

Invasive Pneumococcal Disease Quarterly Report

April–June 2012

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by
Esther Lim
Helen Heffernan

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Introduction

Since 17 October 2008, invasive pneumococcal disease (IPD) has been notifiable to the local Medical Officer of Health under the Health Act 1956. In June 2008, a 7-valent pneumococcal conjugate vaccine (PCV-7), Prevenar[®], was added to the New Zealand childhood immunisation schedule. From approximately October 2011, the 10-valent pneumococcal conjugate vaccine (PCV-10), Synflorix[®], replaced PCV-7 as supplies of the latter were depleted.

PCV-10 includes the seven serotypes in PCV-7 (4, 6B, 9V, 14, 18C, 19F, and 23F) as well as serotypes 1, 5, and 7F. The recommended schedule is four doses, given at 6 weeks, 3 months, 5 months and 15 months of age.

These quarterly reports are part of an enhanced surveillance programme to monitor the impact of PCV vaccination, including the change from PCV-7 to PCV-10, on the epidemiology of IPD in New Zealand.

Methods

The data presented in this report is based on the information recorded on EpiSurv, the national notifiable disease surveillance system, as at 5 July 2012. Any changes made to EpiSurv data by public health unit staff after this date will not be reflected in this report.

Denominator data used to determine all disease rates in this report was derived from the 2011 mid-year population estimates published by Statistics New Zealand. Rates have not been calculated where there are fewer than five notified cases in any category.

The Fisher's exact test was used to determine statistical significance. P-values less than 0.05 are considered to be significant at the 95% level of confidence.

Streptococcus pneumoniae isolates are serotyped at ESR by the capsular antigen reaction (Neufeld test) using the Danish system of nomenclature and sera obtained from the Statens Serum Institut. Methods have not been established at ESR to identify the strain type when only pneumococcal DNA, rather than an isolate, is available. Therefore, serotype can only be determined for culture-positive IPD cases. Serotype data for invasive isolates of *S. pneumoniae* was matched with the relevant IPD case notification.

Case definition

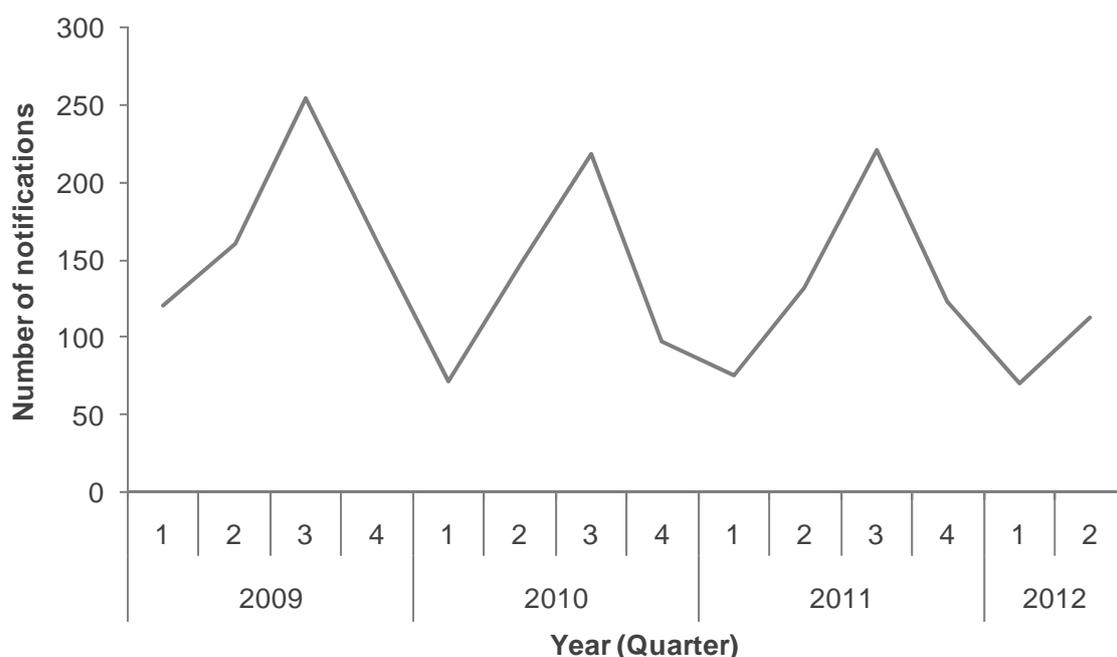
A case of invasive pneumococcal disease is defined as:

- the isolation of *S. pneumoniae* from CSF, blood or other normally sterile site; or
- the detection by nucleic acid amplification test of pneumococcal DNA in CSF, blood or other normally sterile site; or
- a positive newer-generation *S. pneumoniae* antigen test (i.e. Binax NOW) on CSF.

Results

There were 113 IPD cases notified in the April–June 2012 quarter (132 cases in April–June 2011). There is a distinct seasonal pattern with a peak in the July–September quarter and a trough in the January–March quarter each year (Figure 1). The notification rate of 12.0 per 100 000 population (528 cases) for the latest 12-month period ending 30 June 2012 was the same as the rate for the previous 12-month period ending 30 June 2011 (12.0 per 100 000, 523 cases).

Figure 1. Number of cases of invasive pneumococcal disease by quarter reported, Jan 2009–Jun 2012



The distribution of IPD cases and rates by age group is presented in Table 1. During the latest 12-month period the highest rates were in the 65+ years (36.1 per 100 000 population, 212 cases) and <2 years (26.2 per 100 000, 33 cases) age groups. The rates for the latest 12-month-period were lower than those for the previous 12-month period in all age groups except the 5–64 years age group.

Table 1. Number of cases and rates of invasive pneumococcal disease by age group

Age group	Apr–Jun 2012	12 months ending Jun 2012		12 months ending Jun 2011	
	Cases	Cases	Rate ^a	Cases	Rate ^a
<2 years	7	33	26.2	39	30.8
2–4 years	5	18	9.6	24	13.0
5–64 years	55	265	7.6	227	6.5
65+ years	46	212	36.1	233	40.9
Total	113	528	12.0	523	12.0

^a Rate is expressed as cases per 100 000 population.

The distribution of IPD cases and rates by region is presented in Table 2. During the latest 12-month period, the highest rates were in the Midland (13.2 per 100 000 population, 111 cases) and Northern (13.1 per 100 000, 218 cases) regions. The regional rates for the latest 12-month period were similar to those for the previous 12-month period.

Table 2. Number of cases and rates of invasive pneumococcal disease by region

Region	Apr–Jun 2012	12 months ending Jun 2012		12 months ending Jun 2011	
	Cases	Cases	Rate ^a	Cases	Rate ^a
Northern ^b	43	218	13.1	201	12.3
Midland ^c	30	111	13.2	116	13.9
Central ^d	24	109	10.8	99	9.9
Southern ^e	16	90	10.0	107	11.9
Total	113	528	12.0	523	12.0

^a Rate is expressed as cases per 100 000 population.

^b Includes Northland, Waitemata, Auckland, and Counties Manukau DHBs.

^c Includes Waikato, Lakes, Bay of Plenty, Tairāwhiti, and Taranaki DHBs.

^d Includes Hawke's Bay, Whanganui, MidCentral, Hutt Valley, Capital and Coast, Wairarapa, and Nelson Marlborough DHBs.

^e Includes West Coast, Canterbury, South Canterbury, and Southern DHBs.

Table 3 shows the culture-positive cases due to each of the serotypes included in PCV-7 and PCV-10, and due to non-PCV-10 serotypes. Of the 113 cases notified in the April–June 2012 quarter, 102 (90.3%) were culture-positive. The predominant PCV-7 serotype reported in the quarter was type 4 (10 cases). During the quarter there were no cases of IPD due to a PCV-7 serotype in the <2 years age group and one case in the 2–4 years age group (type 9V).

Comparing the latest 12-month period with the previous 12-month period, the number of cases due to each of the PCV-7 serotypes, except types 4 and 23F, either decreased or was very similar. The increase in the number of cases due to types 4 and 23F occurred in the 5+ years age group.

The number of cases due to serotype 1 (PCV-10, but not PCV-7, type) halved in the latest 12-month period (55 to 25), while cases due to serotype 7F almost doubled (12 to 20).

The number of cases due to non-PCV-10 serotypes increased by 20% (245 to 294) in the latest 12-month period compared with the previous 12-month period, with the highest increases in type 22F (88%) and type 19A (35%) cases. The increase in type 22F cases was in the 5+ years age group. There was an increase in type 19A cases in all age groups.

Table 3. Number of invasive pneumococcal disease cases by serotype and age group

Serotypes	Age group											
	<2 years			2–4 years			5+ years			Total		
	Q2 2012 ^a	2012 ^b	2011 ^c	Q2 2012 ^a	2012 ^b	2011 ^c	Q2 2012 ^a	2012 ^b	2011 ^c	Q2 2012 ^a	2012 ^b	2011 ^c
4					1	2	10	51	40	10	52	42
6B		1	1				1	11	20	1	12	21
9V			1	1	1	1	3	15	24	4	16	26
14		1	3			4	2	22	27	2	23	34
18C		1				1	1	9	12	1	10	13
19F			4			3	4	29	33	4	29	40
23F					1	1	5	18	14	5	19	15
Total (PCV-7)	0	3	9	1	3	12	26	155	170	27	161	191
1		1	3		1	5	3	23	47	3	25	55
5												
7F	1	3	2		2		2	15	10	3	20	12
Total (PCV-10)	1	7	14	1	6	17	31	193	227	33	206	258
3	1	1	1			2	5	27	26	6	28	29
6A							1	5	10	1	5	10
6C		1	2				2	13	13	2	14	15
9N		1					1	9	15	1	10	15
11A			1				5	12	15	5	12	16
19A	2	11	6	2	7	3	14	56	46	18	74	55
22F			1				12	45	23	12	45	24
33F			4				2	13	7	2	13	11
Other types ^d	2	10	9		2	1	20	81	60	22	93	70
Total (non-PCV-10)	5	24	24	2	9	6	62	261	215	69	294	245

^a Cases reported in the second quarter of 2012 (April–June 2012).

^b Cases reported in the 12 months ending 30 June 2012.

^c Cases reported in the 12 months ending 30 June 2011.

^d Other serogroups/serotypes reported in the April–June 2012 quarter include 7 (not 7A or 7F), 8, 10A, 13, 15 (not 15B), 17F, 23A, 23B, 35, and 38.