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Report National Reference Centre invasive *S. pneumoniae* 2017-2018 (Q1)

This is a report of the National Reference Centre for invasive *Streptococcus pneumoniae* (NRC) with a focus on the infant invasive pneumococcal disease (IPD) isolates from 2017 and the first four months of 2018.

Data of the NRC are based on a passive laboratory based surveillance. During the last 10 years, 137 different laboratories were involved in this surveillance, with a yearly mean of 101 laboratories sending isolates to the NRC. The geographical origin of the IPD cases is stable during this period and reflects the distribution of the population over the different regions in Belgium (57.5% of Belgian inhabitants live in Flanders, 32 % in Wallonia and 10.5 percent in Brussels (data 2016 https://www.belgium.be/nl/over_belgie/land/bevolking) (Table 1).

In 2017 a total of 173 IPD isolates from children less than 4 years old were received. This is an increase in IPD isolates compared to 125 IPD isolates in 2016. During the first four months of 2018, 65 IPD isolates originating from the same age group were received.

In 2017, serotypes (ST) 12F, 19A and 10A were most frequently isolated and accounted for respectively 18%, 12% and 8% of all IPD isolates in children less than 4 years old. In the youngest children (<12 months old) ST19A was the most important serotype (22% of IPD isolates) (Figure 1). 79% of all IPD cases in less than 4 years old children was caused by serotypes not included in the conjugate vaccines (Figure 2). 20% and 3% of IPD cases were caused by serotypes included in respectively the 13-valent pneumococcal conjugate vaccine (PCV13) and the 10-valent pneumococcal conjugate vaccine (PCV10).

In the period from January 2017 to April 2018, 70% of isolates were from Flemish children, 17% from Walloon children and 13% from children living in Brussels (< 4 years old) (Figures 3 and 4).

The increase in IPD cases in children in 2017 is mainly due to an increase in IPD cases in the last 4 months of 2017. (Figure 3-5) Moreover the increase in IPD isolates is mainly caused by an increase in serotype 19A isolates. This trend continues in the first four months of 2018. Figures 6, 7 and 8 indicate the age and regional distribution of ST19A cases in Belgium.

Table 1: Characteristics of the surveillance of the Belgian National Reference Centre invasive *S. pneumoniae* during period of 2007-2017

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	mean 2007- 2017
number of unique IPD isolates send to the NRC	1598	1768	1949	1896	1888	1776	1671	1223	1382	1343	1518	1637
number of laboratories involved in surveillance												
all	104	104	103	102	100	102	98	97	100	103	95	101
sending more than 5 isolates per year	73	79	86	86	84	87	81	75	79	71	76	80
regional distribution of all isolates based on residence of patient (percentage)												
Flanders	58,7%	56,1%	58,2%	59,8%	57,5%	58,1%	58,2%	55,8%	55,6%	62,2%	63,0%	58,5%
Wallonia	26,2%	27,9%	27,1%	26,9%	27,3%	28,4%	28,3%	30,5%	31,5%	25,7%	25,5%	27,8%
Brussels	14,5%	15,7%	14,0%	12,2%	14,7%	12,6%	12,0%	13,1%	11,6%	10,9%	11,4%	13,0%
other/unknown	0,7%	0,4%	0,7%	1,1%	0,5%	0,8%	1,5%	0,7%	1,3%	1,1%	0,1%	0,8%

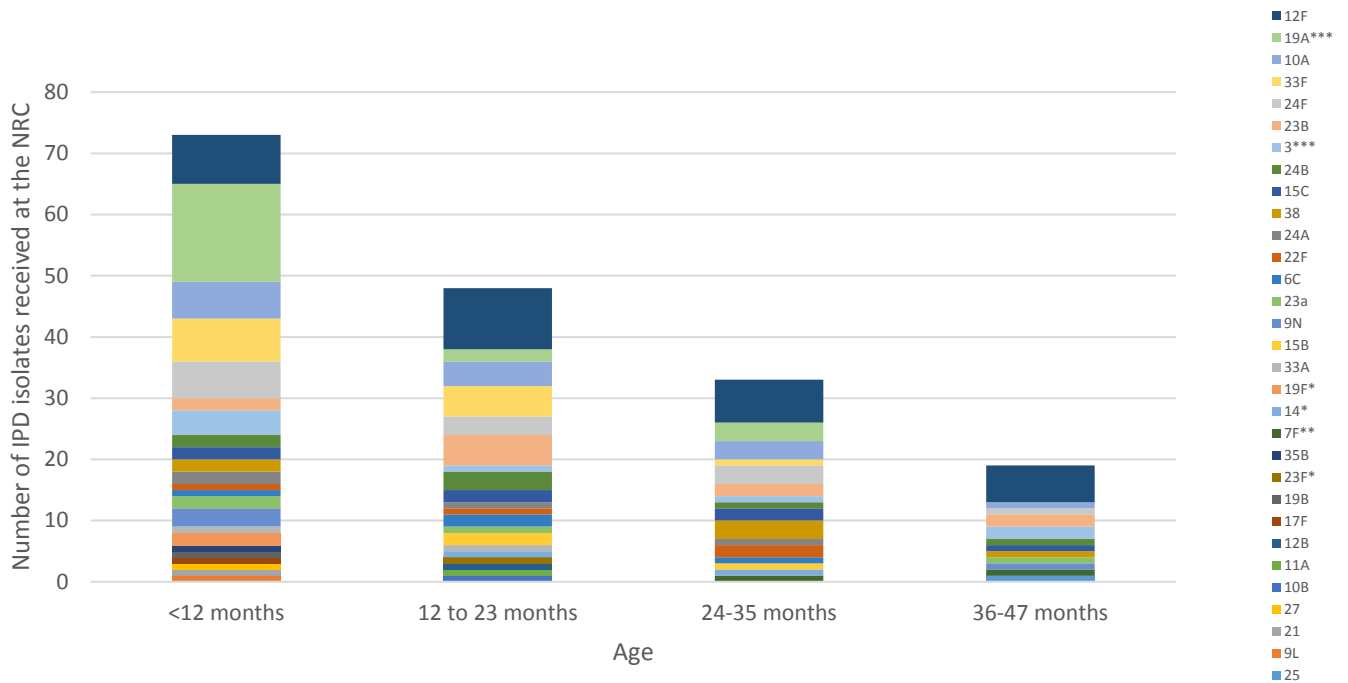


Figure 1: Serotype distribution of invasive pneumococcal disease (IPD) isolates received at the National Reference Centre (NRC) from children < 4 years old in 2017. (*: serotype included in PCV7; **: serotype included in PCV10 and not in PCV7; ***: serotype included in PCV13 and not in PCV10)

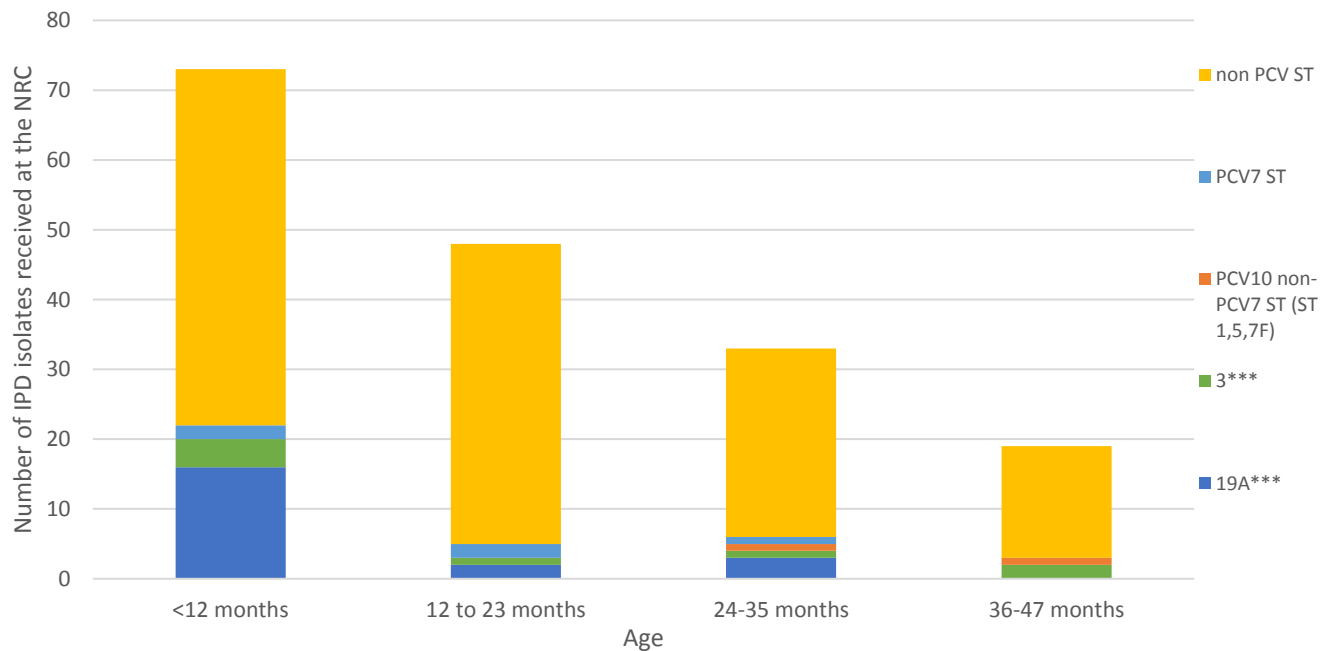


Figure 2: Serotype distribution of invasive pneumococcal disease (IPD) isolates received at the National Reference Centre (NRC) from children <4 years old in 2017 according to inclusion in pneumococcal conjugate vaccines. (***: serotype included in PCV13 and not in PCV10)

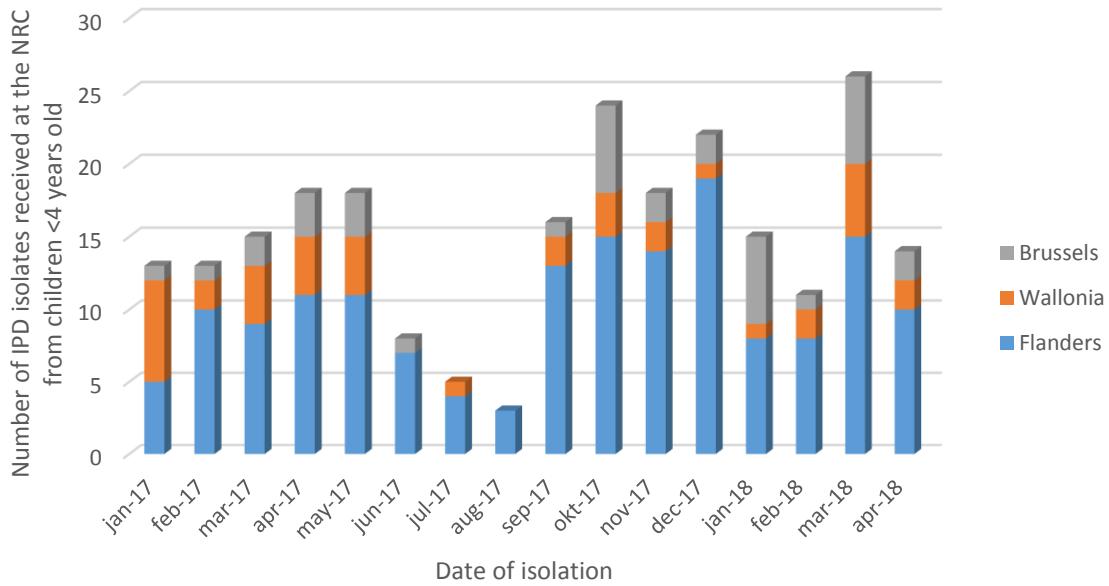


Figure 3: Invasive pneumococcal disease (IPD) isolates received at the National Reference Centre (NRC) from children <4 years old grouped per region from January 2017 to April 2018.

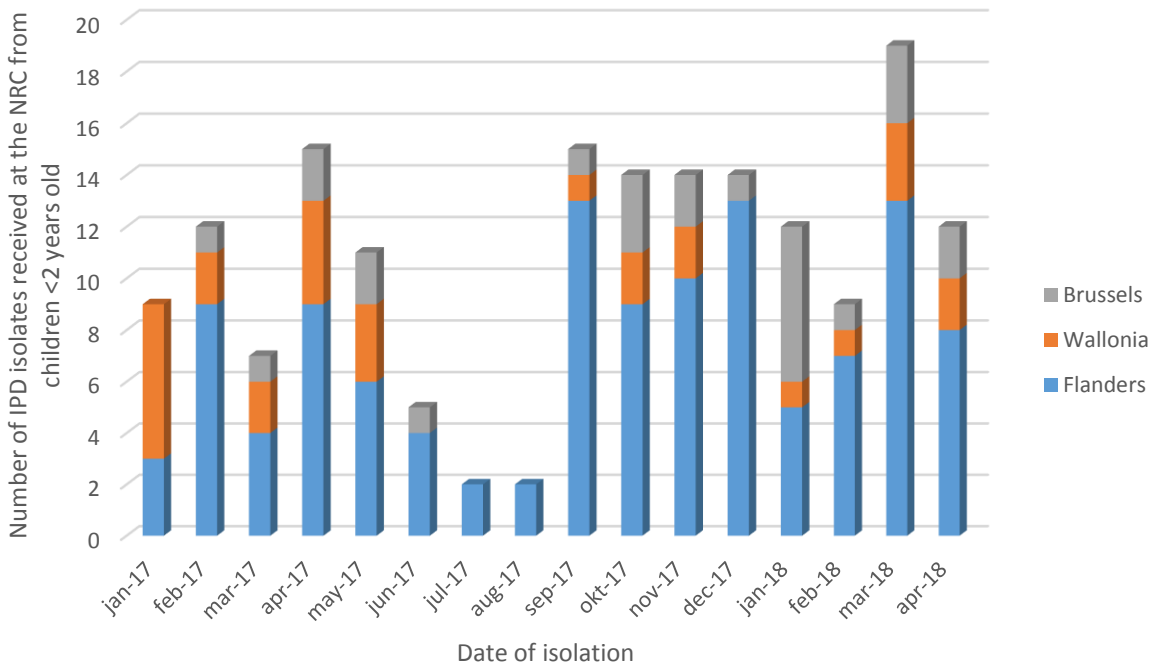


Figure 4: Invasive pneumococcal disease (IPD) isolates received at the National Reference Centre (NRC) from children <2 years old grouped per region for period of isolation from January 2017 to April 2018.

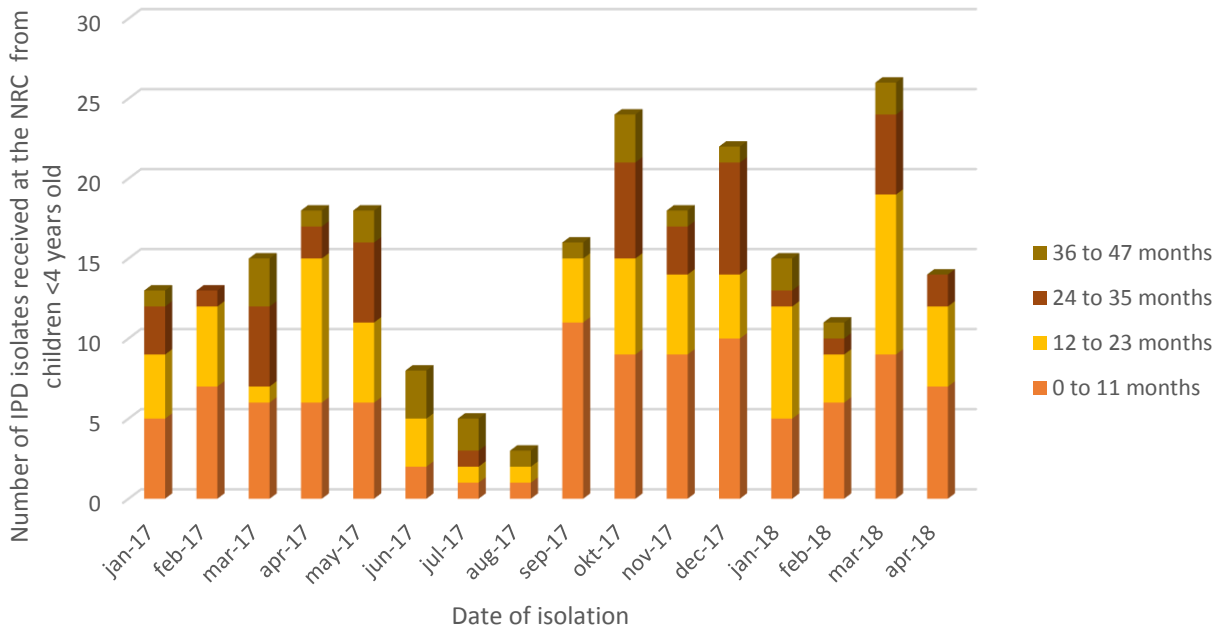


Figure 5: Invasive pneumococcal disease (IPD) isolates received at the National Reference Centre from children <4 years old grouped per age group from January 2017 to April 2018.

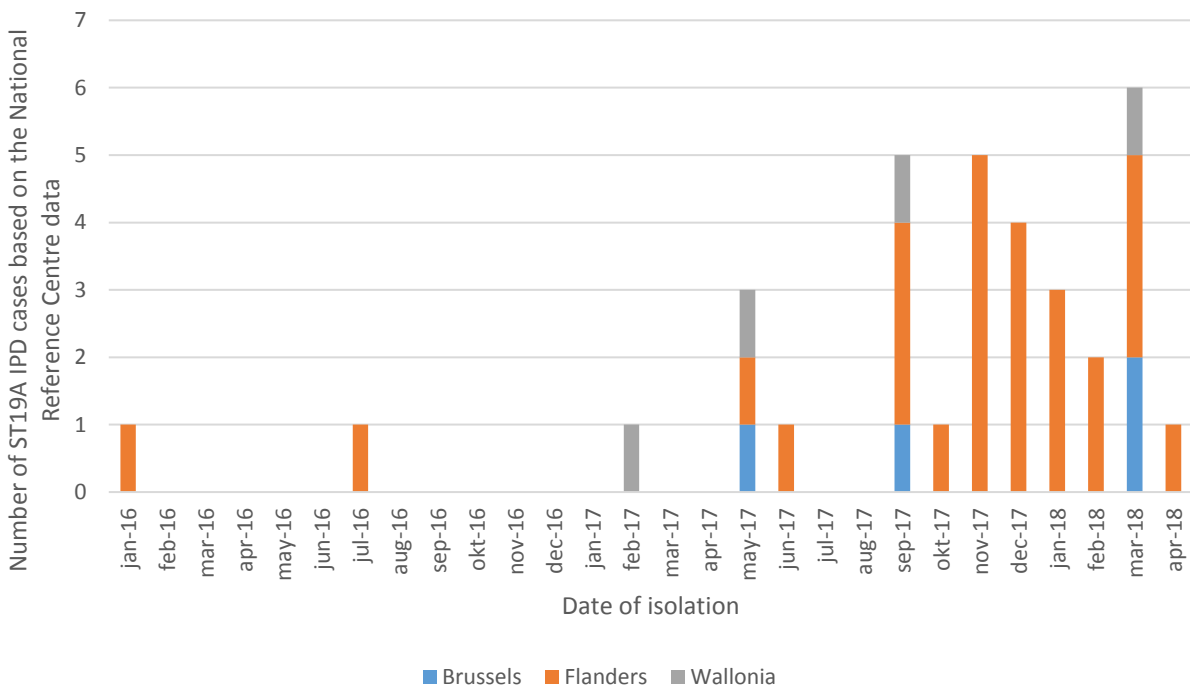


Figure 6: Serotype 19A invasive pneumococcal disease (IPD) cases based on isolates received at the National Reference Centre (NRC) from children <4 years old grouped per region from January 2016 to April 2018.

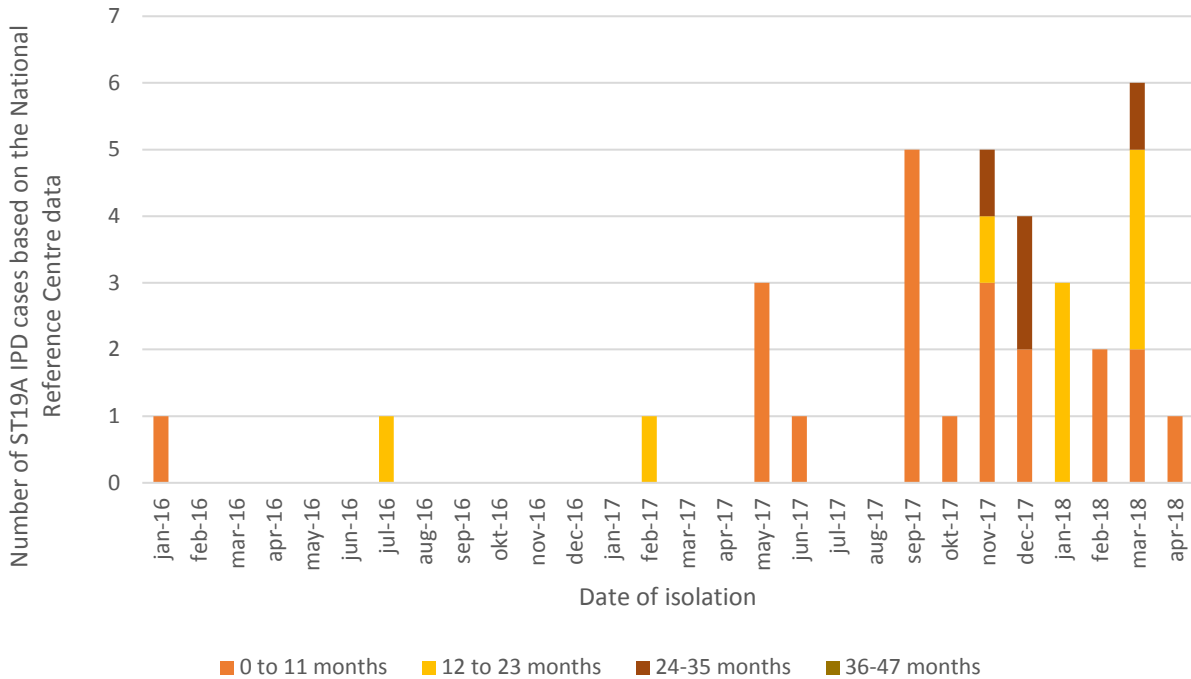


Figure 7: Serotype 19A invasive pneumococcal disease (IPD) cases based on isolates received at the National Reference Centre (NRC) from children <4 years old grouped per age group from January 2016 to April 2018.

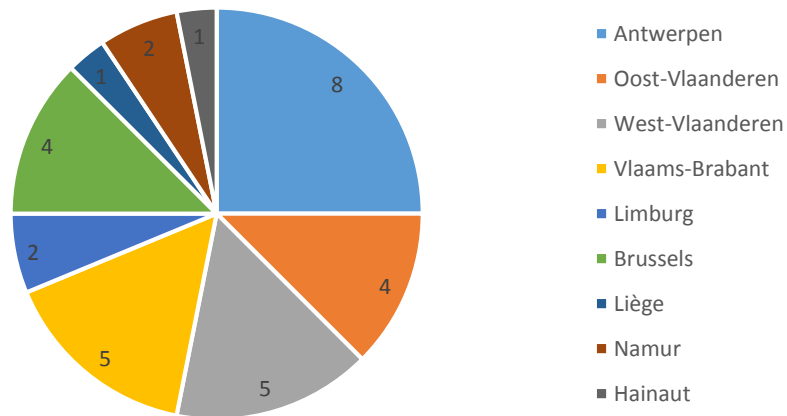


Figure 8: Distribution of ST19A IPD cases (children <4years old) from 2017 and the first four months of 2018 over the different provinces.

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