

PERTUSSIS REPORT

May 2012

This report includes cases of pertussis reported in EpiSurv up to midnight 11 May 2012. Data were extracted from EpiSurv at 10.00 am 15 May 2012.

Summary

In the past two surveillance weeks (28 Apr – 11 May 2012), 203 new cases of pertussis (87 and 116 cases, respectively) were notified, including 37 confirmed cases, 112 probable cases, seven suspect cases, and 47 cases still under investigation. These numbers have increased compared to the numbers reported over the previous two weeks (174 cases). Fifteen (7.4%) of the notified cases were aged less than 1 year. Twelve cases were hospitalised.

There has been a total of 1759 pertussis notifications reported in EpiSurv since the first surveillance week of 2012 (compared to 241 over the same period in 2011), including 675 confirmed cases, 964 probable cases, 42 suspect cases, and 78 cases still under investigation. 132 (7.5%) of the notified cases were in the less than 1 year age group. 90 hospitalisations and no deaths have been reported during this period.

In the last two weeks, the highest number of cases (excluding cases under investigation) was reported in Canterbury (61 cases), Capital and Coast (16 cases), and Hutt Valley (12 cases) DHBs. The highest cumulative rate in 2012 was recorded in Nelson Marlborough (220.9 per 100 000, 309 cases), followed by West Coast (154.7 per 100 000, 51 cases) and Tairāwhiti (135.2 per 100 000, 63 cases) DHBs. The highest number of notifications was reported from Canterbury DHB (381 cases), followed by Nelson Marlborough (309 cases), Capital and Coast (219), Hutt Valley (101) and Counties Manukau (87) DHBs.

This report summarises pertussis notifications for 2012 (first surveillance week starts on 31 December 2011) and new cases in the last two weeks, 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 11 May). Notifications for the past two weeks of 2012 remain well above 2011 and 2010 levels, although in 2011 they have been running above 2010 levels since week 34 (ending 26 August 2011) and have been rising more or less consistently. There has been a decreasing trend in notifications through February and March 2012, although since the beginning of April there has been an increase in weekly notifications. 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

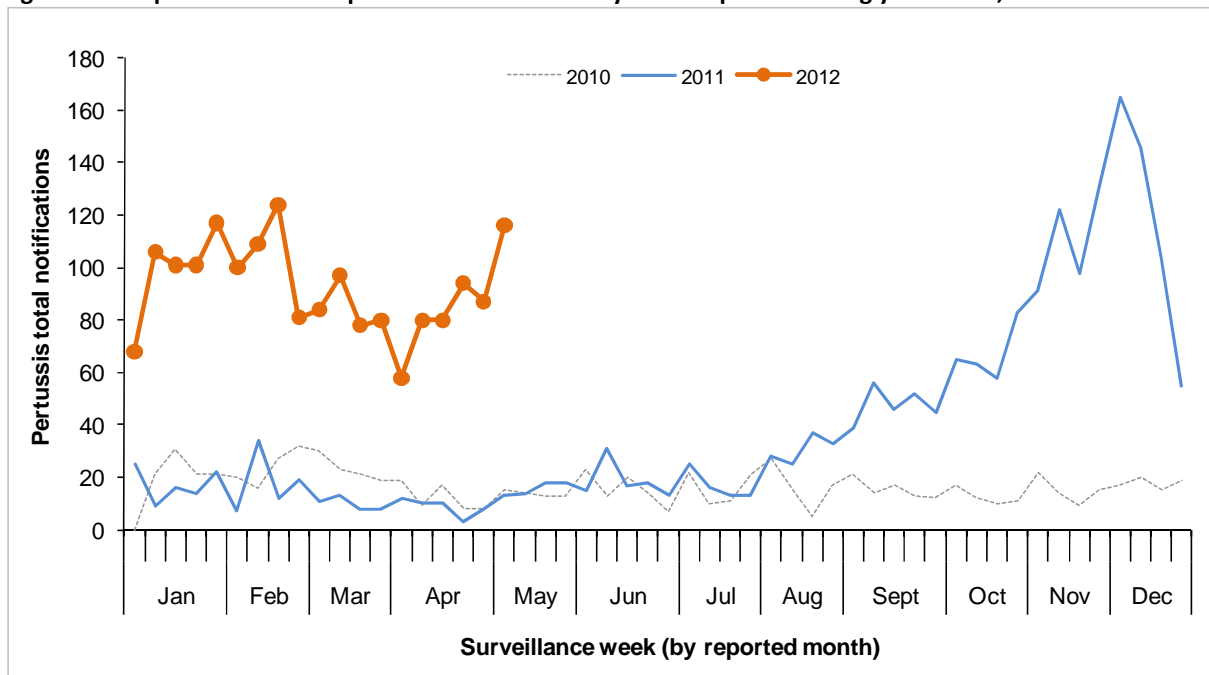
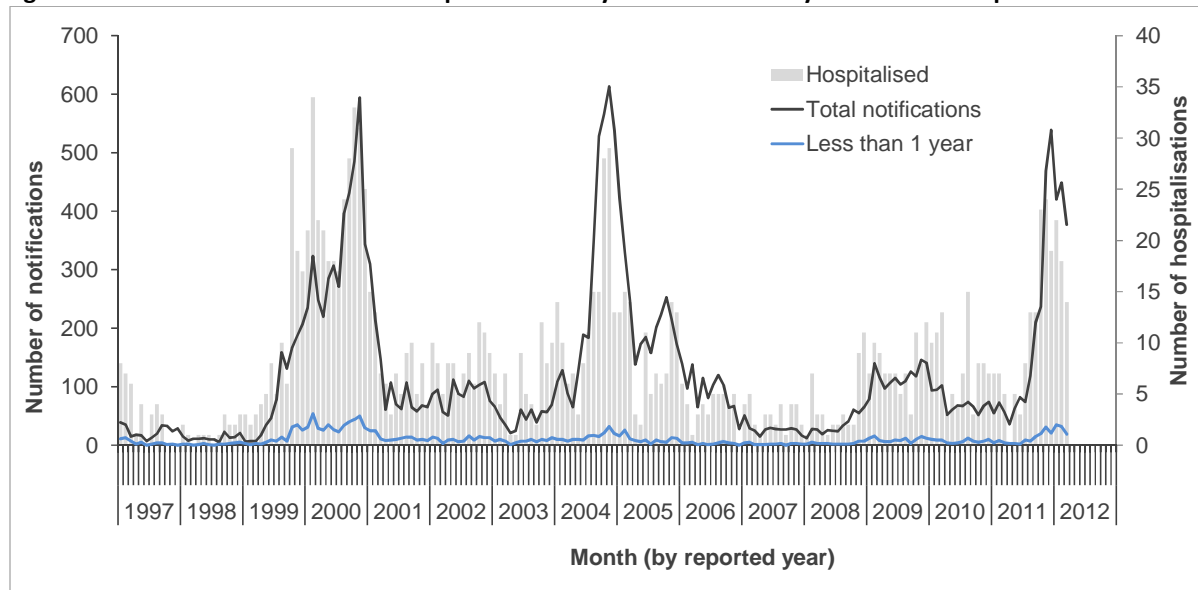


Figure 2 shows pertussis notifications and hospitalisations by calendar month between 1 January 1997 and 31 March 2012. It also shows notifications in those aged less than 1 year during this same period. A four to five-year cycle can be seen with large peaks in notifications in years 2000 and 2004 and 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 (appendix) 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 31 March 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 (203.6 per 100 000 population, 127 cases), followed by the 1 to 4 years (118.3 per 100 000, 298 cases), and 5 to 9 years (66.5 per 100 000, 191 cases) age groups.

Of the 1681 cumulative cases with known age, 16 (1.0%) 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 rates¹ 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	127	203.6	56	12	7
1 to 4	298	118.3	5	19	1
5 to 9	191	66.5	3	15	0
10 to 14	126	43.0	2	11	0
15 to 19	80	25.2	1	10	0
20 to 29	141	22.8	2	13	1
30 to 39	197	35.0	5	21	0
40 to 49	230	36.4	5	26	1
50 to 59	139	25.0	6	19	0
60 to 69	83	19.9	1	7	0
70+	69	17.0	1	3	0
Unknown	0		0	0	0
Overall	1681	38.2	87	156	10

¹Rate of pertussis cases per 100 000 population calculated using 2011 mid-year population estimates.

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

³Notifications between 31 March and 13 April 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 (103 cases), followed by Māori (22 cases). Of the cases in 2012, the ethnic-specific cumulative rates were highest for the European ethnic group (47.4 per 100 000, 1276 cases), followed by Māori (37.1 per 100 000, 210 cases) and Pacific Peoples (29.2 per 100 000, 66 cases). Figure 3 shows the European ethnic group having the highest rates across all age groups except the under 1 year age group, followed by Māori. The ethnic distribution of cases in the under 1 year age group is also shown below. Pacific Peoples ethnic group had the highest rates in this age group, followed by Māori.

Table 2: Pertussis cases and rates¹ 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*
Maori	210	37.1	27	34	22	4	4
Pacific Peoples	66	29.2	19	16	7	4	2
Other	61	16.3	2	4	3	0	0
European	1276	47.4	36	68	103	0	2
Unknown	68		3	5	21	2	4
Overall	1681	41.7	87	127	156	10	12

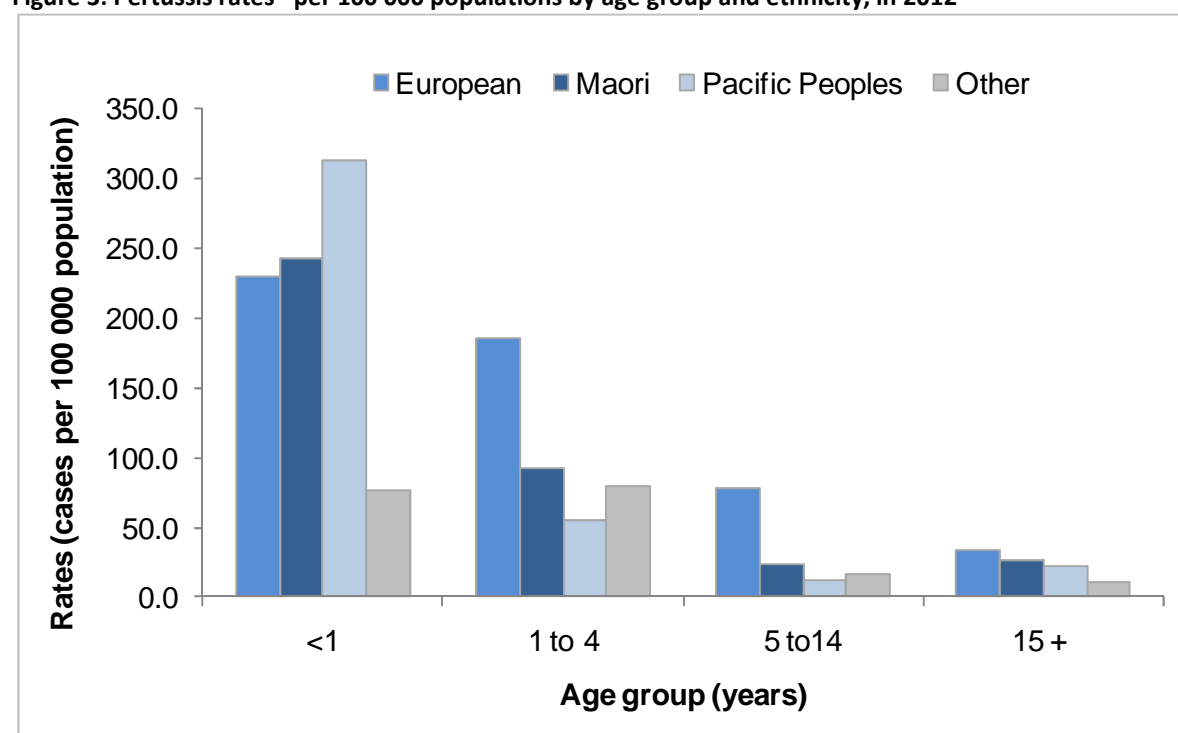
¹Rate of pertussis cases per 100 000 population calculated using Census 2006 usually resident populations.

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

³Notifications between 31 March and 13 April 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 notification rates (per 100 000 population) by age group and ethnicity for years 2003 to 2011. These rates 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. Note that these rates are for all notifications.

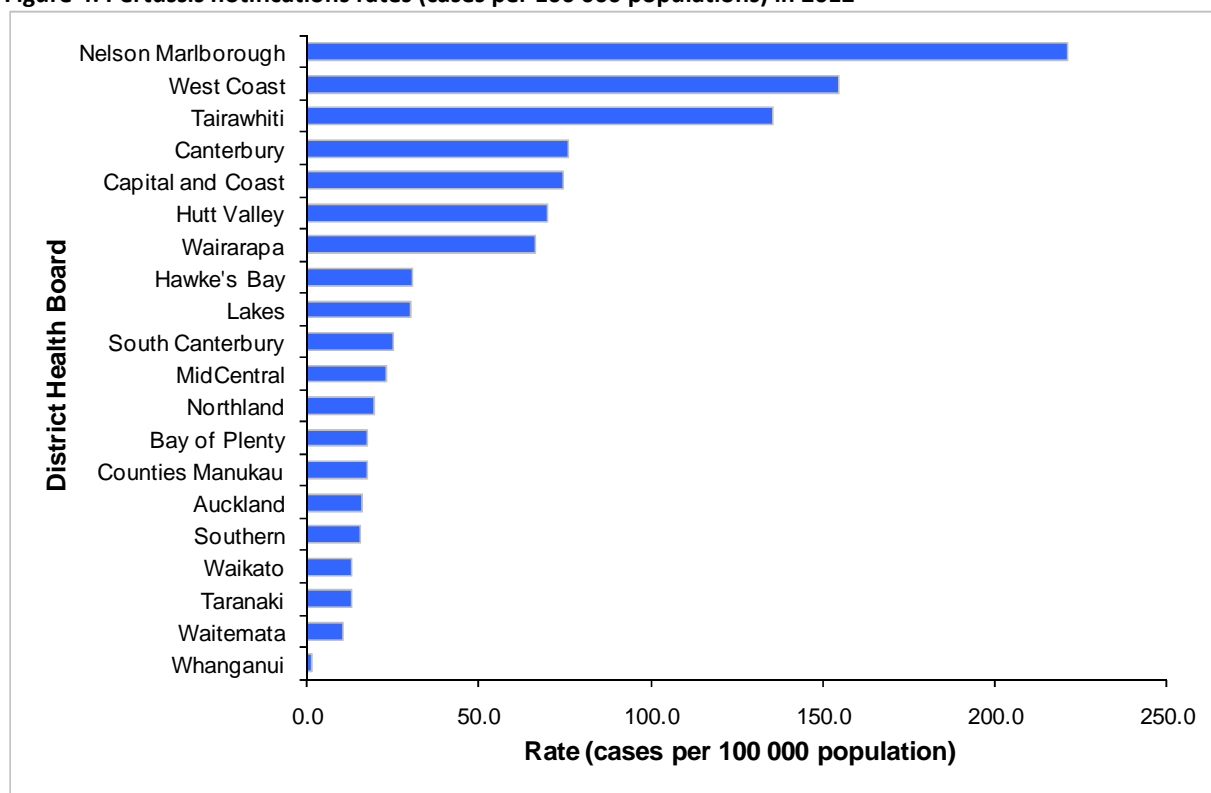
Hospitalisations

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, ten hospitalisations were recorded. There have been 87 hospitalisations reported in EpiSurv in 2012. 56 (64.4%) of these were infants aged less than one year including 16 cases aged less than six weeks. Of the 1468 cases with known ethnicity and hospitalisation status, the ethnic-specific proportions of hospitalisations were as follows: Pacific Peoples (30.6%, 19/62), Māori (14.1%, 27/191), Other (3.8%, 2/53), and European (3.1%, 36/1162).

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 (61 cases), Capital and Coast (16 cases), and Hutt Valley (12 cases) DHBs. The highest cumulative rate in 2012 was recorded in Nelson Marlborough (220.9 per 100 000, 309 cases), followed by West Coast (154.7 per 100 000, 51 cases) and Tairāwhiti (135.2 per 100 000, 63 cases) DHBs. The highest number of notifications was reported from Canterbury DHB (381 cases), followed by Nelson Marlborough (309 cases), Capital and Coast (219), Hutt Valley (101) and Counties Manukau (87) 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 2011 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 37 confirmed cases reported in the last two weeks, 16 (43.2%) had a known vaccination status. Of these 16 cases, five were not vaccinated. Two cases had received one dose of vaccine and three cases had received three doses. A further six 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 11 May)

Age Group	Total cases	One dose	Two doses	Three doses	Four doses	Five doses	Vaccinated		
							(no dose info)	Not vaccinated	Unknown
<6wks	0	0	0	0	0	0	0	0	0
6wks - 2mths	1	1	0	0	0	0	0	0	0
3-4 mths	2	1	0	0	0	0	1	0	0
5mths - 3yrs	5	0	0	2	0	0	0	2	1
4 - 10yrs	4	0	0	1	0	0	0	1	2
11+ yrs	25	0	0	0	0	0	5	2	18
Total	37	2	0	3	0	0	6	5	21

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

Of the 675 confirmed cases with known age reported during 2012, 455 (67.4%) had a known vaccination status (Table 4). Of these 455 cases, 152 were not vaccinated, including five cases aged less than 6 weeks and thus not eligible for vaccination. Forty-one cases had received one dose of vaccine, seven cases had received two doses, 71 cases had received three doses, 58 cases had received four doses, and 32 cases reported having completed pertussis vaccination. A further 94 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	6	0	0	0	0	0	0	5	1
6wks - 2mths	17	11	0	0	0	0	0	5	1
3-4 mths	13	3	2	0	0	0	1	7	0
5mths - 3yrs	138	1	4	57	15	0	12	35	14
4 - 10yrs	142	5	0	10	34	20	13	47	13
11+ yrs	359	21	1	4	9	12	68	53	191
Total	675	41	7	71	58	32	94	152	220

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	31	19.6	2	4	1	0	0
Waitemata	58	10.6	9	4	7	2	2
Auckland	74	16.2	8	9	6	1	1
Counties Manukau	87	17.4	19	21	10	4	3
Waikato	48	13.1	4	3	3	1	1
Lakes	31	30.1	0	1	3	0	0
Bay of Plenty	37	17.5	1	2	3	0	0
Tairāwhiti	63	135.2	1	7	2	0	1
Taranaki	14	12.7	0	0	1	0	0
Hawke's Bay	48	30.8	4	4	4	1	2
Whanganui	1	1.6	0	0	0	0	0
MidCentral	39	23.2	2	5	6	0	0
Hutt Valley	101	69.9	3	6	12	0	0
Capital and Coast	219	74.3	4	12	16	0	0
Wairarapa	27	66.5	6	3	2	0	0
Nelson Marlborough	309	220.9	3	16	10	0	0
West Coast	51	154.7	1	2	4	0	0
Canterbury	381	75.8	11	16	61	1	1
South Canterbury	14	24.8	1	0	0	0	0
Southern	48	15.7	8	12	5	0	1
Total	1681	38.2	87	127	156	10	12

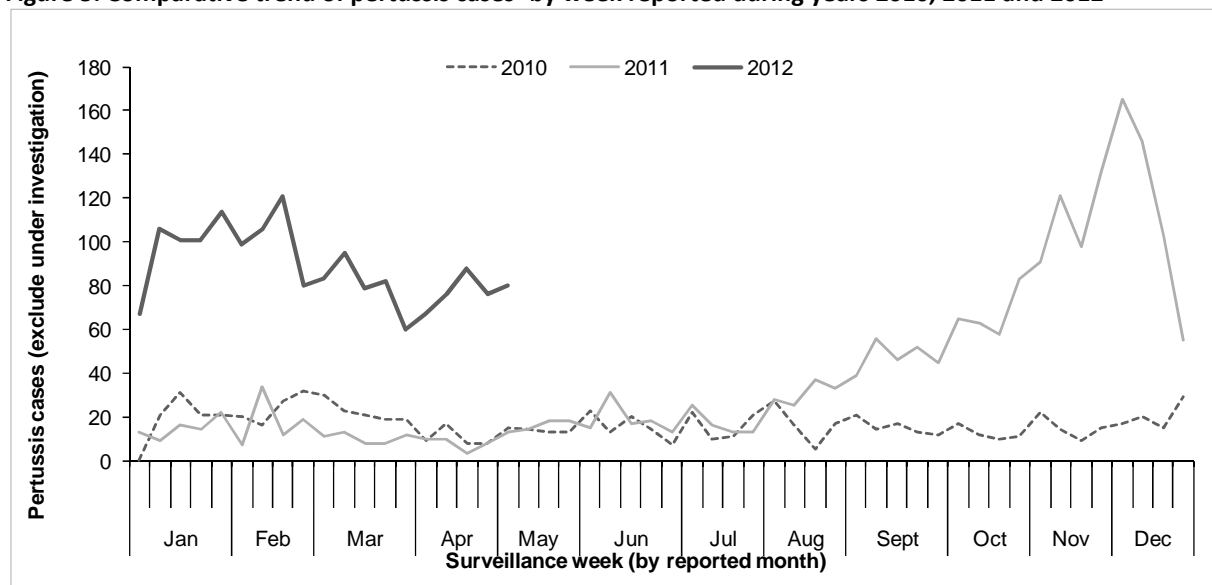
¹Rate of pertussis cases per 100 000 population calculated using 2011 mid-year population estimates.

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

³Notifications between 31 March and 13 April 2012 inclusive

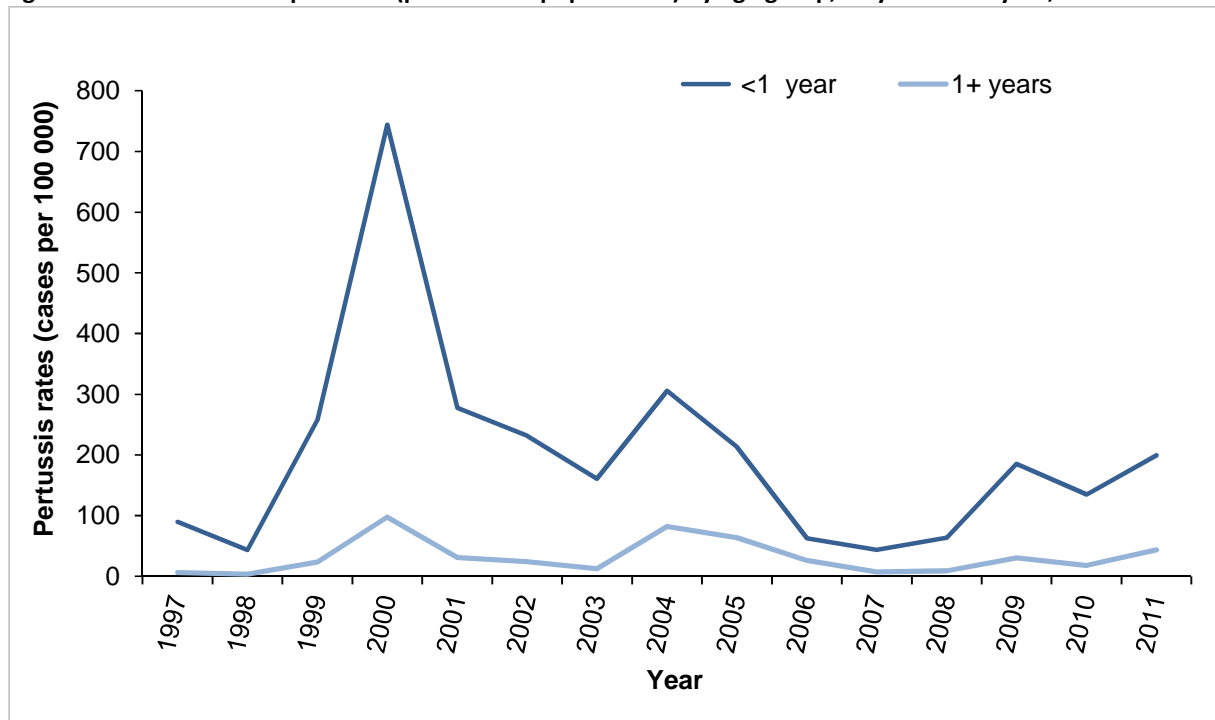
*Cases in the less than 1 year age group

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



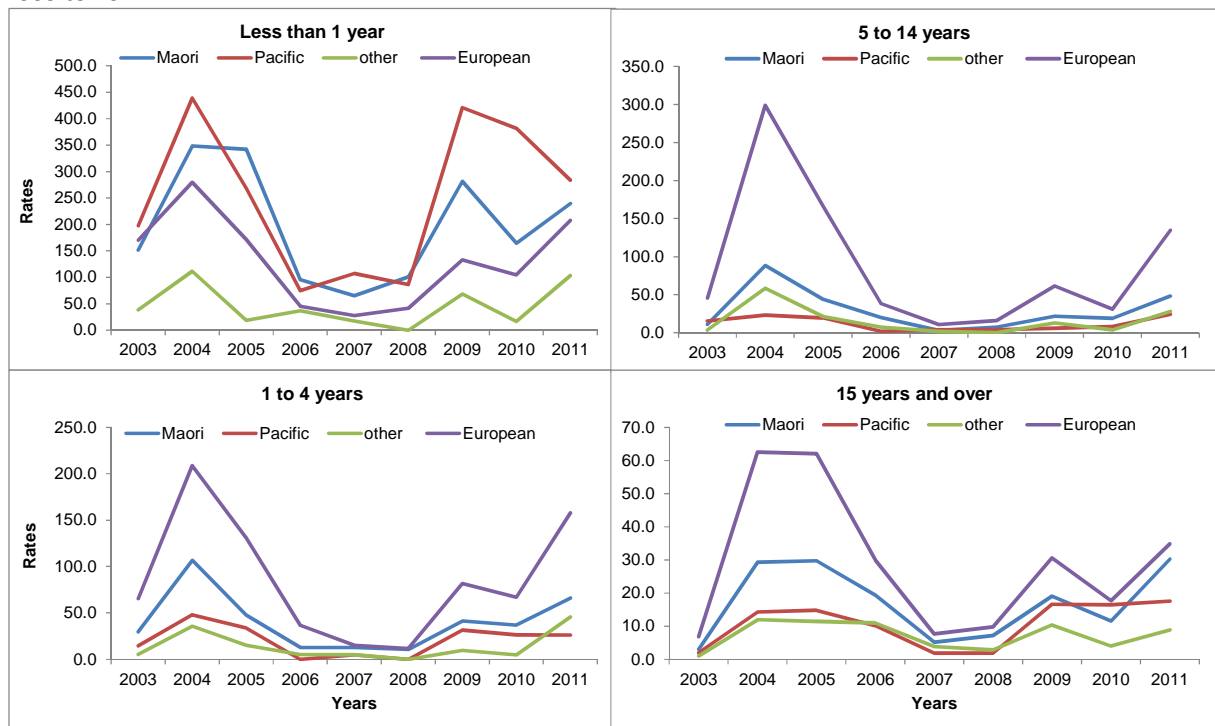
¹Includes confirmed, probable and suspect cases only.

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 to 2011



¹Rate of pertussis notified cases per 100 000 population (includes cases under investigation) calculated using mid-year population estimates

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>.