

# INVASIVE PNEUMOCOCCAL DISEASE SURVEILLANCE AUSTRALIA, 1 JULY TO 30 SEPTEMBER 2015

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## Summary

The number of notified cases of invasive pneumococcal disease (IPD) in the 3rd quarter of 2015 was more than the previous quarter and similar to the number of notified cases in the 3rd quarter of 2014. Overall, the decline in disease due to the serotypes targeted by the 13-valent pneumococcal conjugate vaccine (13vPCV) has been maintained across all age groups since the 13vPCV replaced the 7-valent pneumococcal conjugate vaccine (7vPCV) in the childhood immunisation program from July 2011.

## Results

In the 3rd quarter of 2015, there were 586 cases of IPD reported to the NNDSS. This was a small reduction on the number of cases reported for the same period in 2014 (n=588) (Table 1). Serotype 3 was the most commonly reported cause of IPD in this quarter (Table 2).

In non-Indigenous Australians, the number of notified cases was highest in the 65–69 years age group followed by the under 5 years age group. In Indigenous Australians, notified cases were highest in the 50–54 years and 35–39 years age groups followed by the 40–49 years age group (Table 3). The proportion of cases reported as Indigenous was similar to the [3rd quarter of 2014](http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi3901n.htm) (<http://www.health.gov.au/internet/main/publishing.nsf/Content/cda-cdi3901n.htm>).

There were 58 cases of IPD reported in children under 5 years of age. Of those cases with known serotype, 53% (n=21) were due to a serotype included in either the 7vPCV or the 13vPCV (Figure 1) compared with 39% (n=22) of cases in the 3rd quarter of 2014. Serotype 19A, which is included in the 13vPCV, continued to be the most common serotype affecting this age group (Table 2). The number of cases in this age group was 11% less than the 3rd quarter of 2014 (n=65).

In the 3rd quarter of 2015, there were 16 cases reported in fully vaccinated children aged less than 5 years who were considered to be 13vPCV failures. Serotype 19A was reported as the cause of disease in 56% (n=9) of these cases (Table 4).

There were 19 cases of IPD reported in Indigenous Australians aged 50 years and over. Of those cases with a reported serotype, 59% (n=10) were due to a serotype included in the 23-valent polysaccharide pneumococcal vaccine (23vPPV) (Figure 2). The number of notified cases of IPD in this age group was 9.5% fewer than the previous quarter (n=21) and identical to that recorded in the same quarter of 2014 (n=19). Compared with the previous quarter, the proportion of 23vPPV serotypes increased slightly from 57% to 59% of cases with a reported serotype.

**Table 1: Notified cases of invasive pneumococcal disease, Australia, 1 July to 30 September 2015, by Indigenous status, serotype completeness and state or territory**

Indigenous status	ACT	NSW	NT	Qld	SA	Tas.	Vic.	WA	Q3 2015	Q2 2015	Q3 2014	YTD 2015
Indigenous	0	14	14	14	5	0	0	16	63	60	62	–
Non-Indigenous	9	166	4	82	39	16	78	55	449	297	470	–
Not stated/ Unknown	0	25	0	2	0	0	47	0	74	42	56	–
Total	9	205	18	98	44	16	125	71	586	399	588	1,174
Indigenous status completeness* (%)	100	88	100	98	100	100	62	100	87			–
Serotype completeness† (%)	100	86	94	94	68	88	95	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.

**Table 2: Frequently notified serotypes of invasive pneumococcal disease, Australia, 1 July to 30 September 2015, by age group**

Serotype	Age group			Serotype total*
	Under 5 years	5–64 years	Over 65 years	
3	6	31	24	61
22F	2	25	21	48
19A	9	17	15	41
19F	5	14	17	36
7F		27	4	31
9N		21	7	28
23B	3	12	10	25
15A	1	13	6	20
8		16	3	19
23A		5	13	18
6C	1	6	11	18
38	3	3	11	17
11A	1	10	5	16
33F	1	10	4	15
10A	1	5	8	14
35B	1	5	8	14
15B	1	3	7	11
15C	3	1	4	8
16F		3	5	8
17F		5	3	8
31		3	5	8
4		5	3	8
12F		5		5
14	1	3	1	5
Other	1	28	15	44
Serotype unknown	18	27	15	60
Total	58	303	225	586

\* Serotypes that only occur in less than 5 cases per quarter are grouped as Other and include non-typable samples this quarter.

† Serotype unknown includes those serotypes reported as no isolate, not referred, not viable, typing pending and untyped.

There were 211 cases of IPD reported in non-Indigenous Australians aged 65 years or over. Of those cases with a reported serotype, 61% (n=120) were due to a serotype included in the 23vPPV (Figure 3). The number of notified cases of IPD in this age group was 8% higher than in the 3rd quarter of 2014 (n=195) and 75% higher than the previous quarter (n=122). Compared with the previous quarter, the proportion of IPD due to 23vPPV serotypes increased from 55% to 61% of cases with a reported serotype.

In this quarter there were 30 deaths attributed to 15 different IPD serotypes. There was 1 death reported in a child aged under 5 years, which was associated with serotype 35B.

## Notes

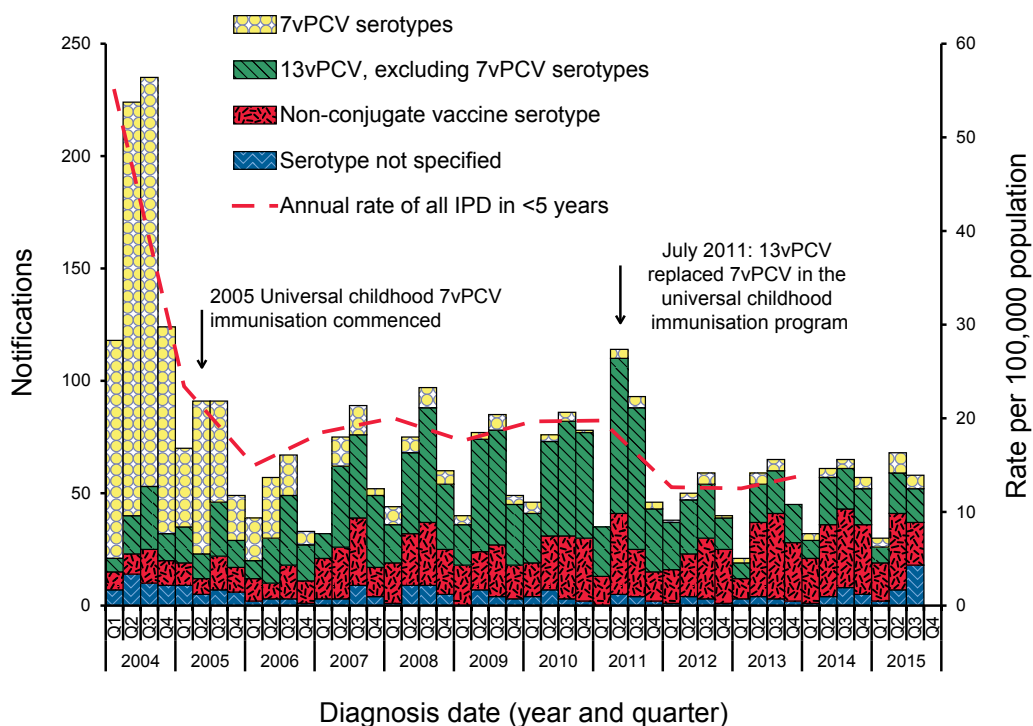
The data in this report are provisional and subject to change as laboratory results and additional case information become available. More detailed data analysis of IPD in Australia and surveillance methodology are described in the IPD annual report series published in *Communicable Diseases Intelligence*.

In Australia, pneumococcal vaccination is recommended as part of routine immunisation for children, the medically at risk, and older Australians. More information on the scheduling of the pneumococcal vaccination can be found on the [Immunise Australia Program web site \(www.immunise.health.gov.au\)](http://www.immunise.health.gov.au).

**Table 3: Notified cases of invasive pneumococcal disease, Australia, 1 July to 30 September 2015, by Indigenous status and age group**

Age group	Indigenous status			Total
	Indigenous	Non-Indigenous	Not reported	
0-4	5	50	3	58
5-9	4	11	7	22
10-14	2	4	1	7
15-19	2	5	2	9
20-24	4	4	2	10
25-29	4	5	2	11
30-34	3	9	8	20
35-39	8	10	6	24
40-44	6	17	16	39
45-49	6	16	10	32
50-54	8	26	4	38
55-59	3	47	2	52
60-64	4	33	2	39
65-69	2	51	1	54
70-74	0	34	3	37
75-79	0	44	4	48
80-84	1	35	2	38
85+	1	47	0	48
Total	63 (11%)	449 (76%)	74 (13%)	586

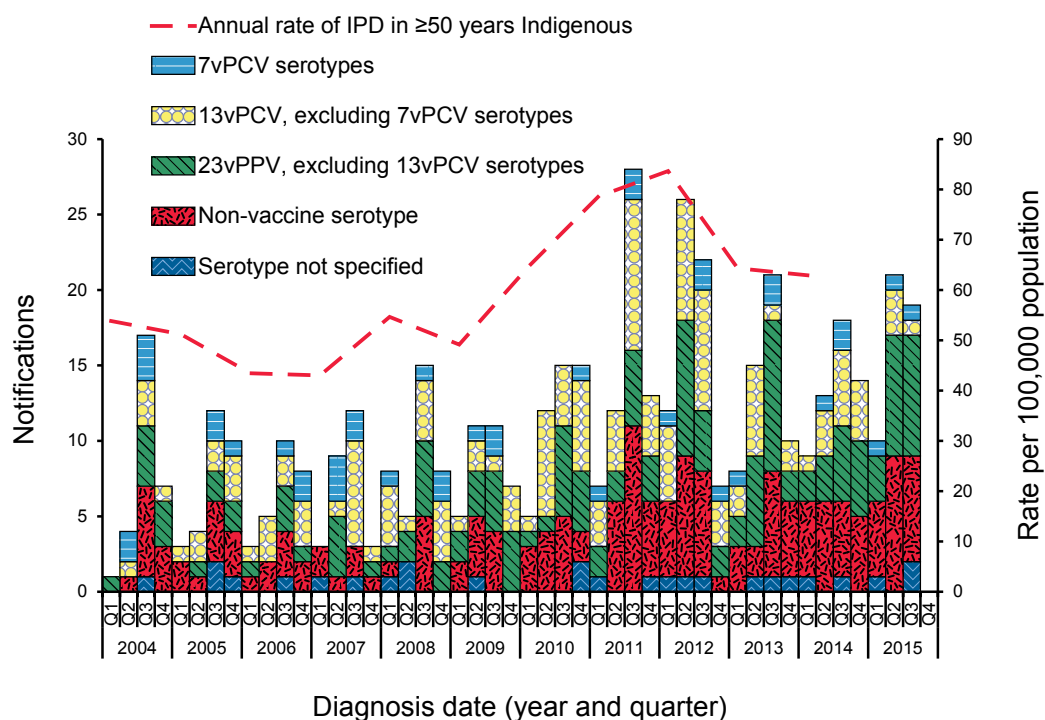
**Figure 1: Notifications (2004 to 30 September 2015) and annual rates (2004 to 2014) of invasive pneumococcal disease in children aged less than 5 years, Australia, by vaccine serotype group**



**Table 4: Characteristics of 13vPCV failures in children aged less than 5 years, Australia, 1 July to 30 September 2015**

Age	Indigenous status	Serotype	Clinical category	Risk factor/s
1 year	Non-Indigenous	19F	Other sterile site	Other/childcare attendee
1 year	Non-Indigenous	19F	Pneumonia	No data available
1 year	Non-Indigenous	19A	Pneumonia	No data available
11 months	Non-Indigenous	19A	Septic arthritis	Childcare attendee
1 year	Non-Indigenous	19A	Bacteraemia	Childcare attendee
2 years	Non-Indigenous	19A	Other sterile site	Childcare attendee
1 year	Non-Indigenous	19A	Pneumonia	No risk factor identified
1 year	Indigenous	19A	Bacteraemia	Other/childcare attendee
3 years	Unknown	19A	No data available	No data available
2 years	Non-Indigenous	19A	No data available	No data available
2 years	Non-Indigenous	19A	No data available	No data available
2 years	Non-Indigenous	3	Other sterile site	Childcare attendee
1 year	Non-Indigenous	3	Pneumonia and bacteraemia	No risk factor identified
9 months	Non-Indigenous	3	Pneumonia	No risk factor identified
1 year	Non-Indigenous	3	Pneumonia	Premature (<37 weeks gestation)
3 years	Non-Indigenous	3	Pneumonia	Chronic illness

**Figure 2: Notifications (2004 to 30 September 2015) and annual rates of all invasive pneumococcal disease (2004 to 2014) in Indigenous Australians aged 50 years or over, Australia, by vaccine serotype group**

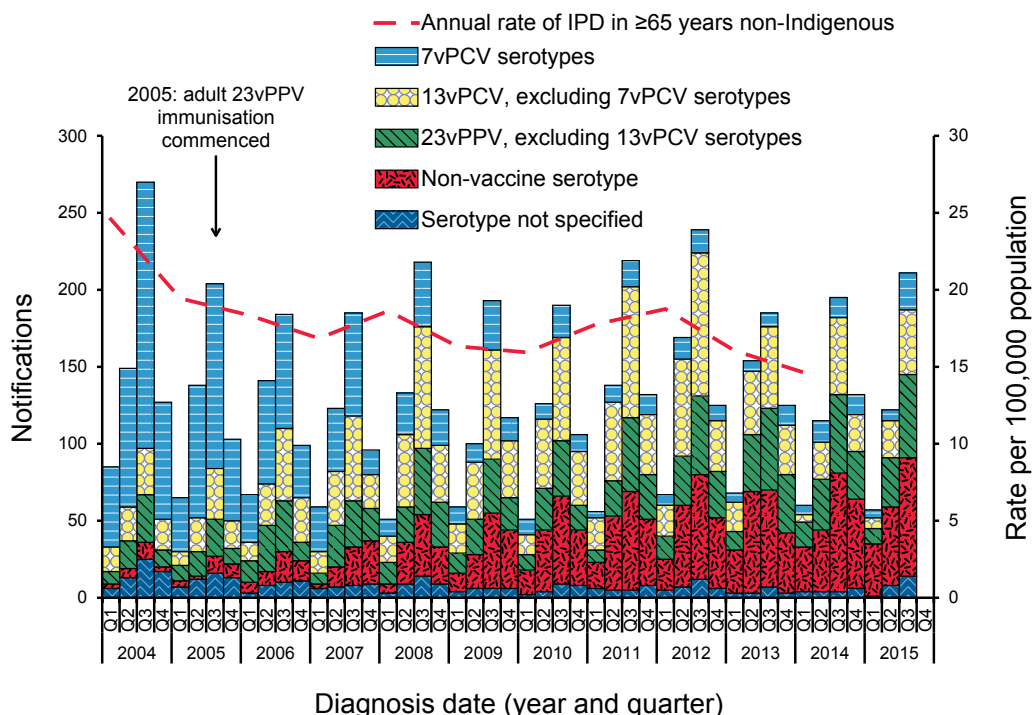


In this report, fully vaccinated describes cases that have completed the primary course of the relevant vaccine(s) required for their age according to the most recent edition of *The Australian Immunisation Handbook*, at least 2 weeks prior to disease onset with at least 28 days between doses of vaccine. NB: A young child who has had all the required doses

for their age but is not old enough to have completed the primary course would not be classified as fully vaccinated.

There are 4 pneumococcal vaccines available in Australia, each targeting multiple serotypes (Table 5). In this report serotype analysis is generally grouped according to vaccine composition.

**Figure 3: Notifications (2004 to 30 September 2015) and annual rates of all invasive pneumococcal disease (2004 to 2014) in non-Indigenous Australians aged 65 years or over, Australia, by vaccine serotype group**



Follow-up of all notified cases of IPD is undertaken in all States and Territories except New South Wales and Victoria who conduct targeted follow-up of notified cases aged under 5 years, and 50 years or over for enhanced data.

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**Table 5: Streptococcus pneumoniae serotypes targeted by pneumococcal vaccines**

Vaccine type	Serotypes targeted by the vaccine
7-valent pneumococcal conjugate vaccine (7vPCV)	4, 6B, 9V, 14, 18C, 19F and 23F.
10-valent pneumococcal conjugate vaccine (10vPCV)	1, 4, 5, 6B, 7F, 9V, 14, 18C, 19F and 23F.
13-valent pneumococcal conjugate vaccine (13vPCV)	1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F and 23F.
23-valent pneumococcal polysaccharide vaccine (23vPPV)	1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19F, 19A, 20, 22F, 23F and 33F.