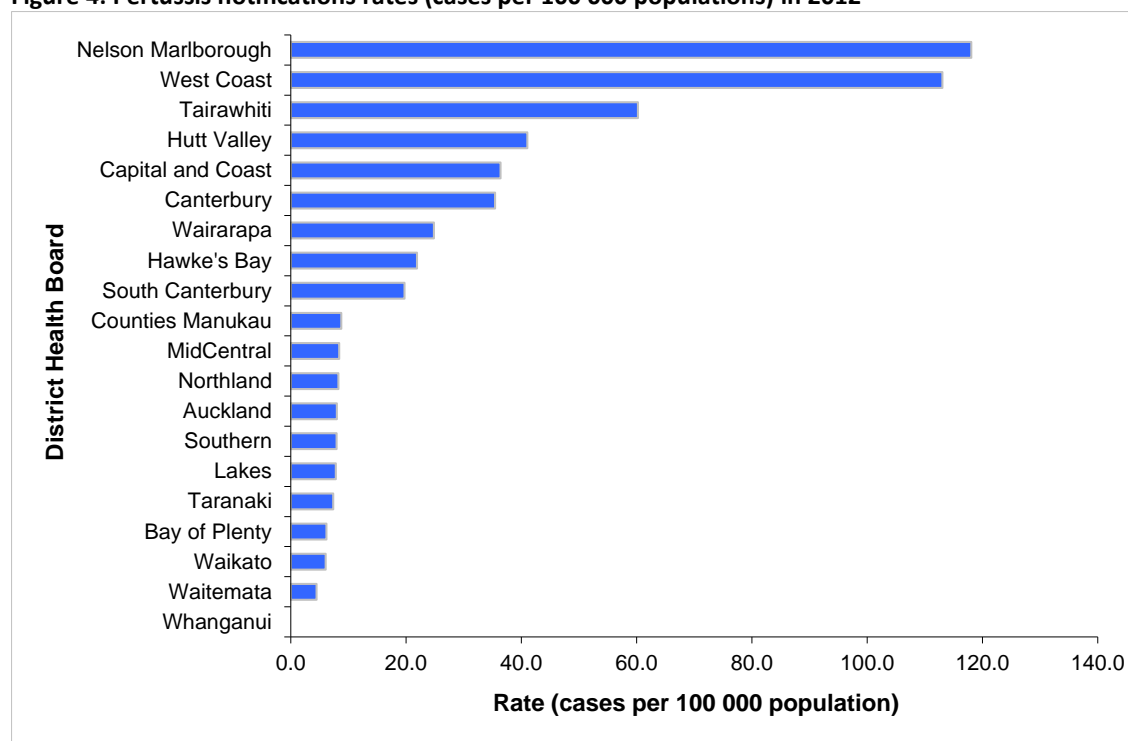
Hospitalisations

The distribution of hospitalisations by age group, ethnicity, and DHB is described in Table 1, Table 2 and Table 5, respectively. In the last two weeks, six hospitalisations were recorded. There have been 39 hospitalisations reported in EpiSurv in 2012. Twenty-five (64.1%) of these were infants aged less than one year including six cases aged less than six weeks. Of the cases with known ethnicity and hospitalisation status, the ethnic-specific proportion of hospitalisations was as followed: Pacific Peoples (19.0%, 4/21), Māori (17.1%, 14/82), Other (6.7%, 1/15), and European (3.3%, 19/579).

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 cases was reported in Canterbury (41 cases) and Capital and Coast (28 cases) DHBs. The highest cumulative rate in 2012 was recorded in Nelson Marlborough (118.0 per 100 000, 163 cases), followed by West Coast (113.0 per 100 000, 37 cases) and Tairāwhiti (60.2 per 100 000, 28 cases) DHBs. The highest number of notifications was also reported from Canterbury DHB (180 cases), followed by Nelson Marlborough (163 cases), Capital and Coast (106), Hutt Valley (59) and Counties Manukau (43) DHBs. Cases in the under 1 year age group by DHB are shown in Table 5 (appendix).

Figure 4: Pertussis notifications rates (cases per 100 000 populations) in 2012



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 two weeks and for 2012, respectively. Of the 62 confirmed cases reported in the last two weeks, 34 (54.8%) had a known vaccination status. Of these 34 cases, 12 were not vaccinated. Two had received two doses, eight had received three doses, three had received four doses, and four cases reported having completed pertussis vaccination. Five cases reported being vaccinated but no dose information was available.

Table 3: Immunisation status¹ of pertussis cases (confirmed) notified in the last two weeks (ending 2 March)

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	0								
3-4 mths	1	0	1	0	0	0	0	0	0
5mths - 3yrs	18	0	1	6	2	0	0	5	4
4 - 10yrs	9	0	0	1	1	3	0	2	2
11+ yrs	34	0	0	1	0	1	5	5	22
Total	62	0	2	8	3	4	5	12	28

¹Immunisation status has been extracted from Episurv notifications and is based on parental recall or Well Child book records only.

Of the 388 confirmed cases with known age reported during 2012, 264 (68.0%) had a known vaccination status (Table 4). Of these 264 cases, 94 were not vaccinated. Thirty cases had received one dose of vaccine, four cases had received two doses, 35 cases had received three doses, 33 cases had received four doses, and 24 cases reported having completed pertussis vaccination. A further 44 cases reported being vaccinated but no dose information was available.

Table 4: Immunisation status¹ of pertussis cases (confirmed) notified in 2012 (since 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	1	0	0	0	0	0	0	0	1
6wks - 2mths	8	7	0	0	0	0	0	1	0
3-4 mths	6	2	1	0	0	0	0	3	0
5mths - 3yrs	83	0	3	25	10	0	7	26	12
4 - 10yrs	77	4	0	8	18	15	1	27	4
11+ yrs	213	17	0	2	5	9	36	37	107
Total	388	30	4	35	33	24	44	94	124

¹Immunisation status has been extracted from Episurv notifications and is based on parental recall or Well Child book records only.

Appendix

Table 5: Pertussis cases and rates by DHB in 2012, and new cases in the last two weeks

DHB	Cumulative ² notifications				Last two weeks ³		
	All cases	Rates ¹	Hosp	<1 year*	New Cases	Hosp	<1 year*
Northland	13	8.3	0	0	1	0	0
Waitemata	24	4.5	3	2	11	2	1
Auckland	36	8.0	4	6	5	0	1
Counties Manukau	43	8.8	8	12	15	0	2
Waikato	22	6.0	3	2	5	1	1
Lakes	8	7.8	0	0	1	0	0
Bay of Plenty	13	6.2	1	2	0	0	0
Tairāwhiti	28	60.2	1	4	3	0	1
Taranaki	8	7.3	0	0	2	0	0
Hawke's Bay	34	21.9	2	1	6	0	0
Whanganui	0	-	0	0	0	0	0
MidCentral	14	8.4	1	3	2	0	0
Hutt Valley	59	41.0	3	5	8	0	0
Capital and Coast	106	36.4	1	6	28	0	3
Wairarapa	10	24.8	1	0	6	0	0
Nelson Marlborough	163	118.0	2	10	13	1	0
West Coast	37	113.0	1	2	10	0	0
Canterbury	180	35.4	4	7	41	2	2
South Canterbury	11	19.7	1	0	0	0	0
Southern	24	7.9	3	4	4	0	1
Total	833	19.1	39	66	161	6	12

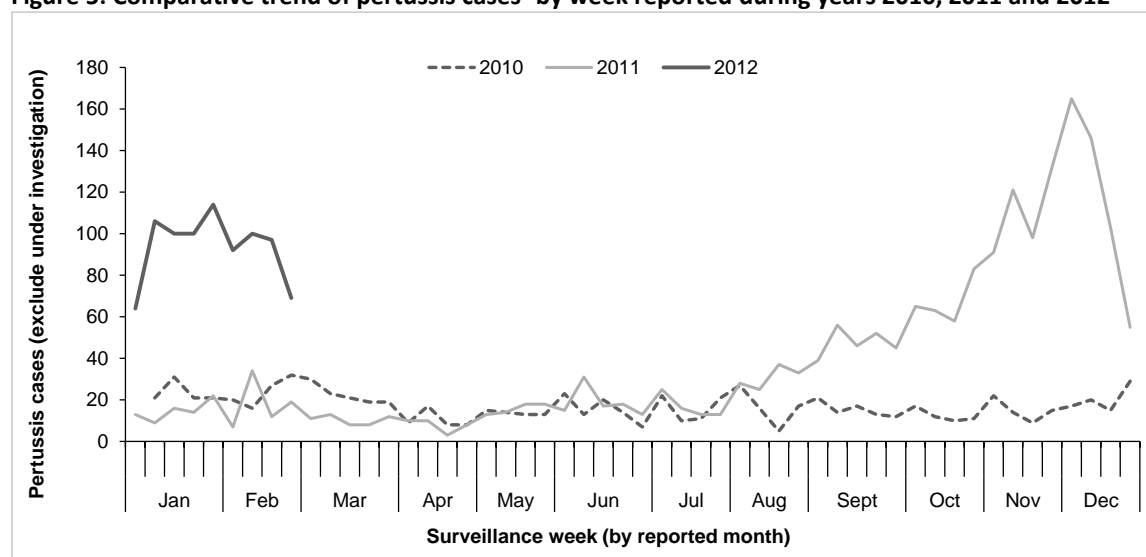
¹Rate of pertussis cases per 100 000 population calculated using 2010 mid-year population estimates.

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³Notifications between 18 February and 02 March 2012 inclusive

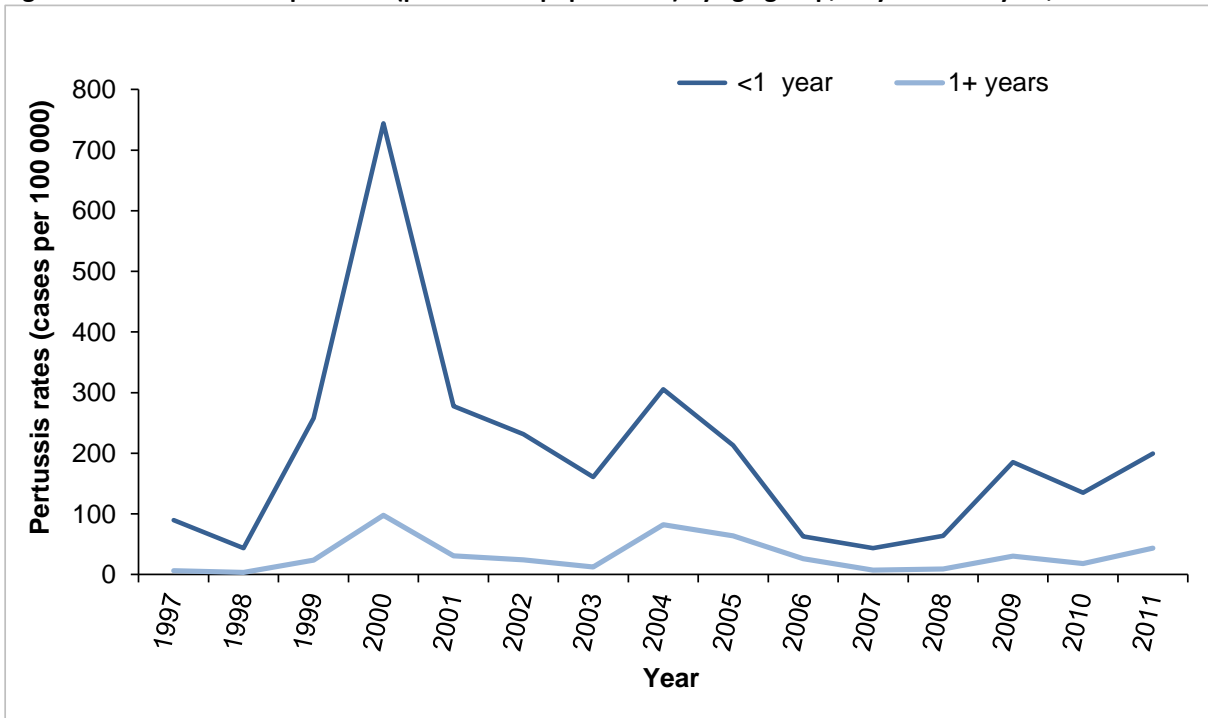
*Cases in the less than 1 year age group

Figure 5: Comparative trend of pertussis cases¹ by week reported during years 2010, 2011 and 2012



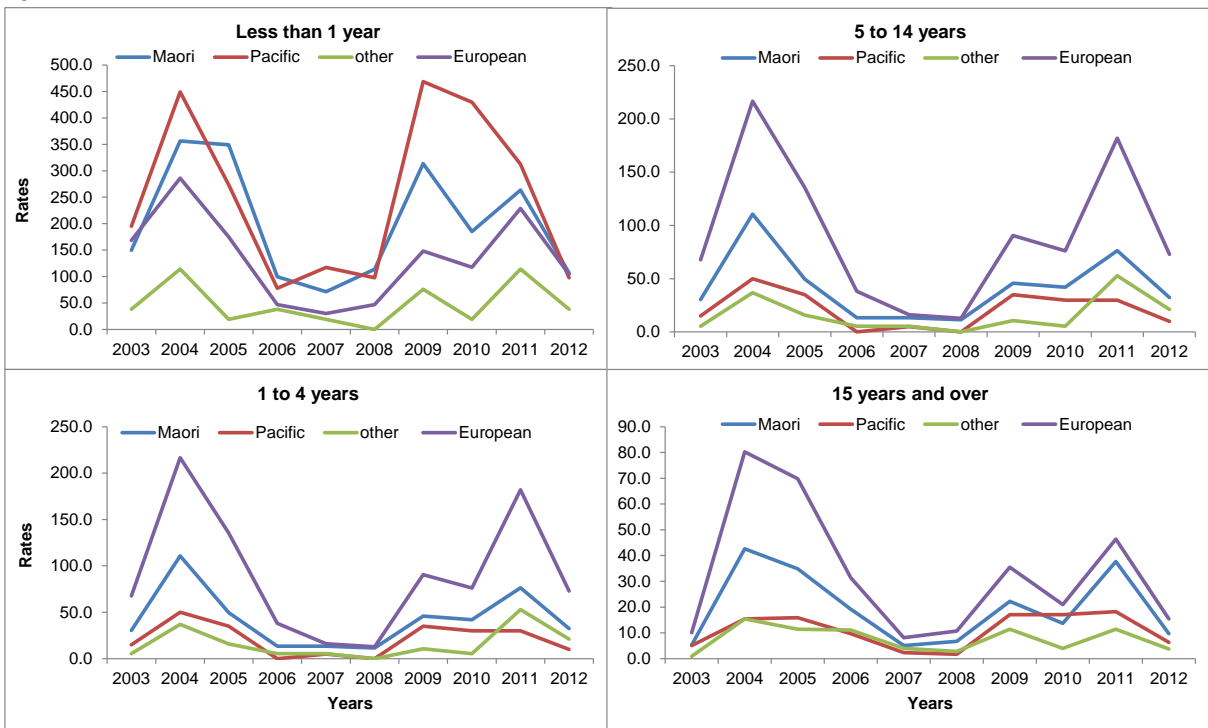
¹Includes confirmed, suspect and probable cases only.

Figure 6: Annual rates¹ of pertussis (per 100 000 populations) by age group, <1 year vs. 1+ year, 1997-2011



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

Figure 7: Trends in cumulative pertussis rates¹ (per 100 000 population) by age group and ethnicity 2003-2012



¹Rate of pertussis notified cases per 100 000 population calculated using census 2006 population

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>.