

INVASIVE PNEUMOCOCCAL DISEASE SURVEILLANCE AUSTRALIA, 1 OCTOBER TO 31 DECEMBER 2013

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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. The Communicable Diseases Network Australia (CDNA) established the Enhanced Invasive Pneumococcal Disease Surveillance Working Group (EIPDSWG) in 2000 to assist in developing and implementing a nationally standardised approach to the enhanced surveillance of IPD in Australia. This quarterly report documents trends in notified cases of IPD occurring in Australia in during 1 October to 31 December 2013.

Notification data are collected by all Australian states and territories under jurisdictional public health legislation and are forwarded to the Commonwealth under the National Health Security Act 2007. Notified cases are collated nationally in the National Notifiable Diseases Surveillance System (NNDSS). The data in this report are provisional and subject to change as laboratory results and additional case information become available. The data are analysed by diagnosis date, which is the onset date or where the onset date was not known, the earliest of the specimen collection date, the notification date, and the notification receive date. Data for this report were extracted on 31 October 2013. Crude rates were calculated using the Australian Bureau of Statistics estimated resident populations for Australia at 30 June of each year. Consideration of vaccination status of cases is outside the scope of this report. For more detailed reports readers are referred to the regular *Communicable Diseases Intelligence* supplements *Vaccine Preventable Diseases in Australia*.

In Australia, pneumococcal vaccination is recommended as part of routine immunisation for children, the medically at risk and older Australians. 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 older in 1999 and for non-Indigenous Australians aged 65 years or older from January 2005.

Results

There were 336 cases of IPD reported to the NNDSS in the 4th quarter of 2013, bringing the year to date total to 1,543 cases (Table). The number of cases notified in the reporting period fell 39% from quarter 3 (n=552). Total number of cases in 2013 was a 15% reduction on the number of cases reported in 2012 (n=1,822).

Overall, Indigenous status was reported for 91% (n=307) of cases, ranging from 83% of cases reported by New South Wales to 100% of cases reported by the Australian Capital Territory, the Northern Territory, Tasmania and Western Australia. New South Wales continued its practice of targeted follow-up of notified cases of IPD aged 5 years or under and 50 years or older for core and enhanced data, whereas follow-up of all cases is undertaken in other states and territories. For this reporting period, Victoria temporarily returned to follow-up of all IPD cases. This may account for missing data among cases falling outside these age groups. Of cases with a reported Indigenous status, Aboriginal and Torres Strait peoples accounted for 13% (n=38) of all cases notified in the quarter (Table).

Serotype information was available for 89% (n=297) of all cases reported in the quarter, ranging from 7% of cases reported by South Australia to 100% of cases reported by the Australian Capital Territory and Tasmania. There were 2 cases reported in the quarter that were deemed by the reference laboratory as non-typable. For figures in this report, cases deemed non-typable are included in the 'Serotype not specified' category with respect to vaccine serotype group.

In the 4th quarter of 2013, notified cases were highest in children aged under 5 years (n=43), followed by the 85 years or over age group (n=38). This age distribution was evident in cases reported as non-Indigenous Australian (Figure 1). However in cases reported as Indigenous, the most prevalent age

Table: Notified cases of invasive pneumococcal disease, Australia, 1 October to 31 December 2013, by Indigenous status, serotype and state or territory

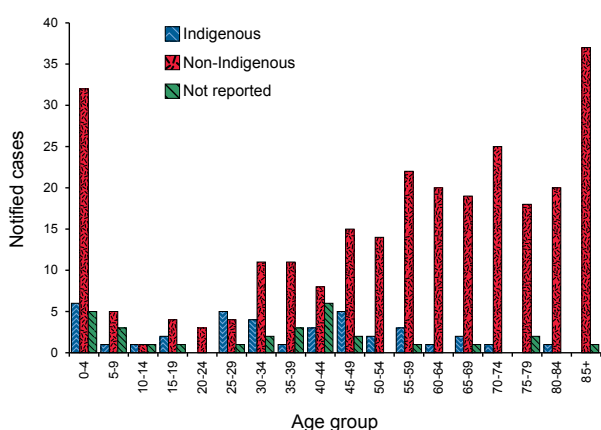
Indigenous status	State or Territory							Total 4th qtr 2013	Total 3rd qtr 2013	Total 4th qtr 2012	Year to date 2013
	ACT	NSW	NT	Qld	SA	Tas.	Vic.				
Indigenous	0	2	10	15	0	0	1	10	38		
Non-Indigenous	6	76	1	34	26	11	80	35	269		
Not stated/ unknown	0	16	0	2	1	0	10	0	29		
Total	6	94	11	51	27	11	91	45	336	552	354
Indigenous status completeness* (%)	100	83	100	96	96	100	89	100	91		
Serotype completeness† (%)	100	94	91	94	7	100	99	96	89		

* 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 performed; 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.

groups were the under 5 years (n=6) followed by the 25–29 and 45–49 years age groups (n=5 each). 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 NIP is targeted.

Figure 1: Notified cases of invasive pneumococcal disease, Australia, 1 October to 31 December 2013, by Indigenous status and age group



Invasive pneumococcal disease in children aged less than 5 years

In the 4th quarter of 2013, 13% (n=43) of notified cases were aged less than 5 years. This was a marked decrease on the number of cases reported

in the previous quarter (n=65) and similar to the number reported during the same period of 2012 (n=41) (Figure 2). The annual rate of notified cases in children less than 5 years of age did not change from 2012 and was the lowest on record at 13 per 100,000 population.

The majority of cases aged less than 5 years (95%, n=41) were reported with serotype information. Of these, 39% (n=16) were reported with a serotype included in the 7vPCV or the 13vPCV.

Notified cases aged less than 5 years with disease caused by the 6 additional serotypes targeted by the 13vPCV increased steadily over the period 2007 to 2011, particularly those caused by serotype 19A (Figure 3). However, cases of this type have decreased since the 4th quarter of 2011, reflecting the introduction of the 13vPCV on the universal childhood immunisation program in mid-2011. In the 4th quarter of 2013, there were 12 cases aged less than 5 years with disease due to serotype 19A, 2 cases due to serotype 3 and 2 cases of serotype 7F. Similar to the 4th quarter 2012, no cases in this age group were reported with disease caused by serotypes 1, 5 or 6A.

Invasive pneumococcal disease in Indigenous Australians aged 50 years or older

In the 4th quarter of 2013, 3% (n=10) of notified cases were reported as Indigenous Australians aged 50 years or over. This was the second lowest reported so far this year behind the 1st quarter (n=8) and was similar to the number reported

Figure 2: Notified cases and rates of invasive pneumococcal disease in those aged less than 5 years, Australia, 2002 to 31 December 2013, by vaccine serotype group

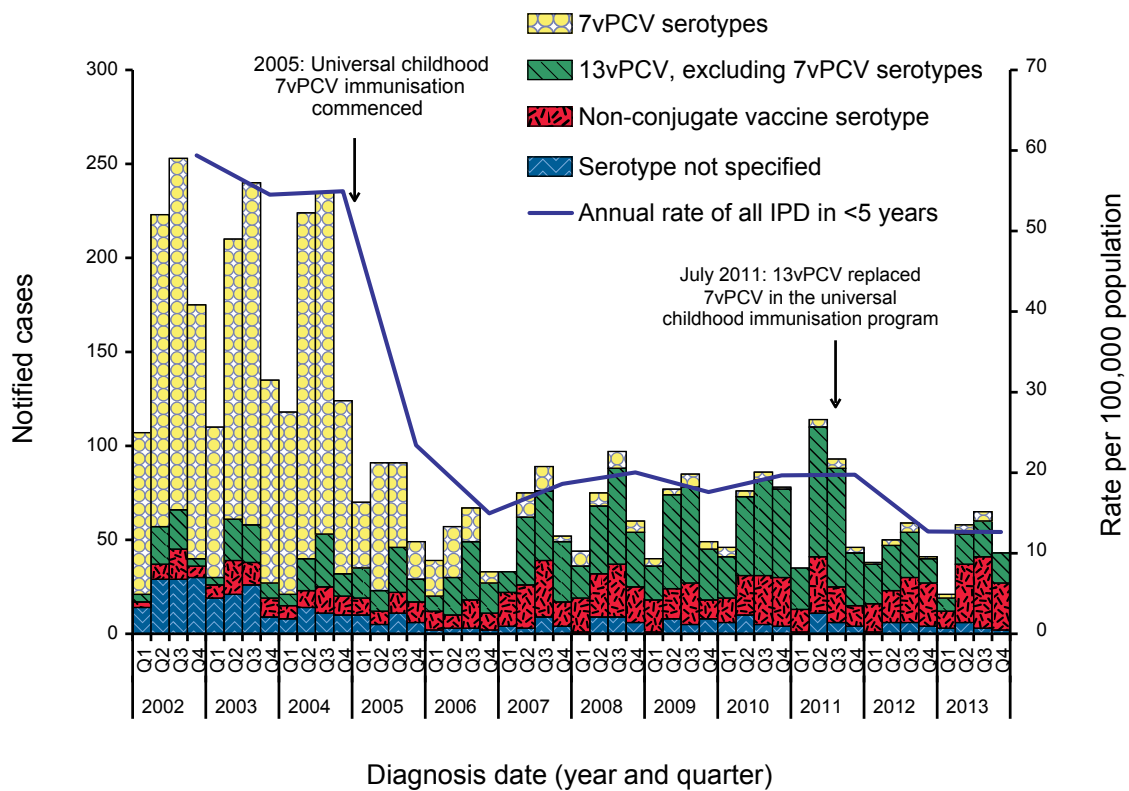


Figure 3: Notified cases of invasive pneumococcal disease caused by serotypes targeted by the 13-valent pneumococcal conjugate vaccine (excluding those targeted by 7-valent pneumococcal conjugate vaccine) and rates of all invasive pneumococcal disease, aged less than 5 years, Australia, 2002 to 31 December 2013

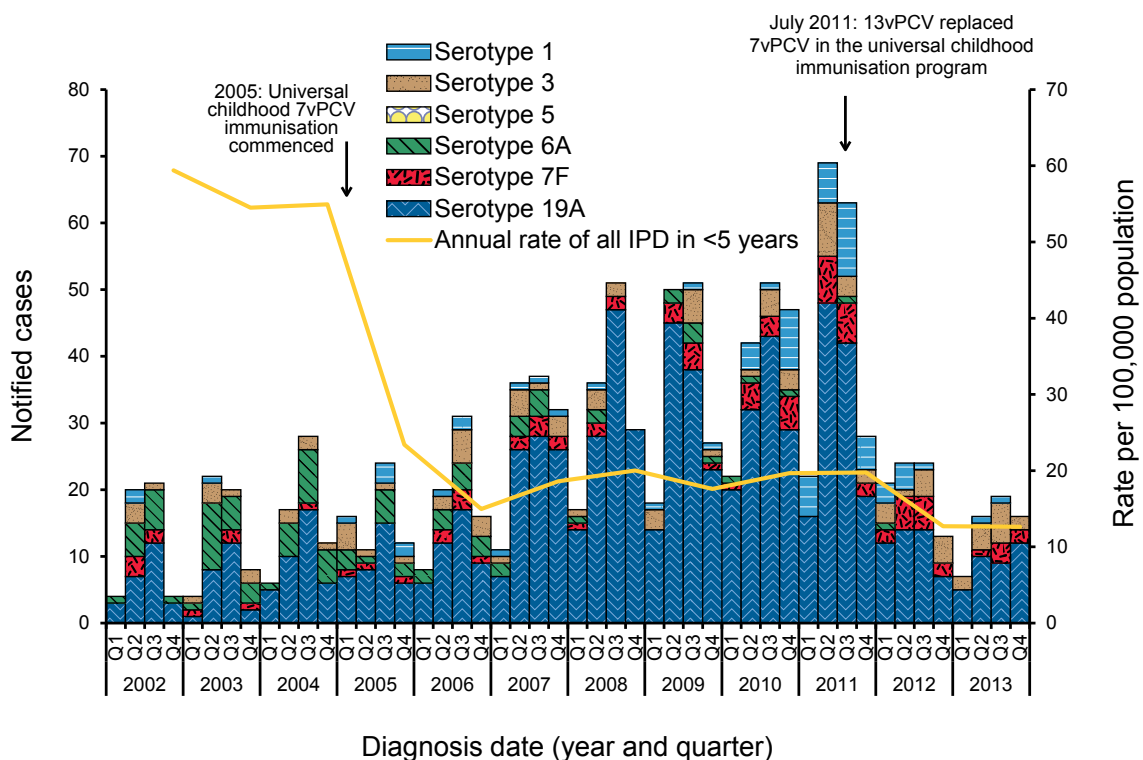
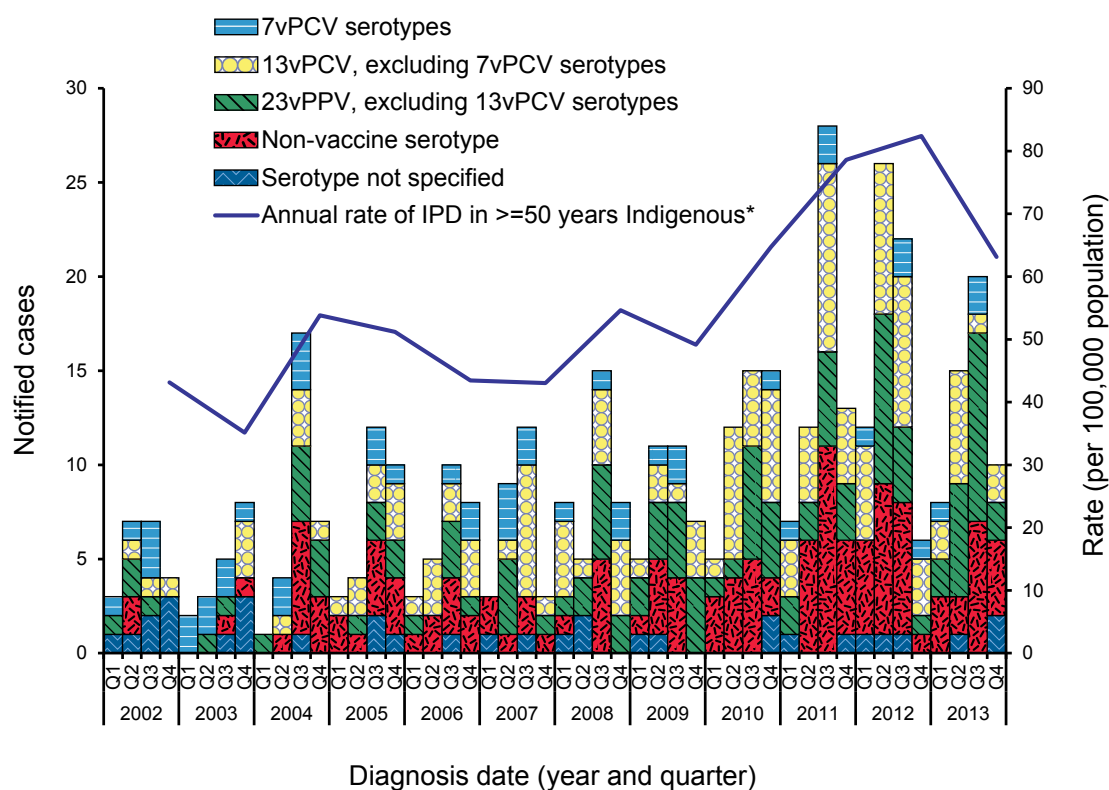


Figure 4: Notified cases and rates of invasive pneumococcal disease in Indigenous Australians aged 50 years or older, Australia, 2002 to 31 December 2013, by vaccine serotype group



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

during the same period in 2012 ($n=6$). For 2010 to 2012, the annual rate of IPD in this group has tended to increase. An outbreak of disease caused by serotype 1 in Central Australia that commenced in late 2010 contributed, in part, to this increase.¹

All but two of the cases notified in the 4th quarter of 2013 were reported with serotype information. Of these, 50% ($n=4$) were reported with disease due to serotypes targeted by the 23vPPV; the remainder reported disease due to a non-vaccine serotype ($n=4$).

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

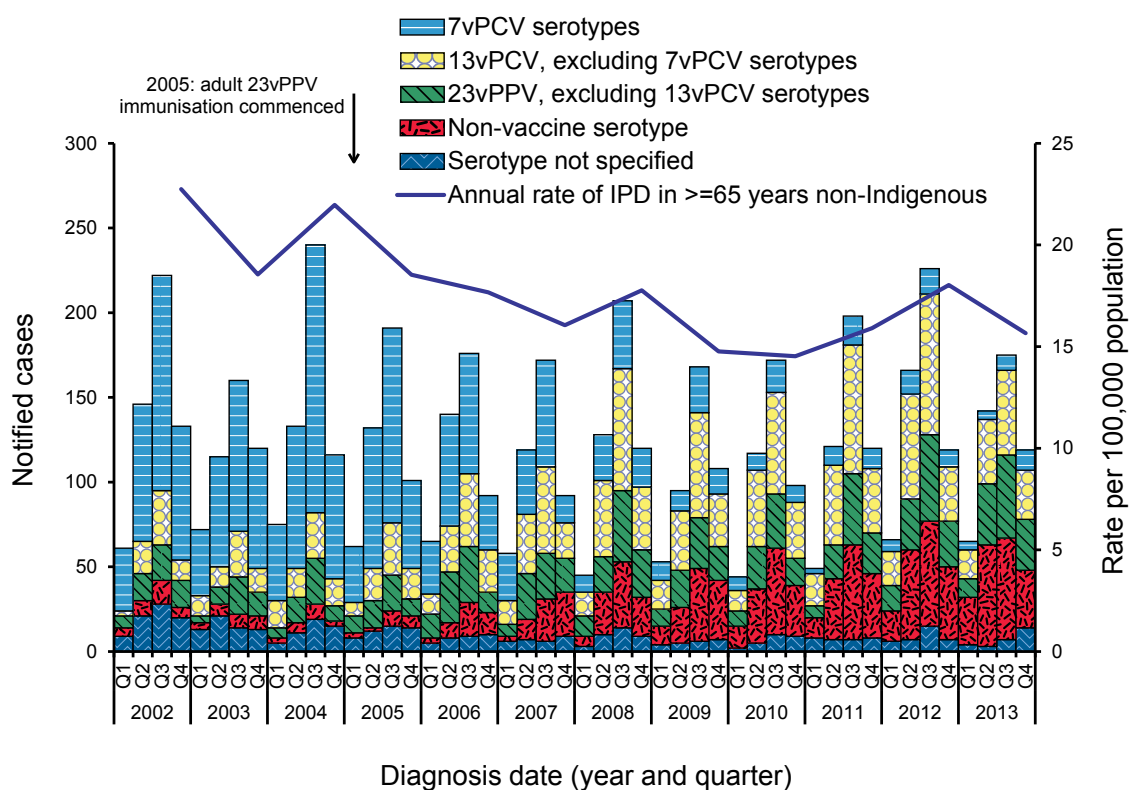
In the 4th quarter of 2013, 35% ($n=119$) of notified cases were reported as non-Indigenous Australians aged 65 years or over. This was a large decrease in the number of cases reported in the previous quarter ($n=173$) and was equal to the number reported during the same period of 2012 ($n=119$) (Figure 5). During 2013, the annual rate fell to 16 per 100,000 population, an 11% decrease from the rate of 2012 (18 per 100,000 population).

The majority (88%, $n=105$) of cases reported in this quarter were reported with serotype information. Of these cases, 68% ($n=71$) 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 and is likely due to herd immunity impacts from the childhood immunisation program.

Conclusion

The number of notified cases of IPD in the 4th quarter of 2013 was a 39% decrease on the previous quarter. Nationally, the pattern of disease has not changed from the 3rd quarter this year. Specifically, disease due to the serotypes targeted by the 13vPCV has continued to decline since the 13vPCV replaced the 7vPCV in the childhood immunisation program from July 2011. In addition, IPD associated with non-vaccine serotypes has decreased in all groups targeted for IPD vaccination. The overall rising trend in the rate of notified cases of IPD in Indigenous Australians aged 50 years or older continued, whereas disease rates

Figure 5: Notified cases and rates of invasive pneumococcal disease in non-Indigenous Australians aged 65 years or older, Australia, 2002 to 31 December 2013, by vaccine serotype group



in non-Indigenous Australians aged 65 years or older remained relatively stable despite an expansion of serotypes causing disease.

Acknowledgements

Report compiled by Dr Rachel de Kluyster on behalf of the EIPDSWG.

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Reference

1. Centre for Disease Control Northern Territory. Comments on notifications. *Northern Territory Disease Control Bulletin* 2012; 19(1): 29.