

# INVASIVE PNEUMOCOCCAL DISEASE SURVEILLANCE AUSTRALIA, 1 OCTOBER TO 31 DECEMBER 2014

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- There were 349 cases of IPD reported to the NNDSS in the 4th quarter of 2014, bringing the year to date total to 1,558 cases (Table).
- The total number of cases in the year to date was similar to the number of cases reported for the same period in 2013 (n=1,543).
- Aboriginal and Torres Strait Islander peoples accounted for 13% (n=39) of all cases with a reported Indigenous status, in the quarter (Table).

## 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 4th quarter of 2014. In this quarterly report, 3 age groups have been selected for focused analysis. 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 or Australians age 65 years or over.\*

\* 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.

## Results

There were 349 cases of IPD reported to the NNDSS in the 4th quarter of 2014, bringing the year to date total to 1,558 cases. The number of cases notified in the reporting period decreased to almost half that of the 3rd quarter (n=587). The large reduction in notifications from the 3rd quarter to the 4th quarter is consistent with the usual peak in the number of cases of IPD in the winter months (Table). For the report period and the calendar year, the total number of cases was similar to the number of cases reported in 2013 (4th quarter n=342; calendar year n=1,543).

Overall, and for cases reported as non-Indigenous, the numbers of 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 under 5 years age group (n=9) followed by the 35–39 and 55–59 years age groups (n=5 each age group).

## Data completeness

During the reporting period, Indigenous status was reported for 87% (n=305) of cases and serotype information was available for 94% (n=328) of all cases reported (Table).

## Invasive pneumococcal disease in children aged less than 5 years

In the 4th quarter of 2014, 15% (n=54) of notified cases were aged less than 5 years, which was a small increase in this proportion compared with the 3rd quarter (11%, n=66) (Figure 2). For the 2014 calendar year, there was a small increase in the total number of cases aged less than 5 years (n=211) compared with 2013 (n=191). The annual rate of notified cases in children less than 5 years of age was 14 per 100,000, which was similar to the 2012–2013 historic low of 13 per 100,000.

The majority (87%, n=47) of cases aged less than 5 years were reported with serotype information. Of these, 36% (n=17) were reported with a serotype included in the 7vPCV or the 13vPCV.

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

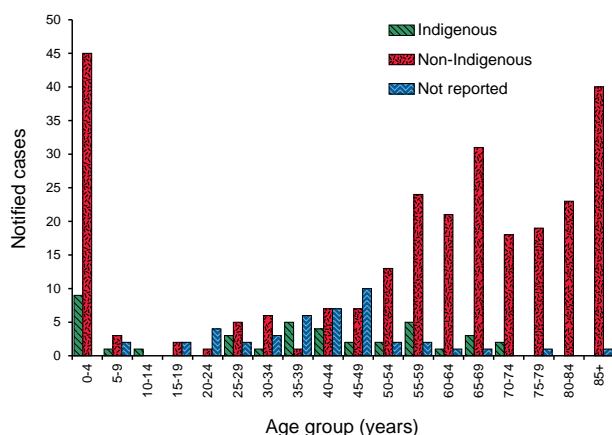
**Table: Notified cases of invasive pneumococcal disease, Australia, 1 October to 31 December 2014, by Indigenous status, serotype completeness and state or territory**

Indigenous status									4th	3rd	4th	Year to date 2014
	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA	qtr 2014	qtr 2014	qtr 2013	
Indigenous	0	2	8	6	3	0	0	20	39	62	39	101
Non-Indigenous	3	96	1	35	19	11	68	33	266	468	277	734
Not stated/ unknown	0	23	0	0	1	0	20	0	44	57	26	101
<b>Total</b>	<b>3</b>	<b>121</b>	<b>9</b>	<b>41</b>	<b>23</b>	<b>11</b>	<b>88</b>	<b>53</b>	<b>349</b>	<b>587</b>	<b>342</b>	<b>1,558</b>
Indigenous status completeness* (%)	100	81	100	100	96	100	77	100	87	–	–	–
Serotype completeness† (%)	100	93	100	100	91	100	89	100	94	–	–	–

\* 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 1: Notifications of invasive pneumococcal disease, Australia, 1 October to 31 December 2014, by Indigenous status and age 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). Since the introduction of the 13vPCV into the universal childhood immunisation program in mid-2011, cases of disease caused by the 6 additional serotypes have generally decreased. In the 4th quarter of 2014, there were 6 cases aged less than 5 years with disease due to serotype 19A, 2 cases due to serotype 3, 1 case of serotype 1 and no cases of 6A. In this age group, 3 cases were reported with disease caused by serotype 7F, a previously common serotype in Australia. For 2014, the number of 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 (n=59) was similar to 2013 (n=60).

#### **Invasive pneumococcal disease in Indigenous Australians aged 50 years or over**

In the 4th quarter of 2014, 4% (n=13) of notified cases were reported as Indigenous Australians aged 50 years or over (Figure 4), which was similar to the proportion of notifications in the 3rd quarter (3%).

All of the cases notified in the 4th quarter of 2014 were reported with serotype information. Of these, 62% (n=8) were reported with disease due to serotypes targeted by the 23vPPV. The remaining cases reported disease due to a non-23vPPV serotype (n=5). During 2014, the annual rate decreased to 62 per 100,000, a 24% reduction from the peak rate of 2012 (82 per 100,000 population).

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

In the 4th quarter of 2014, 38% (n=134) of all notified cases were reported as non-Indigenous and aged 65 years or over (Figure 5). This was similar to the proportion of cases reported in the previous quarter (34%) and in the 4th quarter of 2013 (35%). In the 2014 calendar year, the annual rate was 15 per 100,000, a 40% reduction from the peak rate of 2004 (25 per 100,000 population) and a small reduction on 2013 (16 per 100,000).

The majority (97%, n=130) of cases reported in this quarter were reported with serotype information.

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

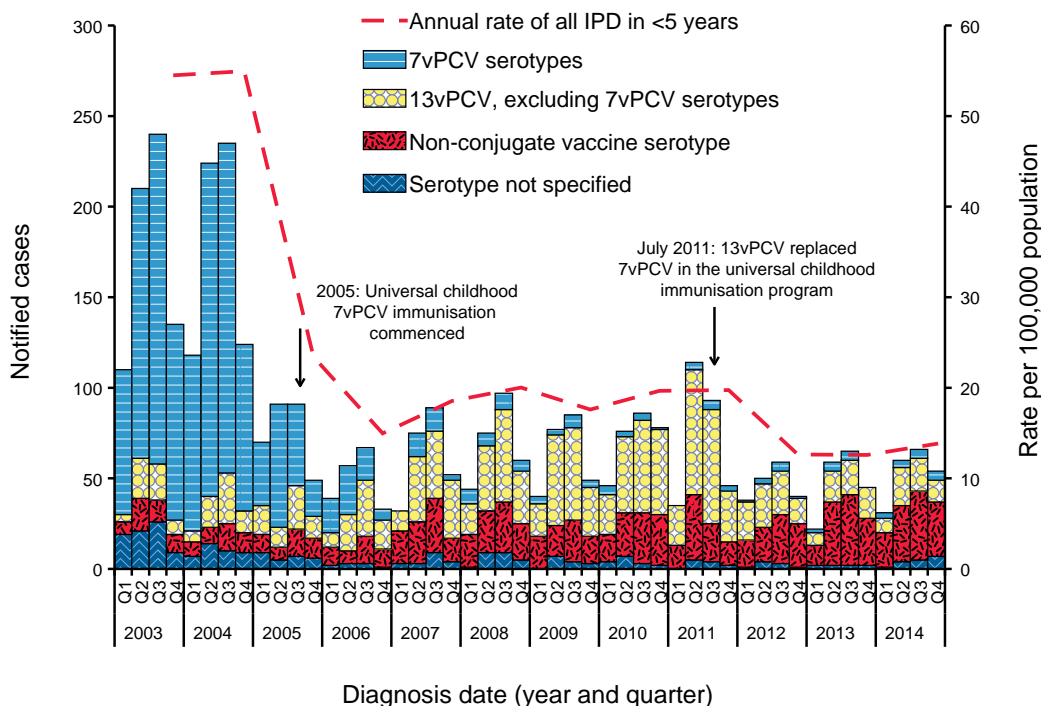
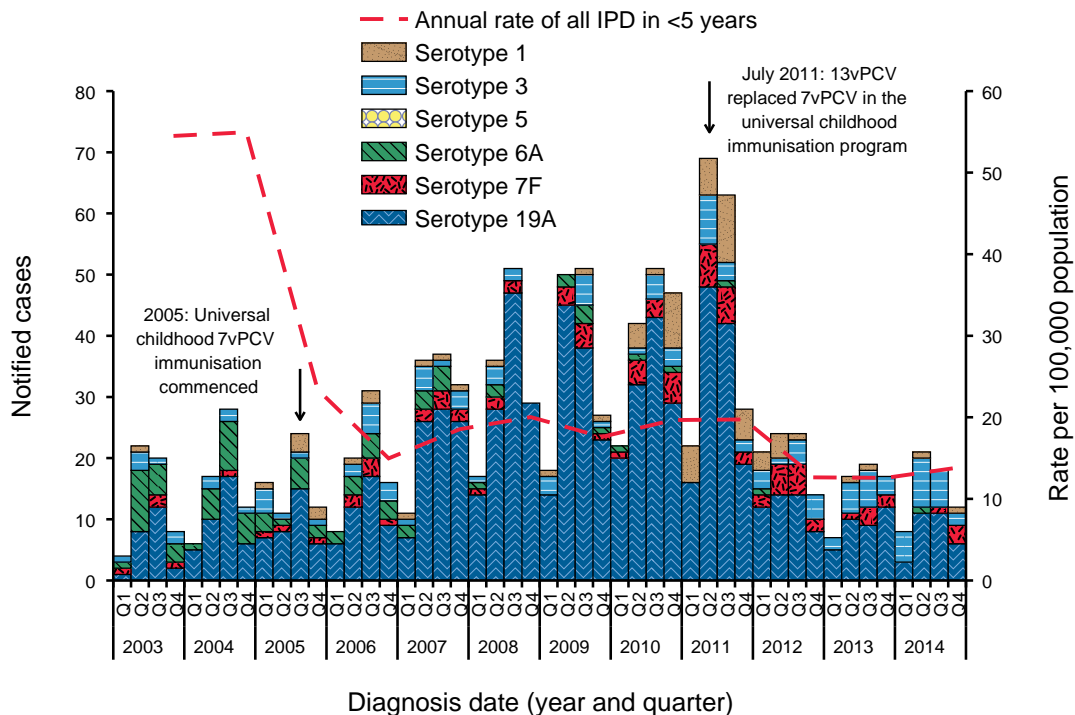
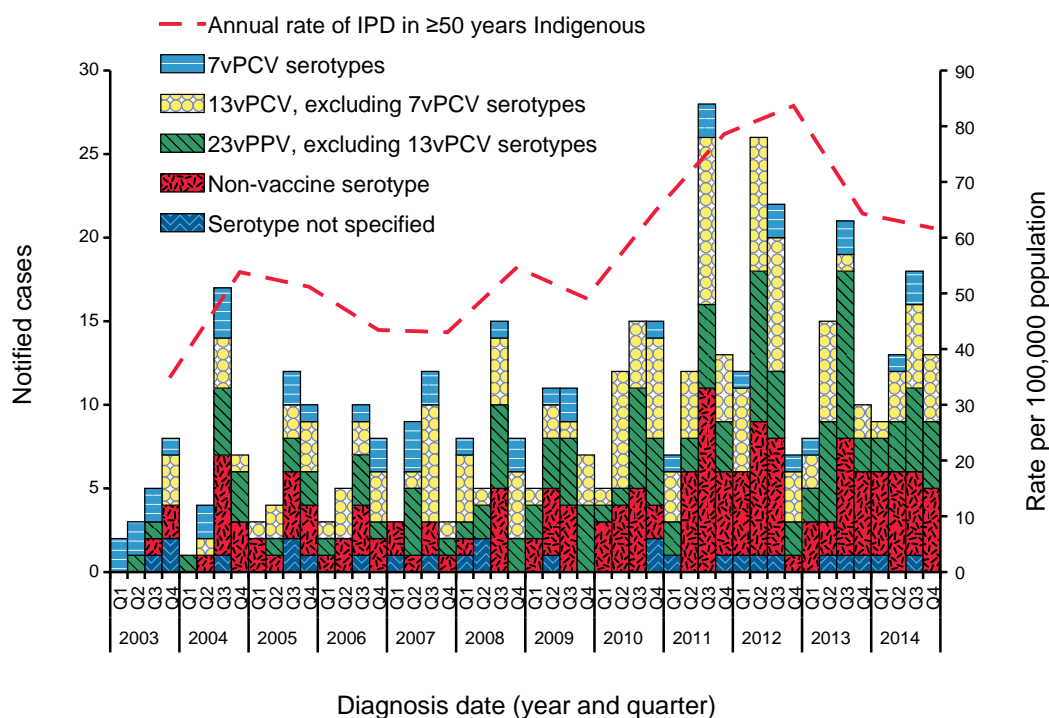


Figure 3: Notifications of invasive pneumococcal disease caused by serotypes targeted by the 13-valent pneumococcal conjugate vaccine\* and annual rates of all invasive pneumococcal disease, aged less than 5 years, Australia, 2003 to 2014



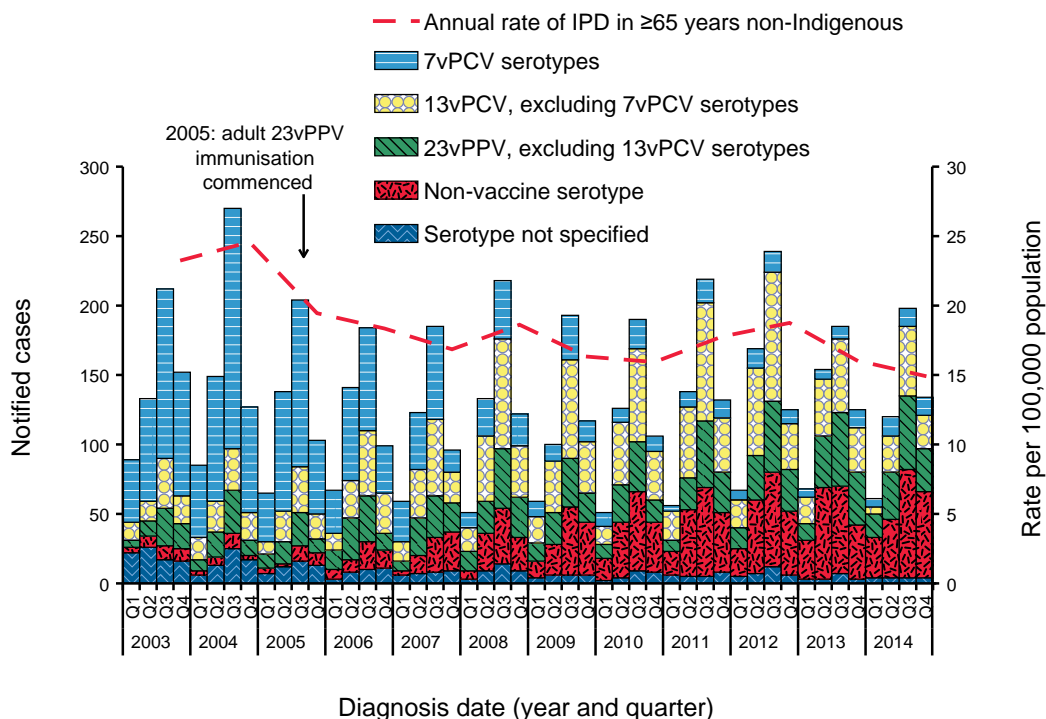
\* Excludes those targeted by 7-valent pneumococcal conjugate vaccine.

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



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

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



Of these cases, 52% (n=68) 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 31 deaths attributed to 17 different IPD serotypes during this reporting period. There were 2 deaths in the under 5 years age group, neither of which were due to serotypes included in the 7vPCV or 13vPCV.

### **Conclusion**

The number of notified cases of IPD in the 4th quarter of 2014 was almost half that of the 3rd quarter. The large reduction in notifications from the 3rd quarter to the 4th quarter is consistent with the usual peak in the number of cases of IPD in the winter months. For the report period and the calendar year, the total number of cases was similar to the number of cases reported in 2013. The decline in disease due to the serotypes targeted by vaccines has been maintained and IPD associated with non-vaccine serotypes has remained stable 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 in this cohort has diversified.

### **Acknowledgements**

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