Invasive pneumococcal disease surveillance Australia, 1 April to 30 June 2014

Rachel de Kluyver for the Enhanced Invasive Pneumococcal Disease Surveillance Working Group

Introduction

Invasive pneumococcal disease (IPD) is caused by the bacterium *Streptococcus pneumoniae* and results in illnesses such as pneumonia, bacteraemia and meningitis. There are currently more than 90 serotypes recognised worldwide, approximately half of which are found in Australia where IPD has been a nationally notifiable disease since 2001. This quarterly report documents trends in notified cases of IPD occurring in Australia in the 2nd quarter of 2014. In this quarterly report, 3 age groups have been selected for focused analyses. These age groups align with groups that carry the greatest burden of disease and against which the National Immunisation Program is targeted. The data in this report are provisional and subject to change as laboratory results and additional case information become available.

Detailed IPD surveillance methodology is described each year in the 1st quarter report and in the annual reports published in *Communicable Diseases Intelligence*.

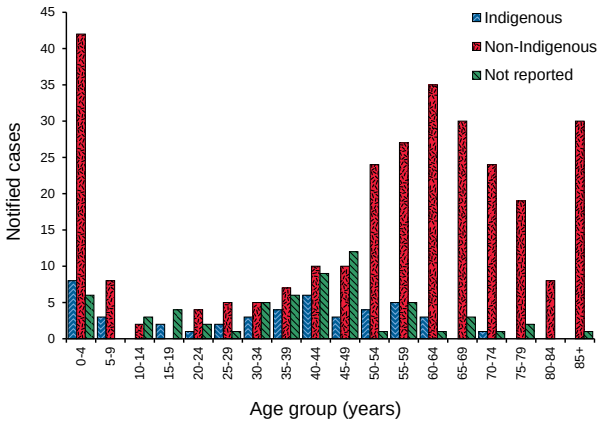
In Australia, pneumococcal vaccination is recommended as part of routine immunisation for children, the medically at risk and older Australians.*

Results

There were 397 cases of IPD reported to the National Notifiable Diseases Surveillance System in the 2nd quarter of 2014, bringing the year to date total to 611 cases. The number of cases notified in the reporting period was an 86% increase from the 1st quarter (n=214). This trend is consistent with the usual peak in the number of cases of IPD in the winter months. This trend was observed in all analyses included in this report. For the year to 30 June there was a 6.1% reduction on the number of cases reported for the same period in 2013 (n=651) (Table).

Overall, and in cases reported as non-Indigenous Australian, notified cases were highest in the under 5 years age group followed by the 60–64 years age group (Figure 1). In cases reported as Indigenous, the most prevalent age group was the under 5 years (n=8) followed by the 40–44 years age group (n=6).

Figure 1: Notifications of invasive pneumococcal disease, Australia, 1 April to 30 June 2014, by Indigenous status and age group



Data completeness

During the reporting period, Indigenous status was reported for 84% (n=335) of cases and serotype information was available for 91% (n=360) of all cases reported (Table).

Invasive pneumococcal disease in children aged less than 5 years

In the 2nd quarter of 2014, 14% (n=56) of notified cases were aged less than 5 years. This was an increase on the number of cases reported in the previous quarter (n=31), but similar to the number reported during the same period of 2013 (n=57) (Figure 2).

The majority (89%, n=50) of cases aged less than 5 years were reported with serotype information. Of these, 42% (n=21) were reported with a serotype included in the 7vPCV or the 13vPCV.

* The 7-valent pneumococcal conjugate vaccine (7vPCV) was added to the National Immunisation Program schedule for Indigenous and medically at-risk children in 2001 and for all children up to 2 years of age in 2005. The 13-valent pneumococcal conjugate vaccine (13vPCV) replaced the 7vPCV in the childhood immunisation program from July 2011. The 23-valent pneumococcal polysaccharide vaccine (23vPPV) was added to the National Immunisation Program schedule for Aboriginal and Torres Strait Islander peoples aged 50 years or over in 1999 and for non-Indigenous Australians aged 65 years or over from January 2005.

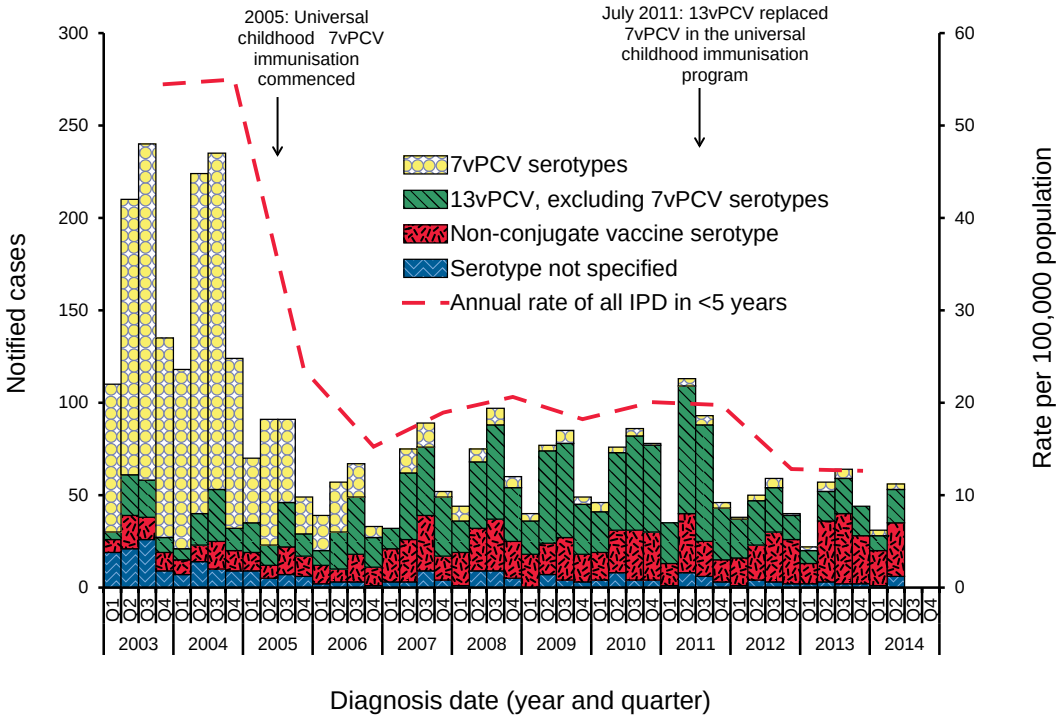
Table: Notified cases of invasive pneumococcal disease, Australia, 1 April to 30 June 2014, by Indigenous status, serotype completeness and state or territory

Indigenous status	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA	1st qrt 2014	4th qrt 2013	1st qrt 2013	Year to date 2014
Indigenous	0	5	10	7	3	1	0	17	43	38	33	43
Non-Indigenous	3	49	1	20	15	2	35	11	136	272	157	136
Not stated/ unknown	0	9	0	3	0	0	17	1	30	25	27	30
Total	3	63	11	30	18	3	52	29	209	335	217	209
Indigenous status completeness* (%)	100	86	100	90	100	100	67	97	86			–
Serotype completeness† (%)	100	89	100	87	94	100	87	97	90			–

* Indigenous status completeness is defined as the reporting of a known Indigenous status, excluding the reporting of not stated or unknown Indigenous status.

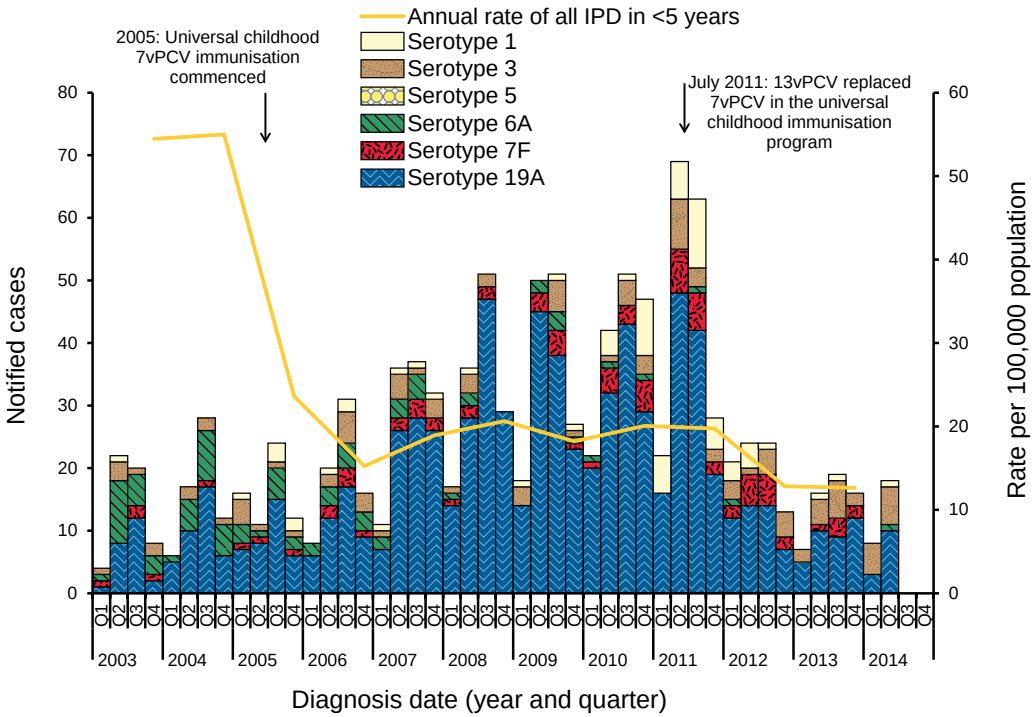
† Serotype completeness is the proportion of all cases of invasive pneumococcal disease that were reported with a serotype or reported as non-typable. Serotype incompleteness may include when no isolate was available as diagnosis was by polymerase chain reaction and no molecular typing was attempted or was not possible due to insufficient genetic material; the isolate was not referred to the reference laboratory or was not viable; typing was pending at the time of reporting; or no serotype was reported by the notifying jurisdiction to the National Notifiable Diseases Surveillance System.

Figure 2: Notifications and rates of invasive pneumococcal disease in those aged less than 5 years, Australia, 2003 to 30 June 2014, by vaccine serotype group



Over the period 2007 to 2011 notified cases aged less than 5 years with disease caused by the 6 additional serotypes (1, 3, 5, 6A, 7F and 19A) that would be covered by the 13vPCV, increased steadily, particularly those caused by serotype 19A (Figure 3). However, cases of serotype 19A have decreased since the 4th quarter of 2011, reflecting the introduction of the 13vPCV into the universal childhood immunisation program in mid-2011. In the 2nd quarter of 2014, there were 10 cases aged less than 5 years with disease due to serotype 19A, 6 cases due to serotype 3 and 1 case each of serotypes 1 and 6A. In this age group, no cases were reported with disease caused by serotype 5 or 7F; a previously common serotype.

Figure 3: Notifications of invasive pneumococcal disease caused by serotypes targeted by the 13-valent pneumococcal conjugate vaccine* and rates of all invasive pneumococcal disease, aged less than 5 years, Australia, 2003 to 30 June 2014



* Excludes those targeted by 7-valent pneumococcal conjugate vaccine

Invasive pneumococcal disease in Indigenous Australians aged 50 years or over

In the 2nd quarter of 2014, 3% (n=13) of notified cases were reported as Indigenous Australians aged 50 years or older (Figure 4). This was a 58% increase compared with the 1st quarter (n=9) and was slightly lower than the number reported during the same period in 2013 (n=15).

All but one of the cases notified in the 2nd quarter of 2014 were reported with serotype information. Of these, approximately half (n=7) were reported with disease due to serotypes targeted by the 23vPPV. The remaining cases reported disease due to a non-vaccine serotype (n=5).

Invasive pneumococcal disease in non-Indigenous Australians aged 65 years or over

In the 2nd quarter of 2014, 28% (n=111) of notified cases were reported as nonIndigenous and aged 65 years or over. This was an increase in the number of cases reported in the previous quarter (n=58) and a 21% reduction on the number reported during the same period of 2013 (n=141) (Figure 5).

The majority (94%, n=104) of cases reported in this quarter were reported with serotype information. Of these cases, 64% (n=67) were reported with a serotype targeted by the 23vPPV. While the burden of disease in this age group has remained relatively stable, the profile of serotypes causing disease has changed over time. Disease due to serotypes targeted by the 7vPCV has reduced substantially in this age group, which is likely to be due to herd immunity impacts from the childhood immunisation program.

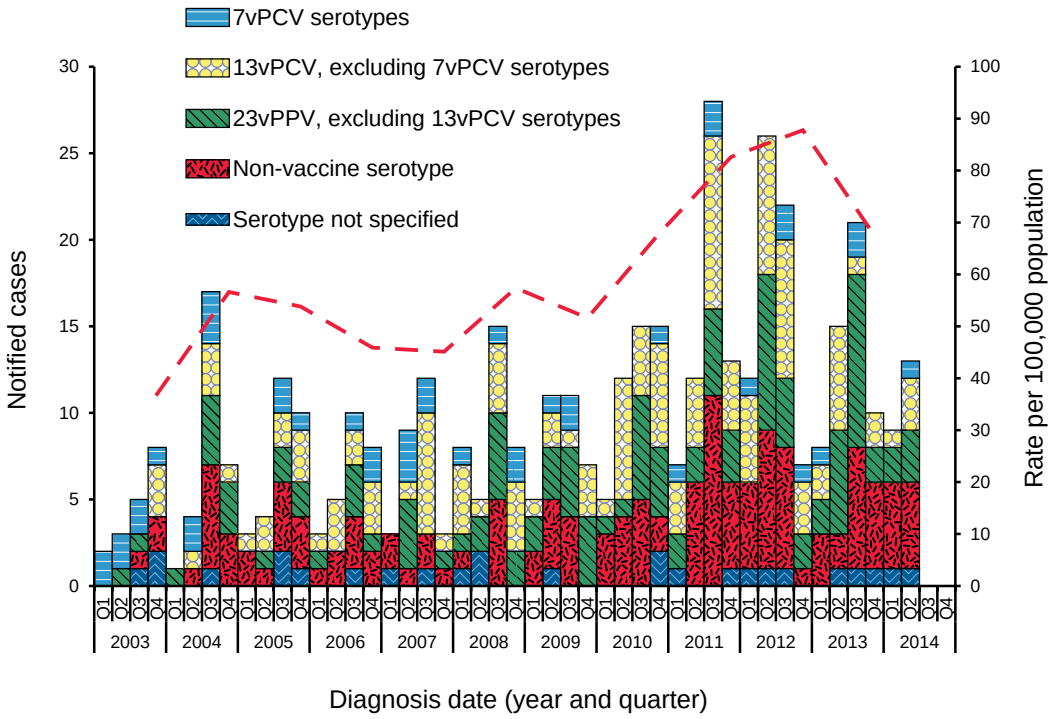
Mortality due to invasive pneumococcal disease

Nationally, there were 21 deaths attributed to 13 different IPD serotypes during this reporting period. No deaths in the under 5 years age group were due to serotypes included in the 7vPCV or 13vPCV.

Conclusion

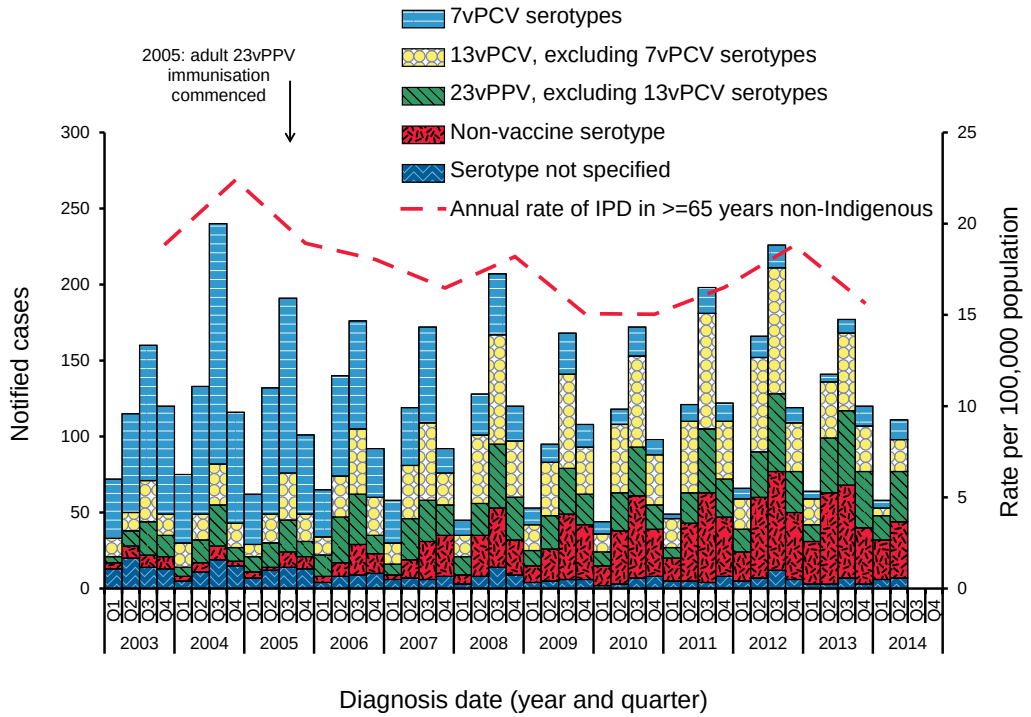
The number of notified cases of IPD in the 2nd quarter of 2014 was an 86% increase on the previous quarter, which was consistent with the seasonal increase of IPD during winter. To 30 June, the total number of cases in 2014 was a 6% reduction on the number of cases reported for

Figure 4: Notifications and rates of invasive pneumococcal disease in Indigenous Australians aged 50 years or over, Australia, 2003 to 30 June 2014, by vaccine serotype group



In 1999, 23vPPV immunisation commenced for Indigenous Australians aged 50 years or over.

Figure 5: Notifications and rates of invasive pneumococcal disease in non-Indigenous Australians aged 65 years or over, Australia, 2003 to 30 June 2014, by vaccine serotype group



the same period in 2013. Nationally, the pattern of disease has not changed from the 2nd quarter of 2013. Specifically, the decline in disease due to the serotypes targeted by the 13vPCV has been maintained since the 13vPCV replaced the 7vPCV in the childhood immunisation program from July 2011. Similarly, IPD associated with non-vaccine serotypes has remained unchanged in all groups targeted for IPD vaccination. Disease in non-Indigenous Australians aged 65 years or over has remained relatively stable but the profile of serotypes causing disease has diversified.

Acknowledgements

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