

PERTUSSIS REPORT

March 2012

This report includes cases of pertussis reported in EpiSurv up to midnight 16 March 2012. Data were extracted from EpiSurv at 10.00 am 20 March 2012.

Summary

In the past two surveillance weeks (03 – 16 Mar 2012), 184 new cases of pertussis (86 and 98 cases, respectively) were notified, including 58 confirmed cases, 87 probable cases, nine suspect cases, and 30 cases still under investigation. These numbers are marginally less than the numbers reported over the previous two weeks (218 cases). Six (3.3%) of the notified cases were aged less than 1 year. Eight cases were hospitalised.

There has been a total of 1102 pertussis notifications reported in EpiSurv since the first surveillance week of 2012 (compared to 182 the same time in 2011), including 468 confirmed cases, 528 probable cases, 28 suspect cases, and 78 cases still under investigation. Seventy-four (6.7%) of the cases were in the less than 1 year age group. 48 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 (26 cases), Nelson Marlborough and Capital and Coast (17 cases each) DHBs. The highest cumulative rate in 2012 was recorded in Nelson Marlborough (139.4 per 100 000, 195 cases), followed by West Coast (127.4 per 100 000, 42 cases) and Tairāwhiti (103.0 per 100 000, 48 cases) DHBs. The highest number of notifications was also reported from Canterbury DHB (207 cases), followed by Nelson Marlborough (195 cases), Capital and Coast (124), Hutt Valley (74) and Counties Manukau (58) 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 16 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 16 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. There has been a slight rise in weekly notifications in the last two weeks. 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

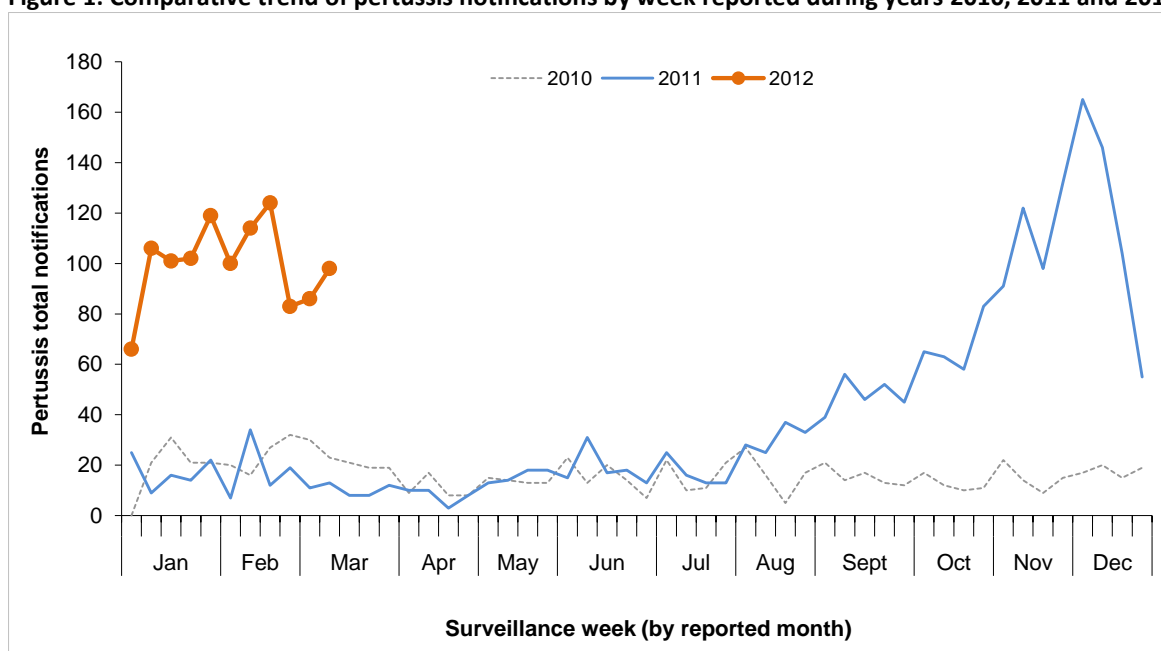
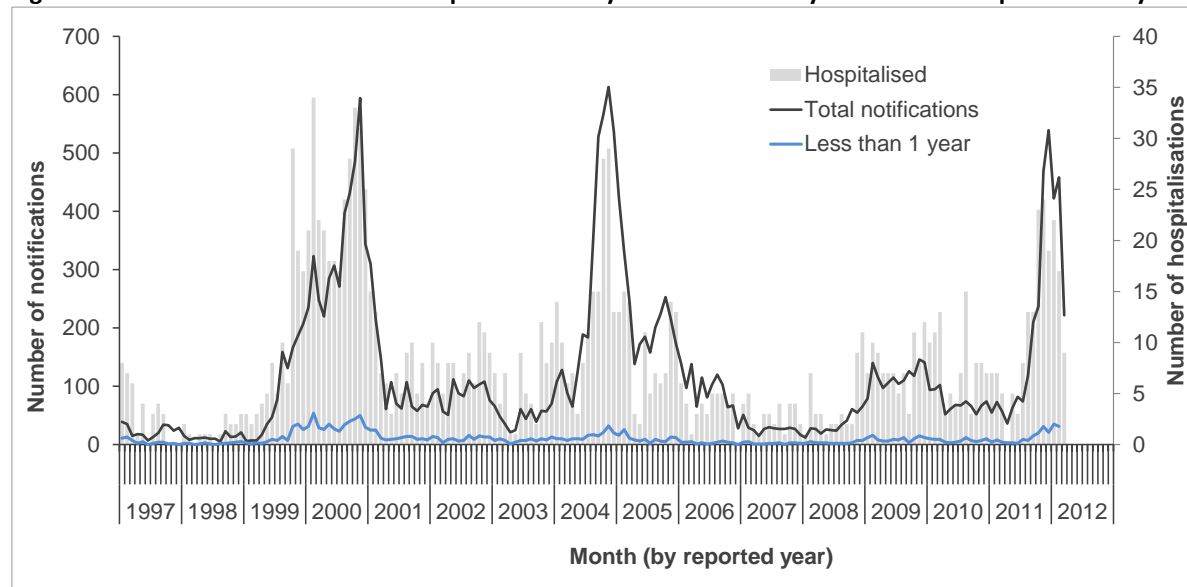


Figure 2 shows pertussis notifications and hospitalisations by calendar month, and notifications in those aged less than 1 year between 1 January 1997 and 16 March 2012. A four to five-year cycle can be seen with large peaks in notifications in years 2000 and 2004 and a much smaller peak in 2009. However, 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 (113.8 per 100 000 population, 71 cases), followed by the 1 to 4 years (79.4 per 100 000, 200 cases), and 5 to 9 years (38.6 per 100 000, 111 cases) age groups. Of the 1022 cumulative cases with known age, eight (0.8%) 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	Hosp	New Cases	Hosp
<1	71	113.8	28	5	2
1 to 4	200	79.4	3	36	1
5 to 9	111	38.6	2	17	0
10 to 14	78	26.6	0	12	0
15 to 19	45	14.2	1	10	0
20 to 29	87	14.1	1	17	1
30 to 39	124	22.0	4	16	1
40 to 49	137	21.7	1	15	0
50 to 59	73	13.1	4	10	0
60 to 69	48	11.5	1	5	0
70+	48	11.8	1	10	1
Unknown	2		0	1	0
Overall	1024	23.2	46	154	6

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 03 and 16 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 (95 cases), followed by Māori (22 cases). Of the cases in 2012, the ethnic-specific cumulative rates were highest for the European ethnic group (28.0 per 100 000, 754 cases), followed by Māori (20.3 per 100 000, 115 cases) and Pacific Peoples (12.8 per 100 000, 29 cases). Figure 3 shows Māori had the highest rates in the less than 1 year age group, while European had the highest rates across older 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 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	115	20.3	16	18	22	1	1
Pacific Peoples	29	12.8	6	6	4	2	1
Other	26	6.9	1	2	3	0	0
European	754	28.0	20	38	95	1	2
Unknown	100		3	7	30	2	1
Overall	1024	25.4	46	71	154	6	5

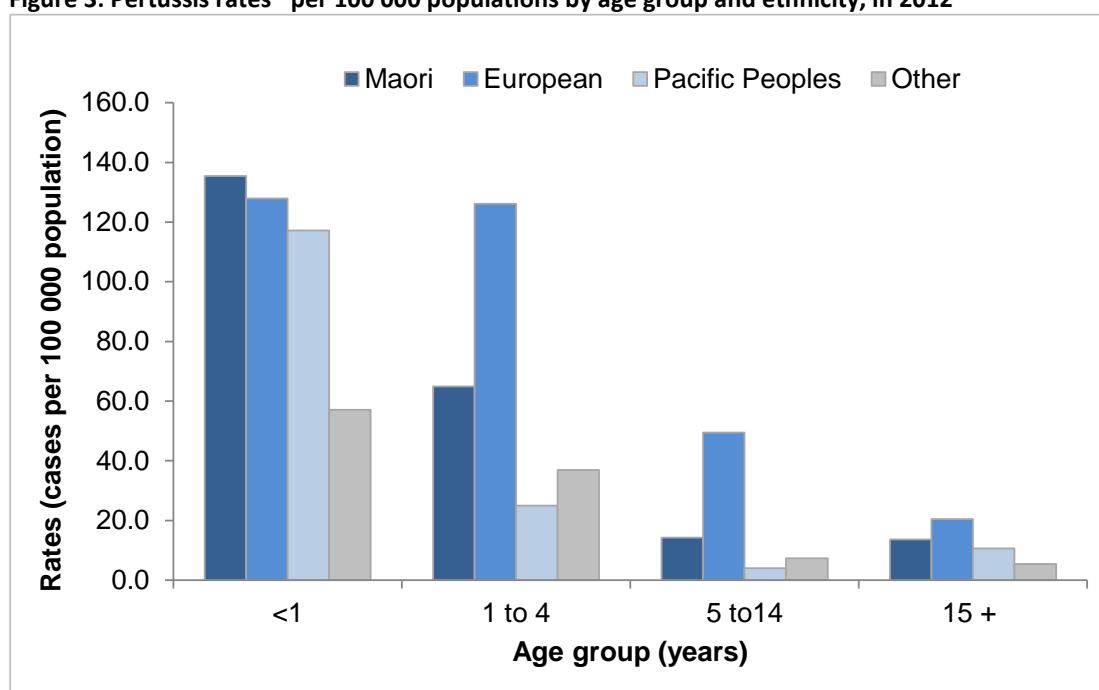
¹Rate of pertussis cases per 100 000 population calculated using Census 2006 usually resident populations.

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

³Notifications between 03 and 16 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 16 March 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.

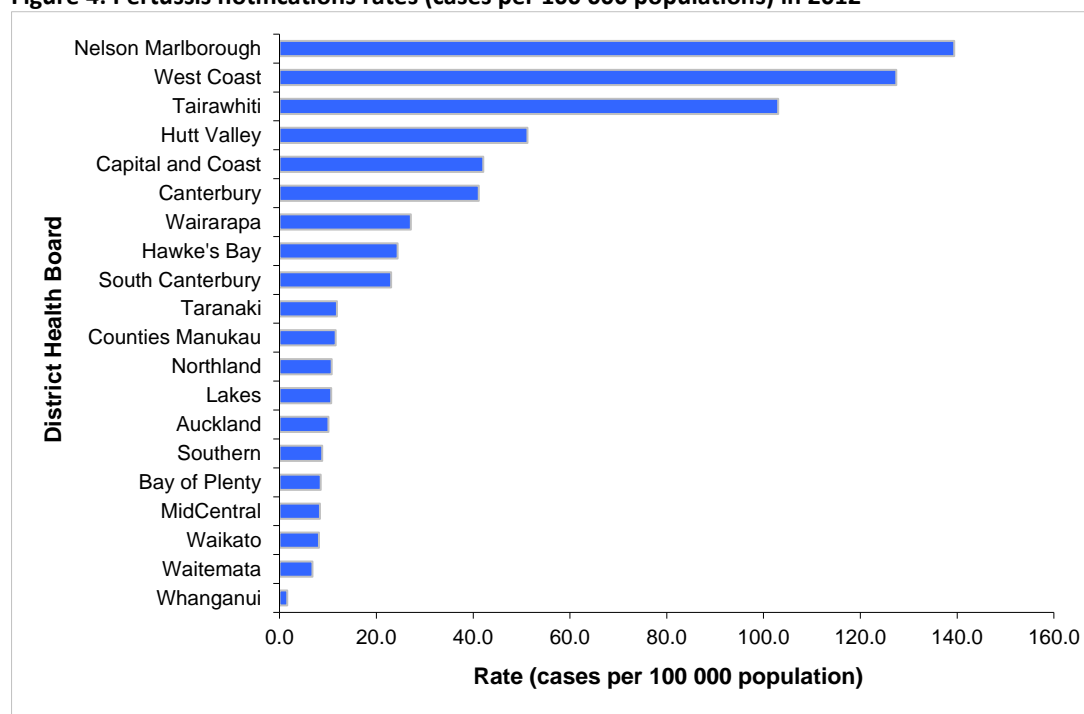
Hospitalisations

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 46 hospitalisations reported in EpiSurv in 2012. Twenty-eight (60.9%) of these were infants aged less than one year including eight cases aged less than six weeks. Of the cases with known ethnicity and hospitalisation status, the ethnic-specific proportions of hospitalisations were as follows: Pacific Peoples (20.7%, 6/29), Māori (10.2%, 16/105), Other (4.8%, 1/21), and European (1.2%, 20/692).

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 (26 cases), Nelson Marlborough and Capital and Coast (17 cases each) DHBs. The highest cumulative rate in 2012 was recorded in Nelson Marlborough (139.4 per 100 000, 195 cases), followed by West Coast (127.4 per 100 000, 42 cases) and Tairāwhiti (103.0 per 100 000, 48 cases) DHBs. The highest number of notifications was also reported from Canterbury DHB (207 cases), followed by Nelson Marlborough (195 cases), Capital and Coast (124), Hutt Valley (74) and Counties Manukau (58) 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 57 confirmed cases reported in the last two weeks, 31 (54.4%) had a known vaccination status. Of these 31 cases, seven were not vaccinated. One case had received one dose of vaccine, four cases had received three doses, four had received four doses, and six cases reported having completed pertussis vaccination. Nine 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		Unknown
							(no dose info)	Not vaccinated	
<6wks	0	-	-	-	-	-	-	-	-
6wks - 2mths	0	-	-	-	-	-	-	-	-
3-4 mths	0	-	-	-	-	-	-	-	-
5mths - 3yrs	9	0	0	3	2	0	1	1	2
4 - 10yrs	17	0	0	1	1	3	2	4	6
11+ yrs	31	1	0	0	1	3	6	2	18
Total	57	1	0	4	4	6	9	7	26

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

Of the 466 confirmed cases with known age reported during 2012, 312 (67.0%) had a known vaccination status (Table 4). Of these 312 cases, 104 were not vaccinated. Thirty cases had received one dose of vaccine, six cases had received two doses, 43 cases had received three doses, 39 cases had received four doses, and 30 cases reported having completed pertussis vaccination. A further 60 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	2	0	0	0	0	0	0	1	1
6wks - 2mths	8	7	0	0	0	0	0	1	0
3-4 mths	6	1	2	0	0	0	0	3	0
5mths - 3yrs	102	0	4	32	14	0	10	27	15
4 - 10yrs	95	4	0	9	19	18	4	31	10
11+ yrs	253	18	0	2	6	12	46	41	128
Total	466	30	6	43	39	30	60	104	154

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	17	10.7	0	0	3	0	0
Waitemata	37	6.8	4	2	9	1	0
Auckland	46	10.1	5	6	9	1	0
Counties Manukau	58	11.6	11	14	15	3	2
Waikato	30	8.2	3	2	8	0	0
Lakes	11	10.7	0	0	3	0	0
Bay of Plenty	18	8.5	1	2	3	0	0
Tairāwhiti	48	103.0	1	4	11	0	0
Taranaki	13	11.8	0	0	5	0	0
Hawke's Bay	38	24.4	2	1	3	0	0
Whanganui	1	1.6	0	0	1	0	0
MidCentral	14	8.3	1	3	2	0	0
Hutt Valley	74	51.2	3	5	14	0	0
Capital and Coast	124	42.1	1	6	17	0	1
Wairarapa	11	27.1	1	0	1	0	0
Nelson Marlborough	195	139.4	2	11	17	0	1
West Coast	42	127.4	1	2	5	0	0
Canterbury	207	41.2	4	7	26	0	0
South Canterbury	13	23.1	1	0	0	0	0
Southern	27	8.8	5	6	2	1	1
Total	1024	23.2	46	71	154	6	5

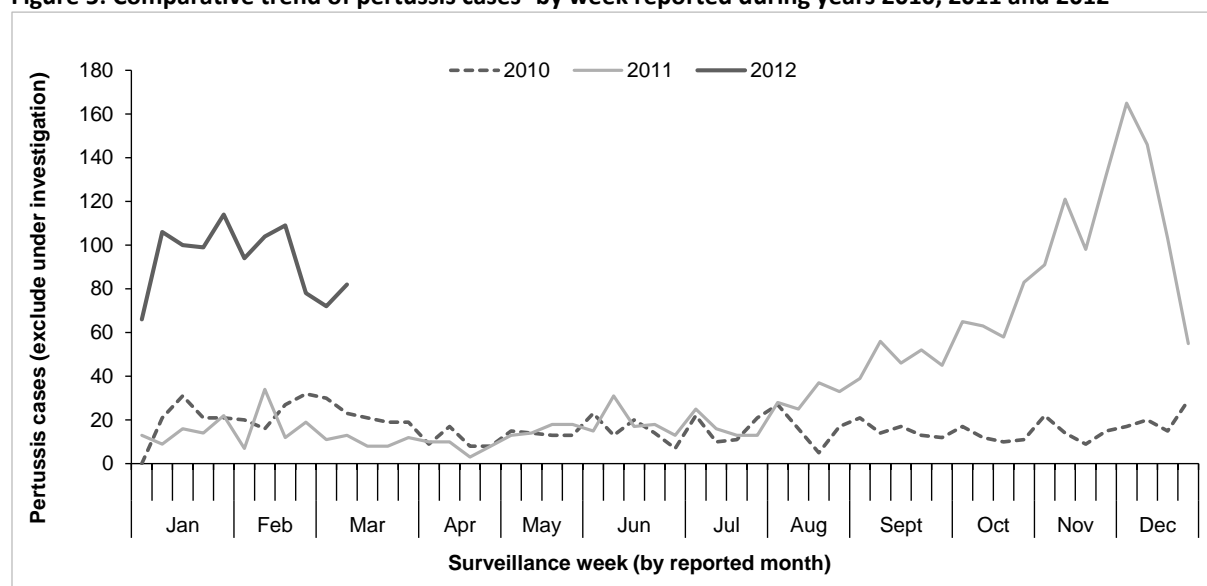
¹Rate of pertussis cases per 100 000 population calculated using 2011 mid-year population estimates.

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

³Notifications between 03 and 16 March 2012 inclusive

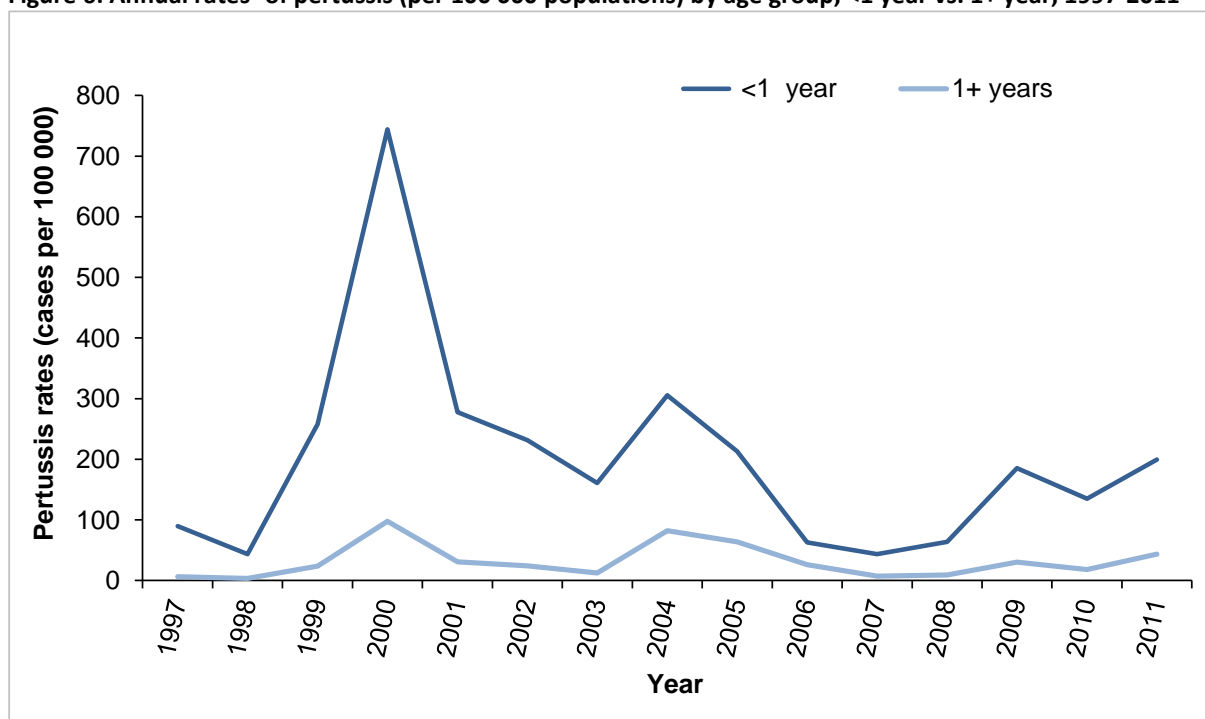
*Cases in the less than 1 year age group

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



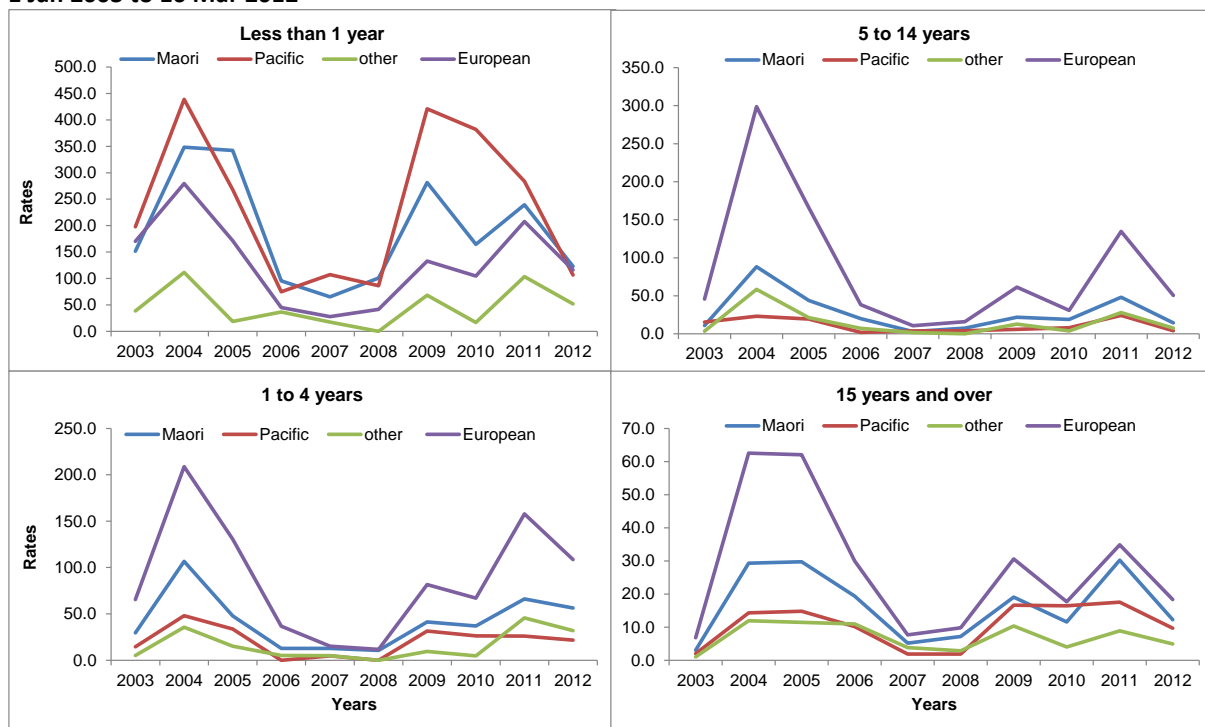
¹Includes confirmed, suspect and probable cases only.

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, 1 Jan 2003 to 16 Mar 2012



¹Rate of pertussis notified cases per 100 000 population 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>.