

PERTUSSIS REPORT

April 2012

This report includes cases of pertussis reported in EpiSurv up to midnight 27 April 2012. Data were extracted from EpiSurv at 10.00 am 1 May 2012.

Summary

In the past two surveillance weeks (14 Apr – 27 Apr 2012), 183 new cases of pertussis (83 and 100 cases, respectively) were notified, including 55 confirmed cases, 89 probable cases, four suspect cases, and 35 cases still under investigation. These numbers have increased compared to the numbers reported over the previous two weeks (138 cases). Thirteen (7.1%) of the notified cases were aged less than 1 year. Eleven cases were hospitalised.

There has been a total of 1568 pertussis notifications reported in EpiSurv since the first surveillance week of 2012 (compared to 220 over the same period in 2011), including 635 confirmed cases, 827 probable cases, 40 suspect cases, and 66 cases still under investigation. 117 (7.5%) of the notified cases were in the less than 1 year age group. 77 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 (45 cases), Capital and Coast (33 cases), and Nelson Marlborough (15 cases) DHBs. The highest cumulative rate in 2012 was recorded in Nelson Marlborough (208.0 per 100 000, 291 cases), followed by West Coast (139.6 per 100 000, 46 cases) and Tairāwhiti (130.9 per 100 000, 61 cases) DHBs. The highest number of notifications was reported from Canterbury DHB (318 cases), followed by Nelson Marlborough (291 cases), Capital and Coast (202), Hutt Valley (89) and Counties Manukau (77) 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 27 April). 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 in the last three weeks 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

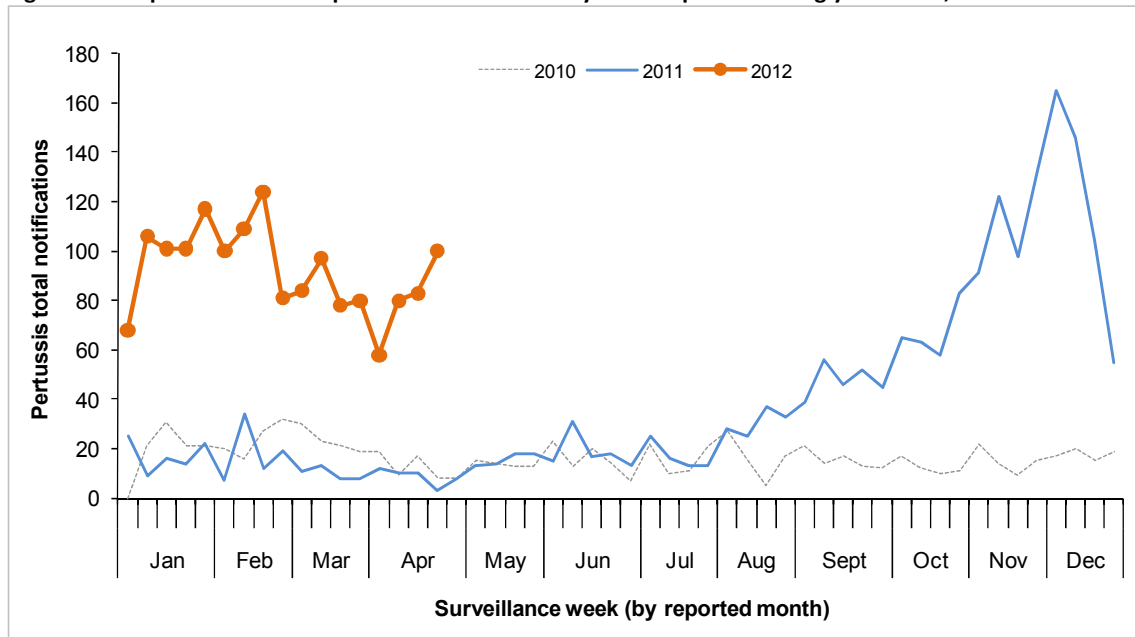
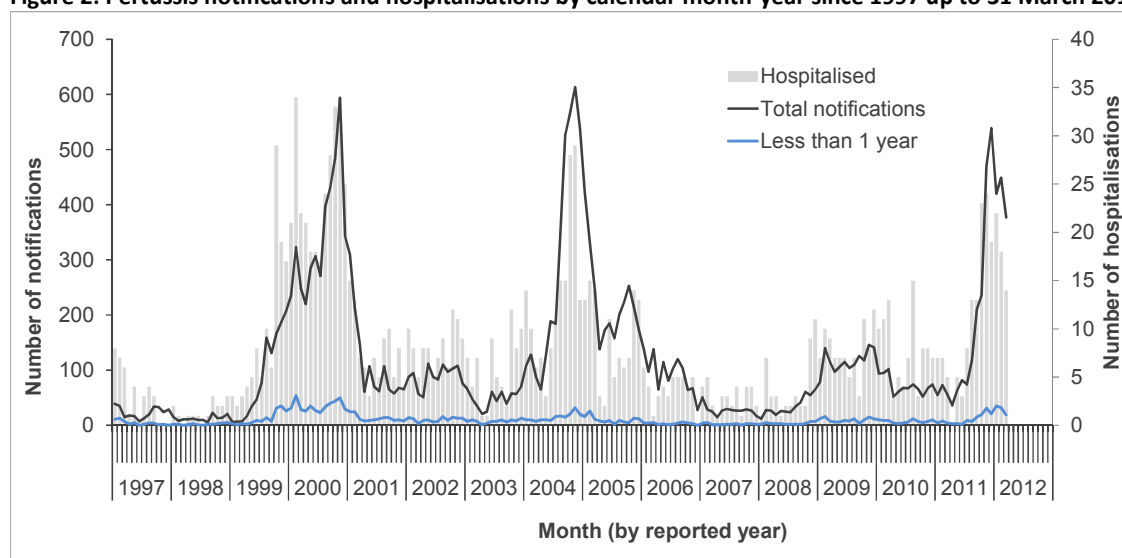


Figure 2 shows pertussis notifications and hospitalisations by calendar month, and notifications in those aged less than 1 year between 1 January 1997 and 31 March 2012. A four to five-year cycle can be seen with large peaks in notifications in years 2000 and 2004 and a much smaller peak in 2009. However, 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 (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 (184.4 per 100 000 population, 115 cases), followed by the 1 to 4 years (110.0 per 100 000, 277 cases), and 5 to 9 years (60.6 per 100 000, 174 cases) age groups.

Of the 1502 cumulative cases with known age, 14 (0.9%) 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	115	184.4	48	12	10
1 to 4	277	110.0	4	30	0
5 to 9	174	60.6	3	19	0
10 to 14	113	38.6	2	9	1
15 to 19	69	21.7	1	7	0
20 to 29	127	20.5	1	17	0
30 to 39	172	30.6	5	15	0
40 to 49	199	31.5	4	19	0
50 to 59	119	21.4	6	12	0
60 to 69	71	17.0	1	3	0
70+	66	16.2	1	5	0
Unknown	0		0	2	0
Overall	1502	34.1	76	150	11

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 (99 cases), followed by Māori (20 cases). Of the cases in 2012, the ethnic-specific cumulative rates were highest for the European ethnic group (43.0 per 100 000, 1158 cases), followed by Māori (32.9 per 100 000, 186 cases) and Pacific Peoples (24.7 per 100 000, 56 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	186	32.9	23	31	20	3	4
Pacific Peoples	56	24.7	14	14	7	4	4
Other	59	15.7	2	4	8	0	0
European	1158	43.0	36	65	99	4	4
Unknown	43		1	1	14	0	0
Overall	1502	37.3	76	115	148	11	12

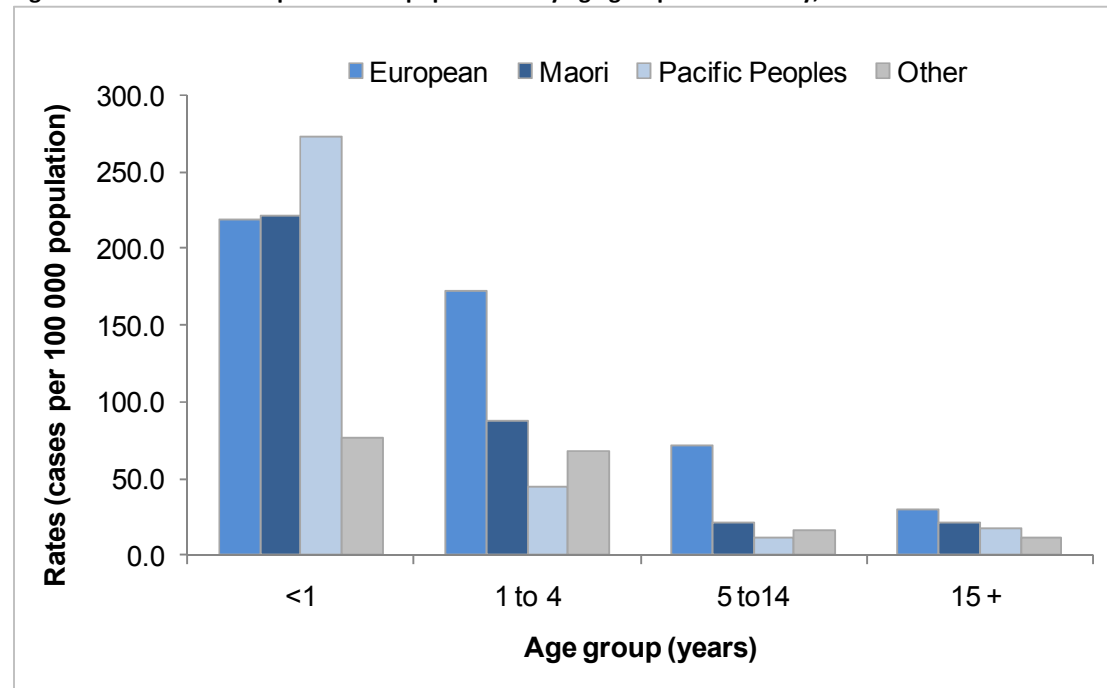
¹Rate of pertussis cases per 100 000 population calculated using Census 2006 usually resident populations.

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.

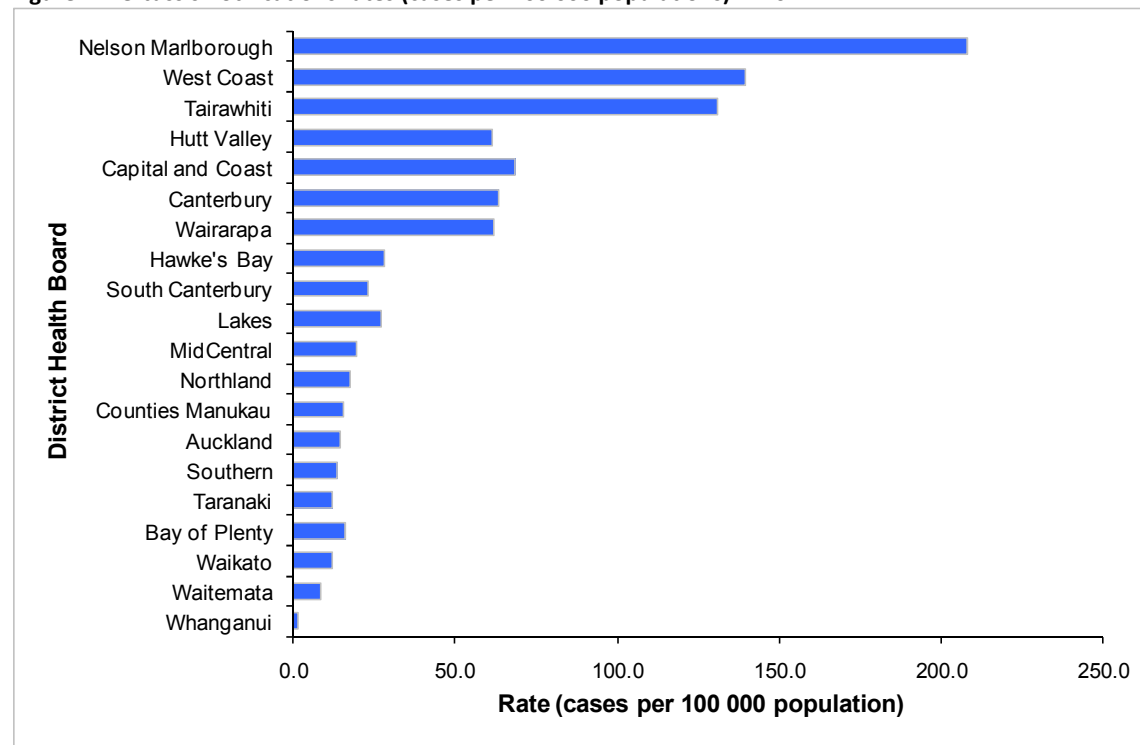
Hospitalisations

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, eleven hospitalisations were recorded. There have been 76 hospitalisations reported in EpiSurv in 2012. 48 (63.2%) of these were infants aged less than one year including 14 cases aged less than six weeks. Of the 1316 cases with known ethnicity and hospitalisation status, the ethnic-specific proportions of hospitalisations were as follows: Pacific Peoples (26.9%, 14/52), Māori (13.8%, 23/167), Other (4.0%, 2/50), and European (3.4%, 36/1047).

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 (45 cases), Capital and Coast (33 cases), and Nelson Marlborough (15 cases) DHBs. The highest cumulative rate in 2012 was recorded in Nelson Marlborough (208.0 per 100 000, 291 cases), followed by West Coast (139.6 per 100 000, 46 cases) and Tairāwhiti (130.9 per 100 000, 61 cases) DHBs. The highest number of notifications was reported from Canterbury DHB (318 cases), followed by Nelson Marlborough (291 cases), Capital and Coast (202), Hutt Valley (89) and Counties Manukau (77) 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 55 confirmed cases reported in the last two weeks, 29 (52.7%) had a known vaccination status. Of these 29 cases, six were not vaccinated. Three cases had received three doses of vaccine, six cases had received four doses, and one case reported having completed pertussis vaccination. A further 13 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 13 April)

Age Group	Total cases	One dose	Two doses	Three doses	Four doses	Five doses	Vaccinated		Unknown
							(no dose info)	Not vaccinated	
<6wks	2	0	0	0	0	0	0	1	1
6wks - 2mths	1	0	0	0	0	0	0	1	0
3-4 mths	1	0	0	0	0	0	0	1	0
5mths - 3yrs	9	0	0	3	1	0	1	0	4
4 - 10yrs	16	0	0	0	4	0	5	2	5
11+ yrs	26	0	0	0	1	1	7	1	16
Total	55	0	0	3	6	1	13	6	26

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

Of the 635 confirmed cases with known age reported during 2012, 427 (67.2%) had a known vaccination status (Table 4). Of these 427 cases, 143 were not vaccinated, including four cases aged less than 6 weeks and thus not eligible for vaccination. Thirty-seven cases had received one dose of vaccine, seven cases had received two doses, 63 cases had received three doses, 57 cases had received four doses, and 32 cases reported having completed pertussis vaccination. A further 88 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		Unknown
							(no dose info)	Not vaccinated	
<6wks	6	0	0	0	0	0	0	4	2
6wks - 2mths	15	8	0	0	0	0	0	5	2
3-4 mths	11	2	2	0	0	0	0	7	0
5mths - 3yrs	131	1	4	50	16	0	12	32	16
4 - 10yrs	137	5	0	9	32	20	13	44	14
11+ yrs	335	21	1	4	9	12	63	51	174
Total	635	37	7	63	57	32	88	143	208

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	28	17.7	2	4	2	1	1
Waitemata	47	8.6	7	2	2	0	0
Auckland	66	14.5	7	8	5	1	1
Counties Manukau	77	15.4	15	18	5	2	2
Waikato	44	12.0	3	2	4	0	0
Lakes	28	27.2	0	1	10	0	0
Bay of Plenty	34	16.0	1	2	9	0	0
Tairāwhiti	61	130.9	1	6	2	0	0
Taranaki	13	11.8	0	0	0	0	0
Hawke's Bay	44	28.2	3	2	3	1	1
Whanganui	1	1.6	0	0	0	0	0
MidCentral	33	19.6	2	5	6	1	1
Hutt Valley	89	61.6	3	6	4	0	0
Capital and Coast	202	68.6	4	12	33	0	1
Wairarapa	25	61.6	6	3	0	0	0
Nelson Marlborough	291	208.0	3	16	15	0	0
West Coast	46	139.6	1	2	0	0	0
Canterbury	318	63.3	10	15	45	4	4
South Canterbury	13	23.1	1	0	0	0	0
Southern	42	13.7	7	11	3	1	1
Total	1502	34.1	76	115	148	11	12

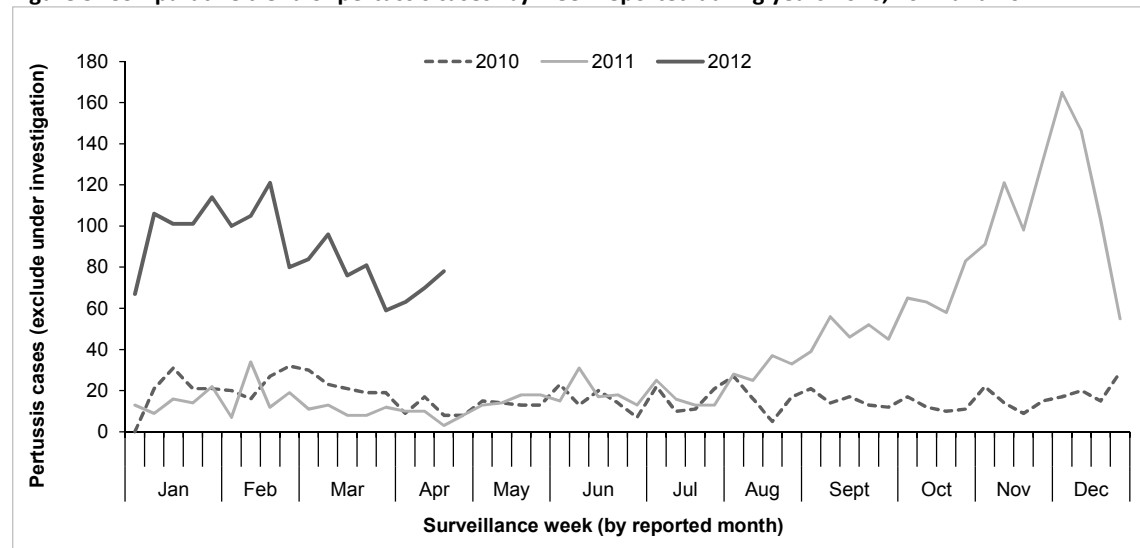
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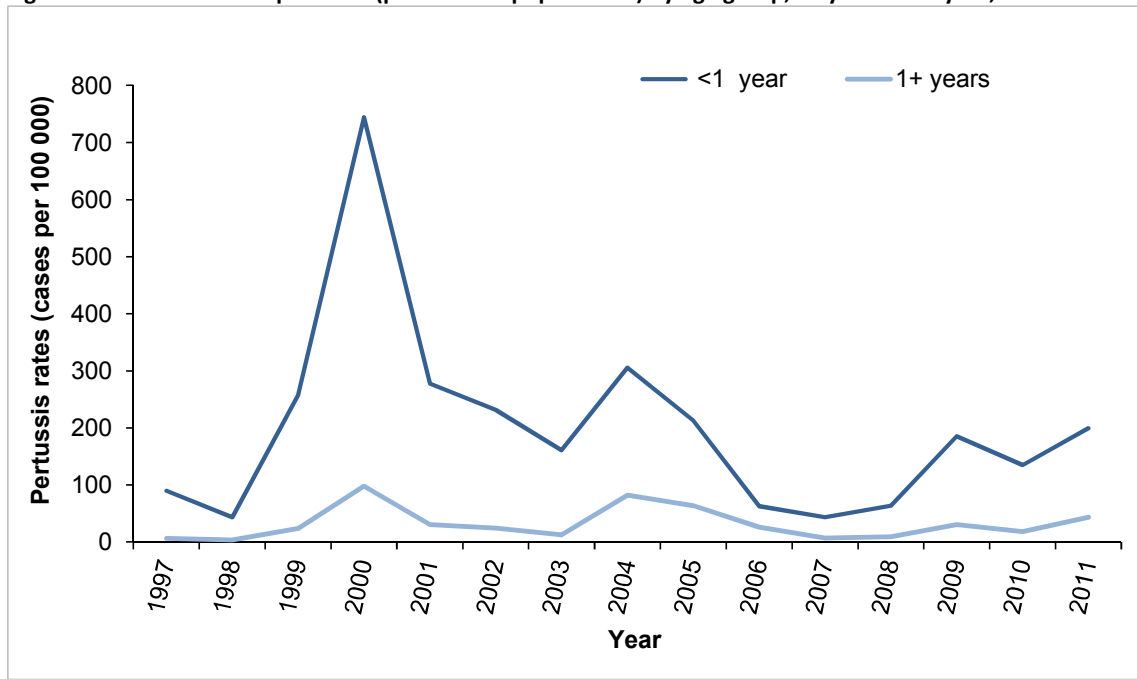
*Cases in the less than 1 year age group

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



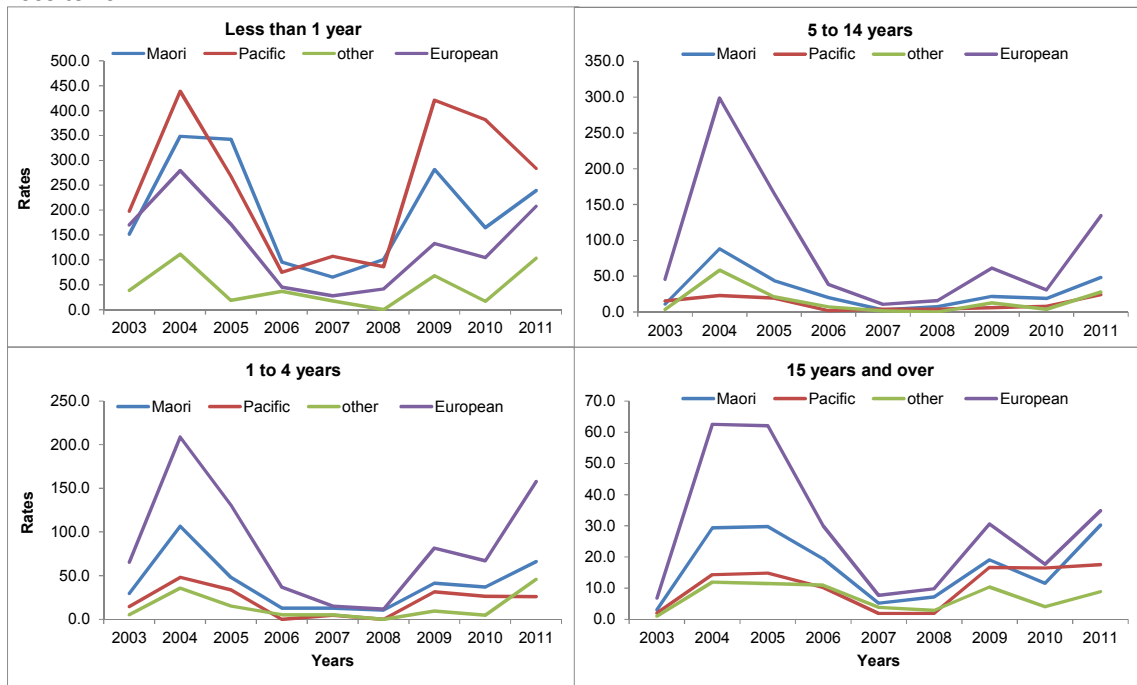
¹ Includes confirmed, probable and suspect cases only.

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>.