Invasive pneumococcal disease surveillance Australia, 1 July to 30 September 2014

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- There were 588 cases of invasive pneumococcal disease reported to the National Notifiable Diseases Surveillance System in the 3rd quarter of 2014, bringing the year-to-date total to 1,211 cases.
- The total number of cases in the year-to-date was similar to the number of cases reported for the same period in 2013.
- Aboriginal and Torres Strait Islander peoples accounted for 13% of all cases with a reported Indigenous status.

Introduction

Invasive pneumococcal disease (IPD) is caused by the bacterium *Streptococcus pneumoniae* and results in conditions 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 3rd quarter of 2014 (1 July to 30 September 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

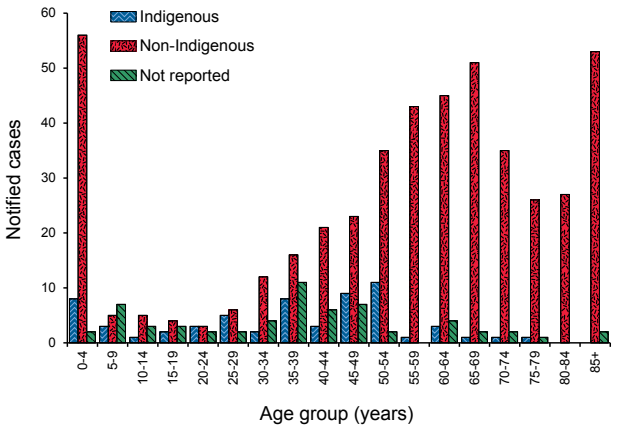
There were 588 cases of IPD reported to the National Notifiable Diseases Surveillance System in the 3rd quarter of 2014, bringing the year-to-date total to 1,211 cases. Similar to many infectious diseases, the number of cases of IPD is highest in the winter months and this is particularly evident for cases aged greater than 5 years. This seasonal trend was observed in all analyses included in this report. For the year to 30 September, the total number of cases was similar to the number of cases reported for the same period in 2013 (n=1,208) (Table).

Overall, notified cases were highest in the under 5 years age group followed by the over 85 years age group (Figure 1). In cases reported as Indigenous, the most prevalent age group was the 50–54 years age group (n=11) followed by the 45–49 years age group (n=9).

Data completeness

During the reporting period, Indigenous status was reported for 90% (n=528) of cases and serotype information was available for 96% (n=567) of all cases reported (Table).

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



* The 7-valent pneumococcal conjugate vaccine (7vPCV) was added to the National Immunisation Program (NIP) 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 NIP 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 July to 30 September 2014, by Indigenous status, serotype completeness and state or territory

Indigenous status	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA	Total 3rd qrt 2014	2nd qrt 2014	3rd qrt 2013	Year to date 2014
Indigenous	1	11	14	13	3	1	0	19	62	45	64	107
Non-Indigenous	4	158	2	86	61	11	91	53	466	315	422	781
Not stated/ unknown	0	16	0	2	0	0	42	0	60	48	68	108
Total	5	185	16	101	64	12	133	72	588	408	554	1,211
Indigenous status completeness* (%)	100	91	100	98	100	100	68	100	90			–
Serotype completeness† (%)	100	95	100	95	94	83	99	100	96			–

* 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-typeable. 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.

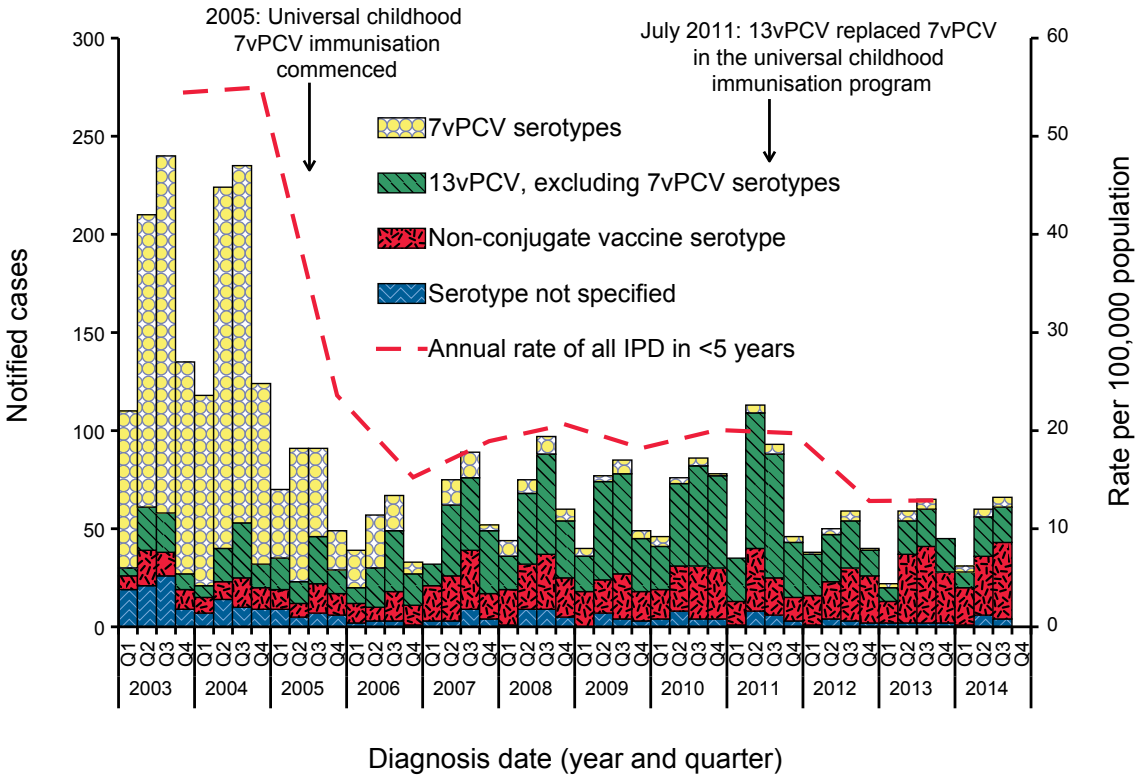
Invasive pneumococcal disease in children aged less than 5 years

In the 3rd quarter of 2014, 11% (n=66) of all notified cases were aged less than 5 years, which was similar to the number reported during the same period of 2013 (n=65).

The majority (94%, n=62) of cases aged less than 5 years were reported with serotype information. Of these, 37% (n=23) were reported with a serotype included in the 7vPCV or the 13vPCV (Figure 2).

Over the period 2007 to 2011 notified cases aged less than 5 years with disease caused by the

Figure 2: Notifications (2003 to 30 September 2014) and annual rates (2003 to 2013) of all invasive pneumococcal disease in those aged less than 5 years, Australia, by vaccine serotype group



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 3rd quarter of 2014, there were 11 cases aged less than 5 years with disease due to serotype 19A and 6 cases due to serotype 3. In this age group, 1 case was reported with disease caused by serotype 7F, a previously common serotype.

Invasive pneumococcal disease in Indigenous Australians aged 50 years or over

In the 3rd quarter of 2014, 3% (n=18) of notified cases were reported as Indigenous Australians aged 50 years or over (Figure 4). This was slightly lower than the number reported during the same period in 2013 (n=21).

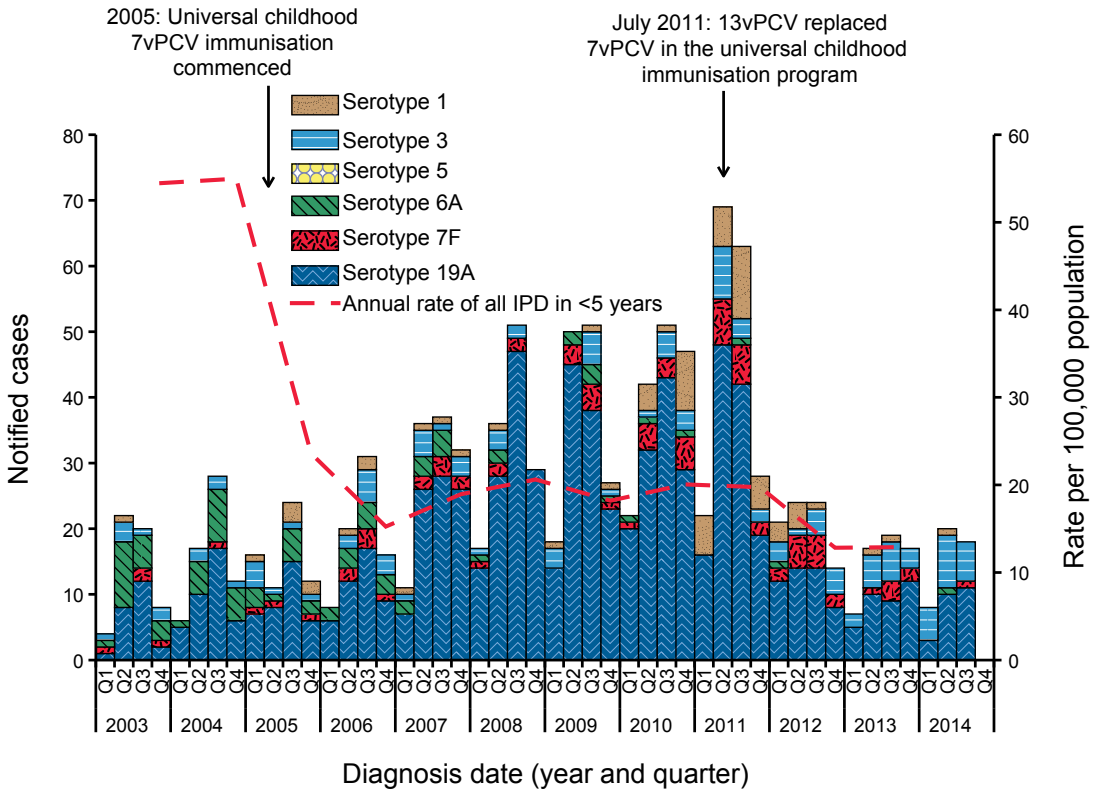
All but one of the cases notified in the 3rd quarter of 2014 were reported with serotype information. Of these, approximately 70% (n=12) were reported with disease due to serotypes targeted by the 23vPPV. The remaining cases reported disease due to a non-vaccine serotype (n=5).

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

In the 3rd quarter of 2014, 34% (n=198) of notified cases were reported as non-Indigenous and aged 65 years or over. This was similar to the number reported during the same period of 2013 (n=184) (Figure 5).

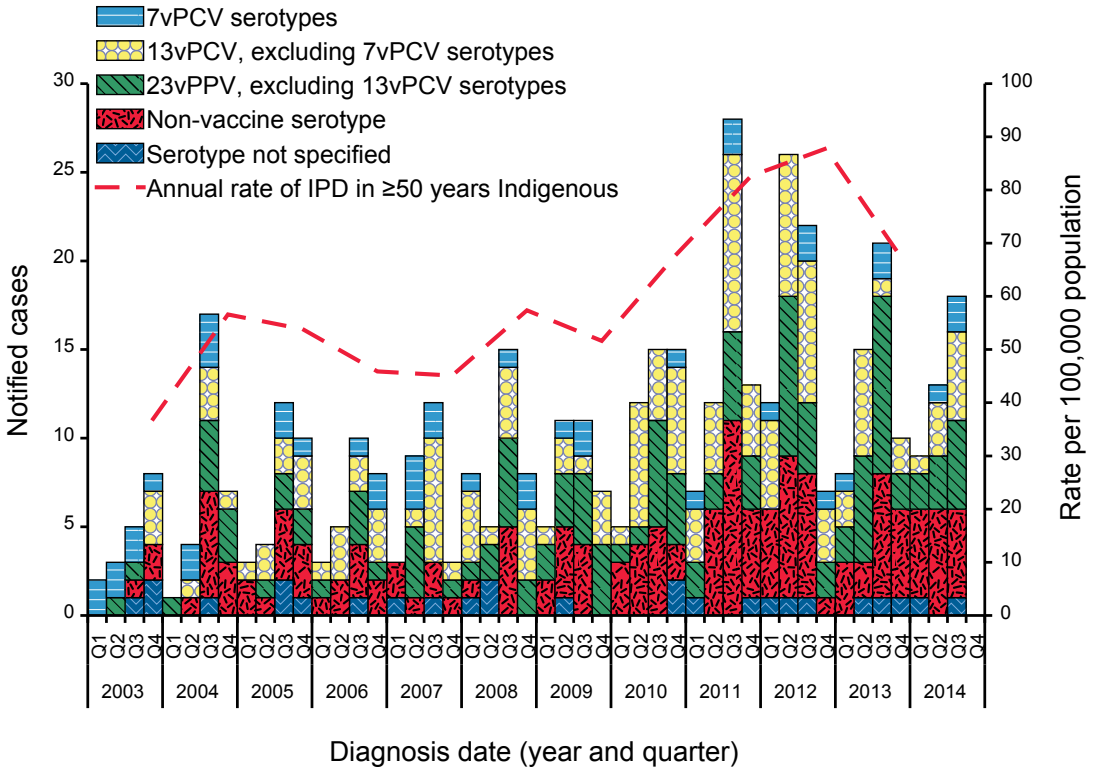
The majority (97%, n=193) of cases reported in this quarter were reported with serotype information. Of these cases, 60% (n=116) were reported with a serotype targeted by the 23vPPV. While the burden of disease in this age group has remained relatively stable, the profile of serotypes causing disease 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.

Figure 3: Notifications of invasive pneumococcal disease caused by serotypes targeted by the 13-valent pneumococcal conjugate vaccine* and annual rates of all invasive pneumococcal disease aged less than 5 years, Australia, 2003 to 2013



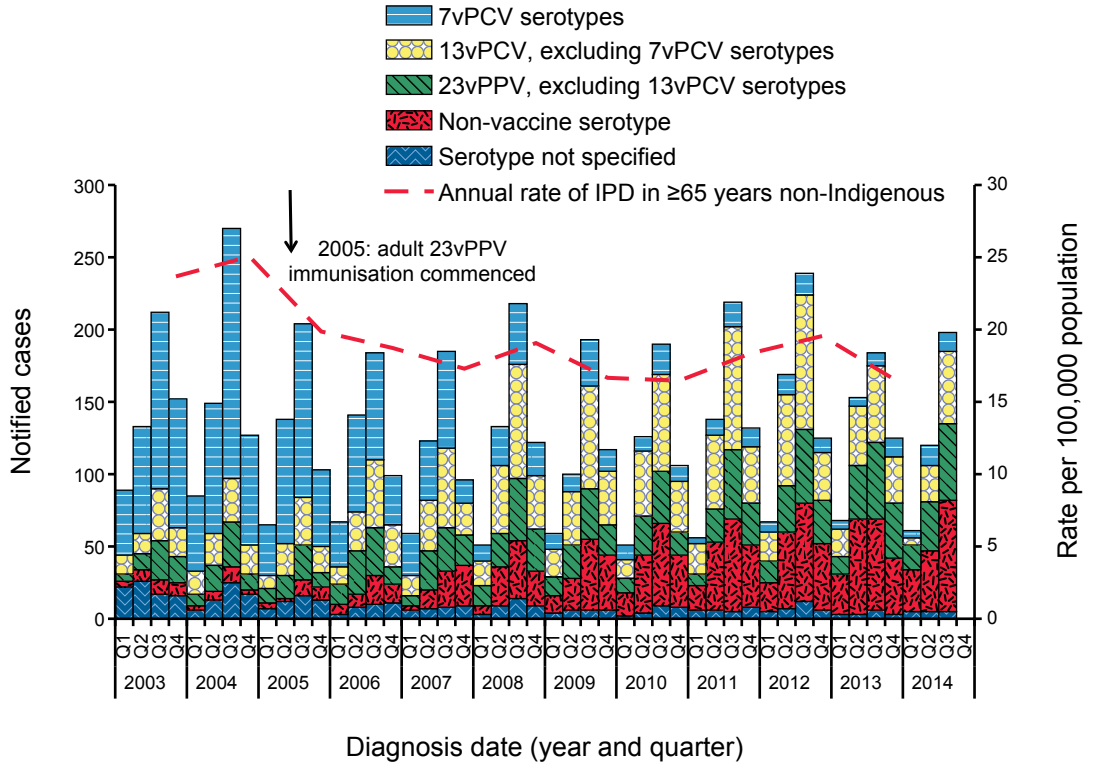
* Excluding those targeted by 7-valent pneumococcal conjugate vaccine from 2003 to 30 September 2014.

Figure 4: Notifications (2003 to 30 September 2014) and annual rates of all invasive pneumococcal disease (2003 to 2013) in Indigenous Australians aged 50 years or over, Australia, by vaccine serotype group*



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

Figure 5: Notifications (2003 to 30 September 2014) and annual rates of all invasive pneumococcal disease (2003 to 2013) in non-Indigenous Australians aged 65 years or over, Australia, by vaccine serotype group



Mortality due to invasive pneumococcal disease

Nationally, there were 48 deaths attributed to 19 different IPD serotypes during this reporting period. No deaths were reported in the under 5 years age group.

Conclusion

The number of notified cases of IPD in the 3rd quarter of 2014 was an increase on the previous quarter, which was consistent with the seasonal increase of IPD during winter. To 30 September, the total number of cases in 2014 was almost identical to the number of cases reported for 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

Report compiled by Dr Rachel de Kluyver on behalf of the Enhanced Invasive Pneumococcal Disease Surveillance Working Group.

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