

Cumulative invasive pneumococcal disease case numbers reported by the GERMS-SA surveillance programme, 2005 to 26 September 2017

GERMS-SA surveillance programme

- GERMS-SA is a national, active, laboratory-based surveillance system initiated in 2003.
- Invasive pneumococcal disease (IPD) cases defined as hospitalised individuals with *Streptococcus pneumoniae* cultured from normally sterile site specimens (e.g., cerebrospinal fluid, blood or joint fluid).
- Repeat isolates from the same individual within 21 days.
- ~270 laboratories each year send reports and isolates.
- Age, sex, date of specimen collection, and source of specimen captured.
- Pneumococci serotyped by Quellung reaction using specific antisera (Statens Serum Institute, Copenhagen, Denmark).
- Only viable isolates were included in cumulative graph case numbers as molecular diagnostic techniques only introduced in 2007.
- Graphs presented for those younger than 5 years, and those 5 years and older. Cases with unknown age were also not included in cumulative graph case numbers.
- Divided into three graphs for each age group: disease caused by any of the seven serotypes in PCV-7 (4, 6B, 9V, 14, 18C, 19F and 23F); disease caused by any of the six additional serotypes in PCV-13 but not in PCV7 (1, 3, 5, 6A, 7F, 19A); and disease caused by any serotypes not in PCV-13.
- More information on the GERMS-SA system available at:
<http://www.nicd.ac.za/?page=germs-sa&id=97>

PCV vaccine introduction in South Africa

- The 7-valent pneumococcal conjugate vaccine (PCV-7) was introduced to the South African Expanded Programme on Immunization in April 2009, with no catch-up vaccination campaign.
- There was a graded replacement of PCV-7 by 13-valent pneumococcal conjugate (PCV-13) in 2011. By June 2011 all provinces were using PCV-13.
- There was a limited PCV-13 catch-up campaign in 2011 and 2012.
- WHO/UNICEF vaccine coverage estimates for receiving a third dose of the PCV vaccine in South Africa are 10% in 2008, 58% in 2009, 62% in 2011, 70% in 2012, 69% in 2013, 72% in 2014, 77% 2015 and 59% in 2016.¹
- The effect of the vaccine on invasive pneumococcal diseases in South Africa has been described.²

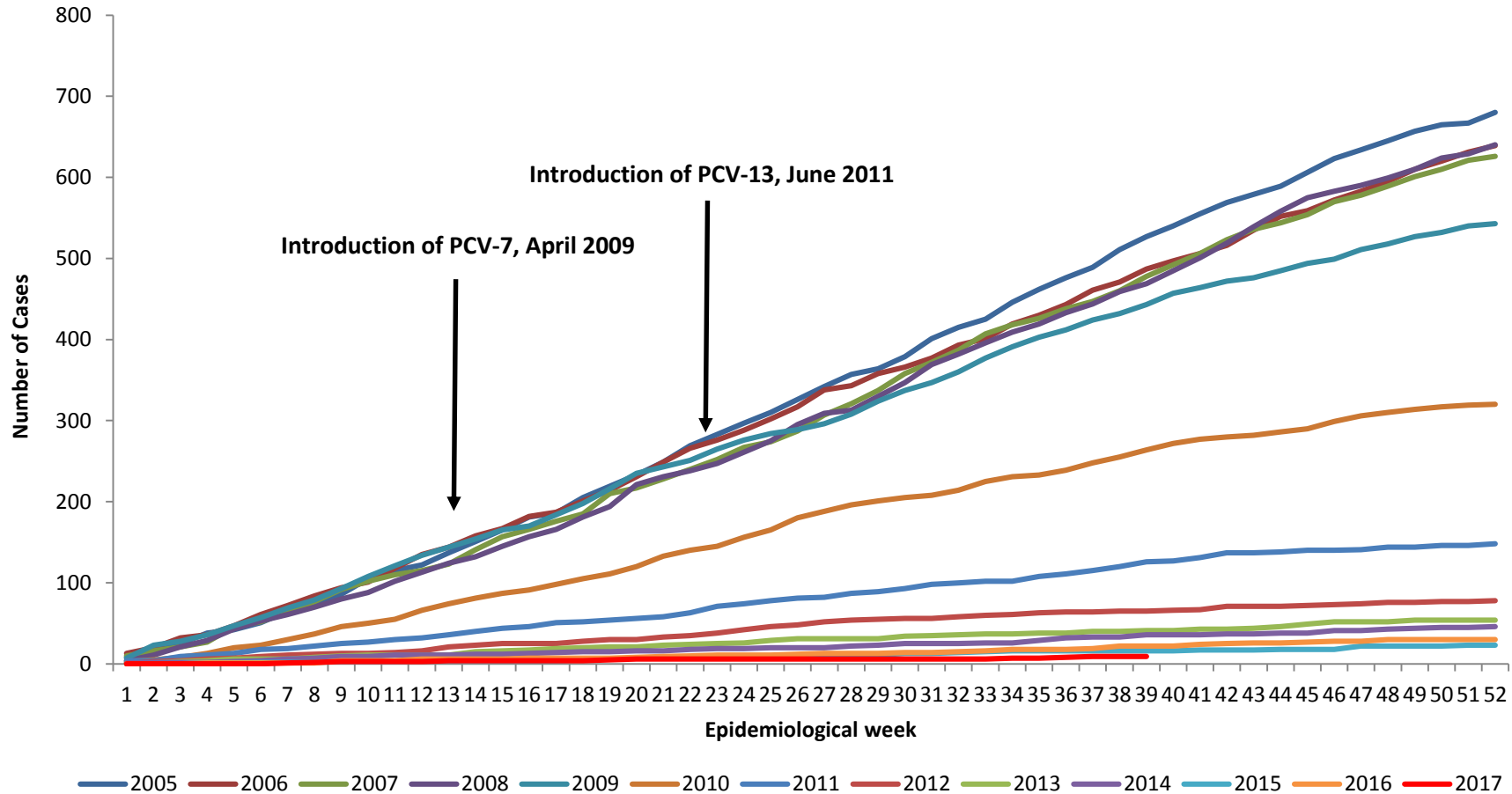


Figure 1. Cumulative weekly number of cases of invasive pneumococcal disease due to any of the seven serotypes (4, 6B, 9V, 14, 18C, 19F and 23F) in PCV-7: children <5 years of age in South Africa, from 2005 to date. Only viable isolates included.

Data are provisional as reported to date.

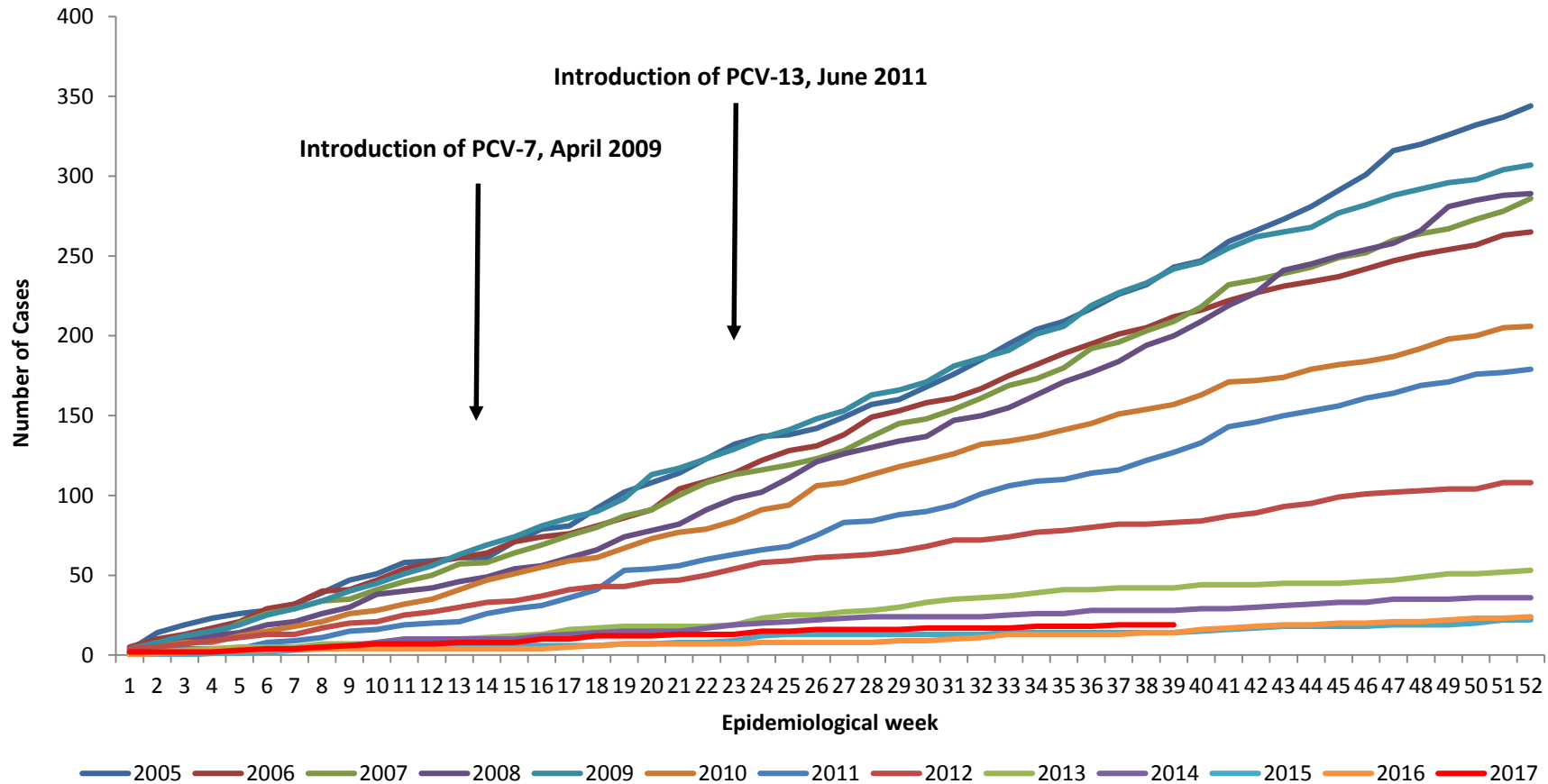


Figure 2. Cumulative weekly numbers of cases of invasive pneumococcal disease due to any of the six additional (1, 3, 5, 6A, 7F, 19A) serotypes in PCV-13 but not in PCV-7: children <5 years of age in South Africa, from 2005 to date. Only viable isolates were included. (Note: There is reported cross protection between 6A and 6B which is included in PCV-7³)

Data are provisional as reported to date.

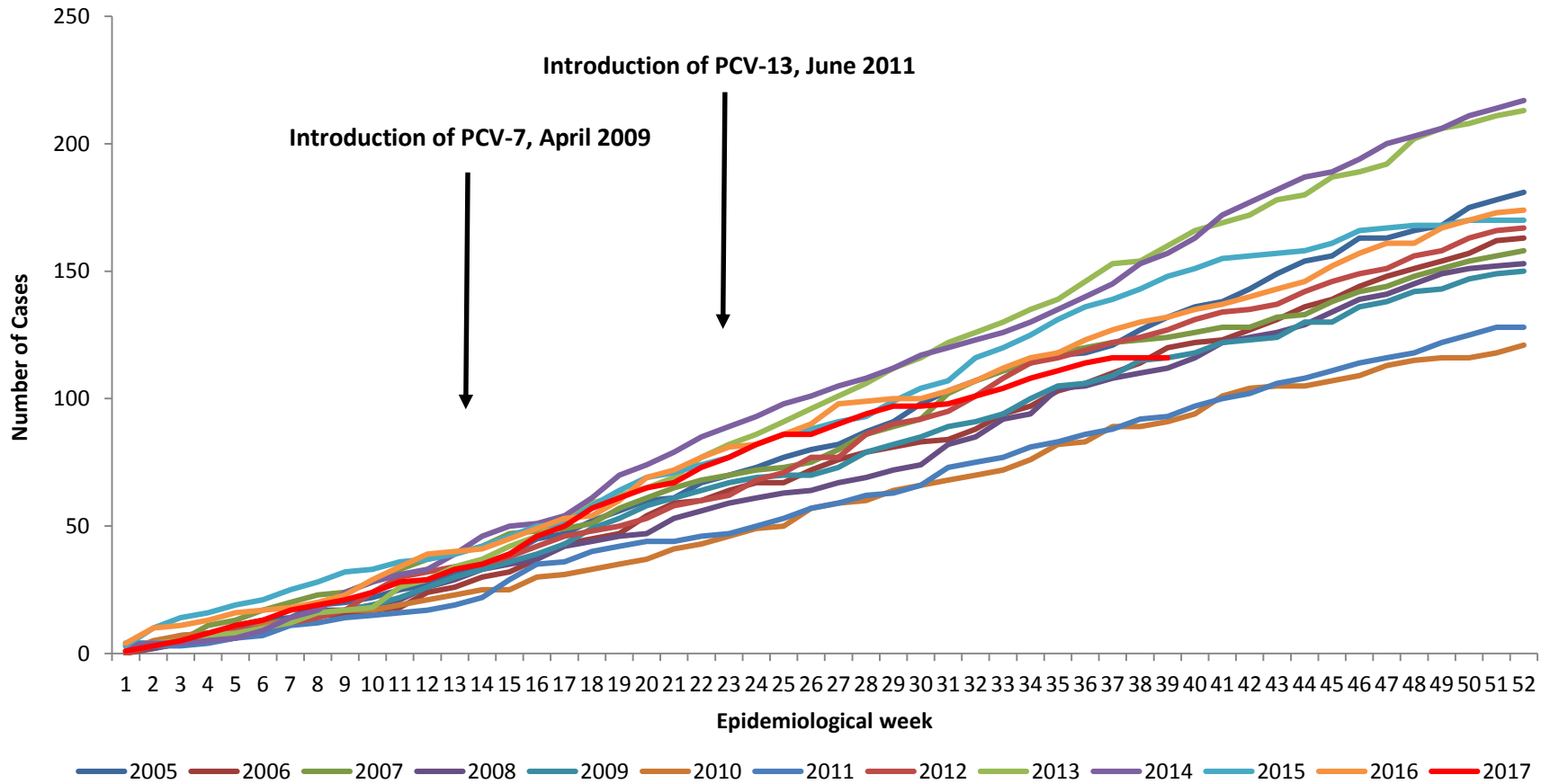


Figure 3. Cumulative weekly numbers of cases of invasive pneumococcal disease due to any of the serotypes not in PCV-13: Children <5 years of age in South Africa, from 2005 to date. Only viable isolates were included.

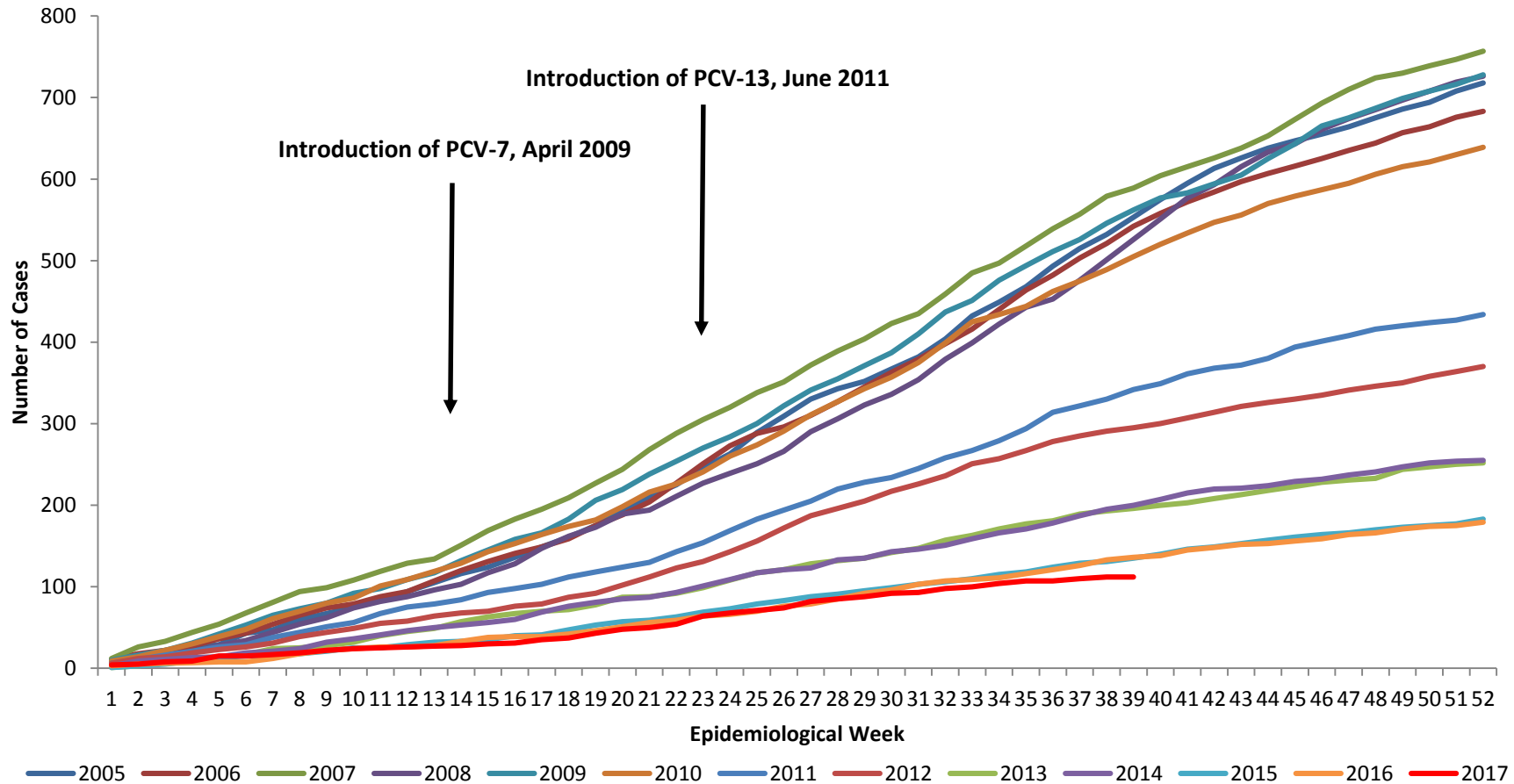


Figure 4. Cumulative weekly number of cases of invasive pneumococcal disease due to any of the seven serotypes (4, 6B, 9V, 14, 18C, 19F and 23F) in PCV-7: Individuals ≥ 5 years old of age in South Africa, from 2005 to date. Only viable isolates were included.

Data are provisional as reported to date.

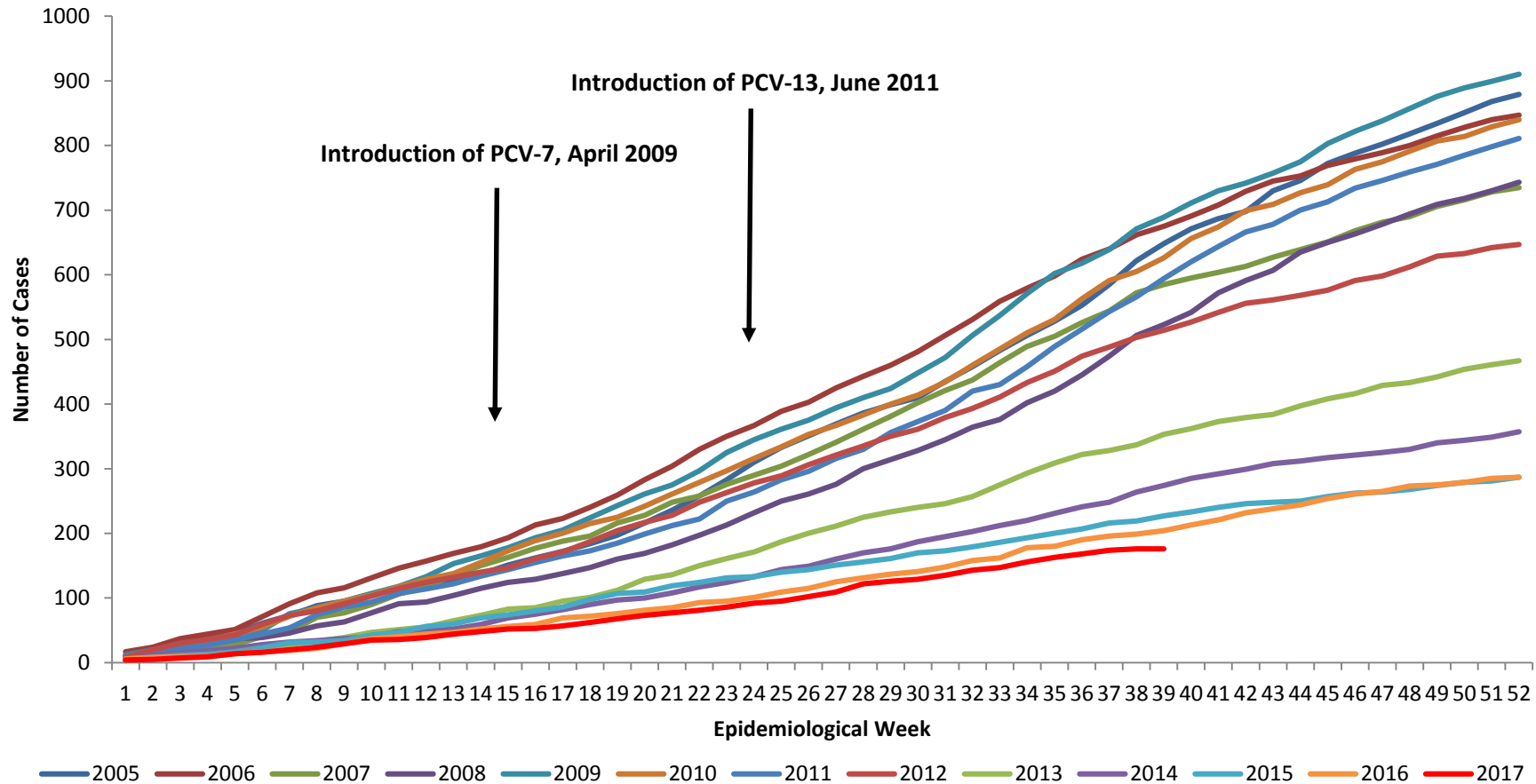


Figure 5: Cumulative weekly numbers of cases of invasive pneumococcal disease due to any of the six additional (1, 3, 5, 6A, 7F, 19A) serotypes in PCV-13 but not in PCV-7: individuals ≥ 5 years of age in South Africa, from 2005 to date. Only viable isolates were included (Note: There is reported cross protection between 6A and 6B which is included in PCV-7³)

Data are provisional as reported to date.

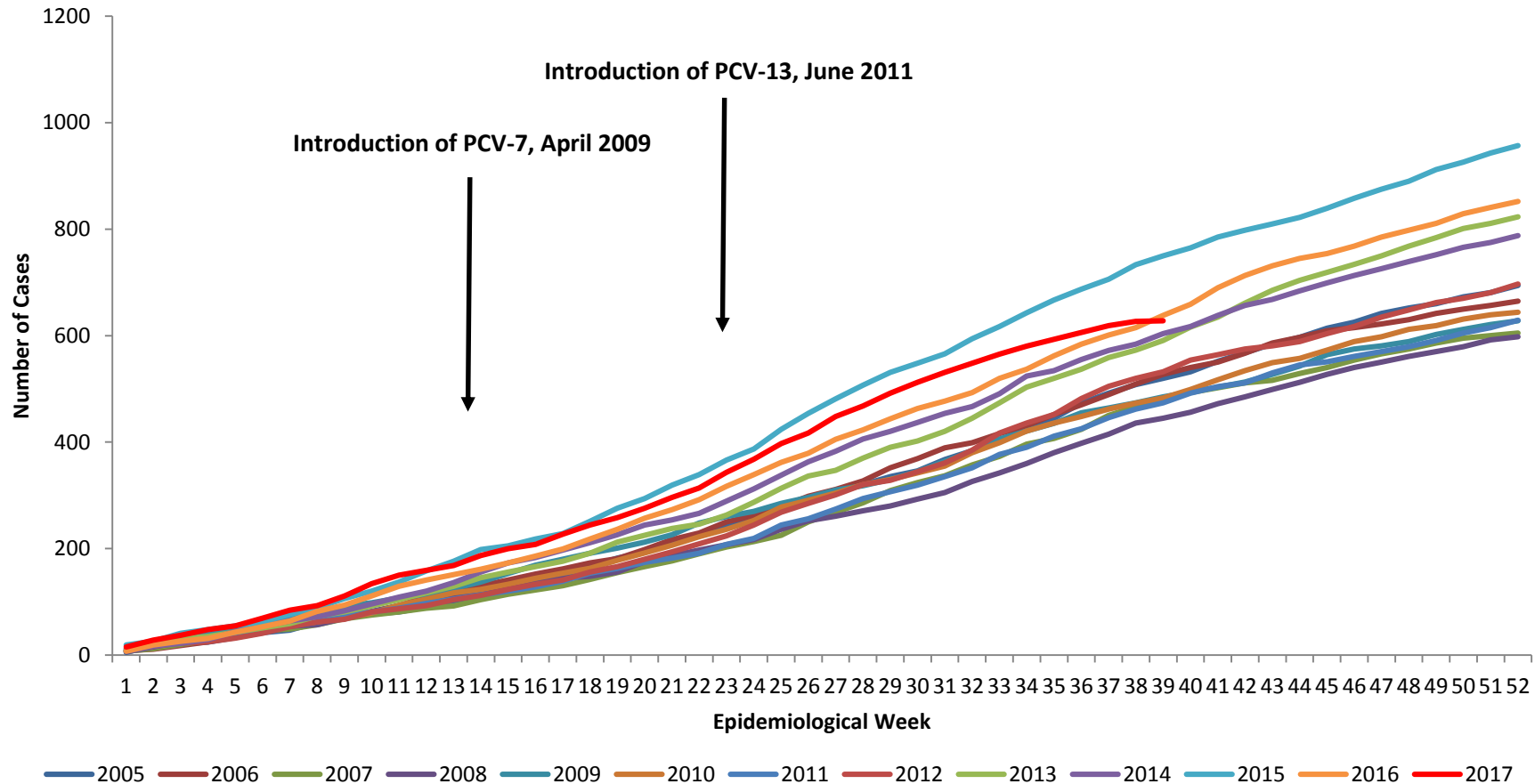


Figure 6. Cumulative weekly numbers of cases of invasive pneumococcal disease due to any of the serotypes not in PCV-13: individuals ≥ 5 years of age in South Africa, from 2005 to date. Only viable isolates were included.

Data are provisional as reported to date.

Missing information

Age unknown for 1,112 of the cases (Table 1). By the time that this report was produced there were 33 isolates from cases with pending serotype results (Table 2).

Table 1. Isolates with missing age; number of viable and non-viable isolates and audit cases identified, 2005-2017

	Age missing, n (%)	Viable, n (%)	Non-Viable, n (%)	Audit, n (%)	Total
2005	142 (3)	3,650 (73)	380 (8)	856 (17)	5,028
2006	142 (3)	3,419 (70)	446 (9)	868 (18)	4,875
2007	137 (3)	3,325 (68)	602 (12)	816 (17)	4,880
2008	147 (3)	3,326 (67)	577 (11)	932 (18)	4,982
2009	103 (2)	3,384 (70)	537 (11)	841 (17)	4,865
2010	89 (2)	2,872 (67)	516 (12)	809 (19)	4,286
2011	65 (2)	2,409 (62)	451 (12)	944 (24)	3,869
2012	84 (3)	2,161 (65)	344 (10)	718 (22)	3,307
2013	60 (2)	1,933 (66)	351 (12)	582 (20)	2,926
2014	48 (2)	1,750 (63)	374 (13)	608 (22)	2,780
2015	48 (2)	1,701 (63)	235 (9)	702 (26)	2,686
2016	20 (1)	1,577 (64)	252 (10)	605 (25)	2,454
2017	27 (2)	1,087 (68)	267 (17)	222 (14)	1,603

Table 2. Number of 2017 isolates with pending serotype information by age and week of specimen collection

Week	8	14	17	18	20	21	22	23	24	25	26	27	28	29	32	33	34	36
<5	1	-	-	-	-	-	-	-	-	1	-	-	1	1	-	-	1	-
≥5	-	1	1	1	1	1	1	3	1	3	3	6	1	2	1	1	-	1

Data Source

National Institute for Communicable Diseases | GERMS-SA

References

1. World Health Organization [Internet] WHO-UNICEF estimates of PCV3 coverage. 2017 [cited 21 July 2017]. Available from: http://apps.who.int/immunization_monitoring/globalsummary/timeseries/tswucoveragepcv3.html.
2. von Gottberg A, de Gouveia L, Tempia S, Quan V, Meiring S, von Mollendorf C, et al. Effects of vaccination on invasive pneumococcal disease in South Africa. *N. Engl. J. Med.* 2014;371(20):1889-99.
3. Whitney CG, Pilishvili T, Farley MM, Schaffner W, Craig AS, Lynfield R, et al. Effectiveness of seven-valent pneumococcal conjugate vaccine against invasive pneumococcal disease: A matched case-control study. *The Lancet.* 2006;368(9546):1495-502.

Last updated: 9 October 2017

Next update: 5 January 2018