

INVASIVE PNEUMOCOCCAL DISEASE



IN THE CZECH REPUBLIC

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Background and aims

In the Czech Republic, pneumococcal conjugate vaccine (PCV) has been available since 2001 and was included into the

Czech national immunization programme for infants in January 2010.

The aim of this project was to obtain information about the pre-vaccination incidence of invasive pneumococcal disease (IPD) and serotype distribution.

Methods

A laboratory-based IPD surveillance programme was carried out in 2000 – 2006 and a pilot enhanced IPD surveillance programme followed in 2007. A nationwide IPD surveillance programme was implemented in January 2008. An IPD case was defined by the isolation of *S. pneumoniae* from blood, cerebrospinal fluid, or other normally sterile site in accordance with the EU case definition. Each isolate was identified by the standard methods and *S. pneumoniae* isolates were serotyped by the Quellung reaction using serotype-specific antisera. In addition, 81 isolates of *S. pneumoniae* causing IPD in 2008 were characterized by multilocus sequence typing (MLST) (<http://spneumoniae.mlst.net/>).

Results

Table 1. Invasive pneumococcal disease
Cases per 100,000 population, Czech Republic, 1997 – 2009

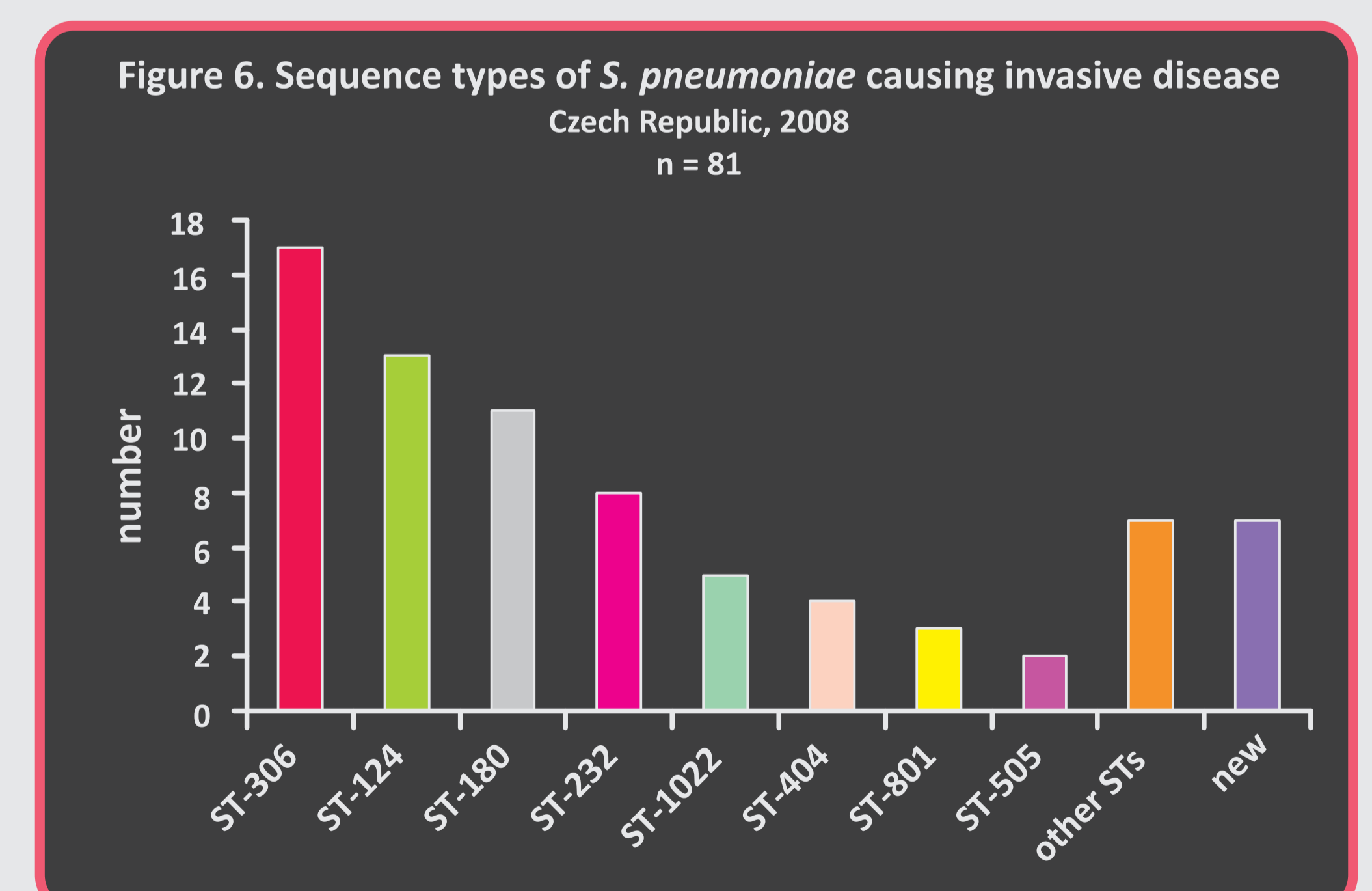
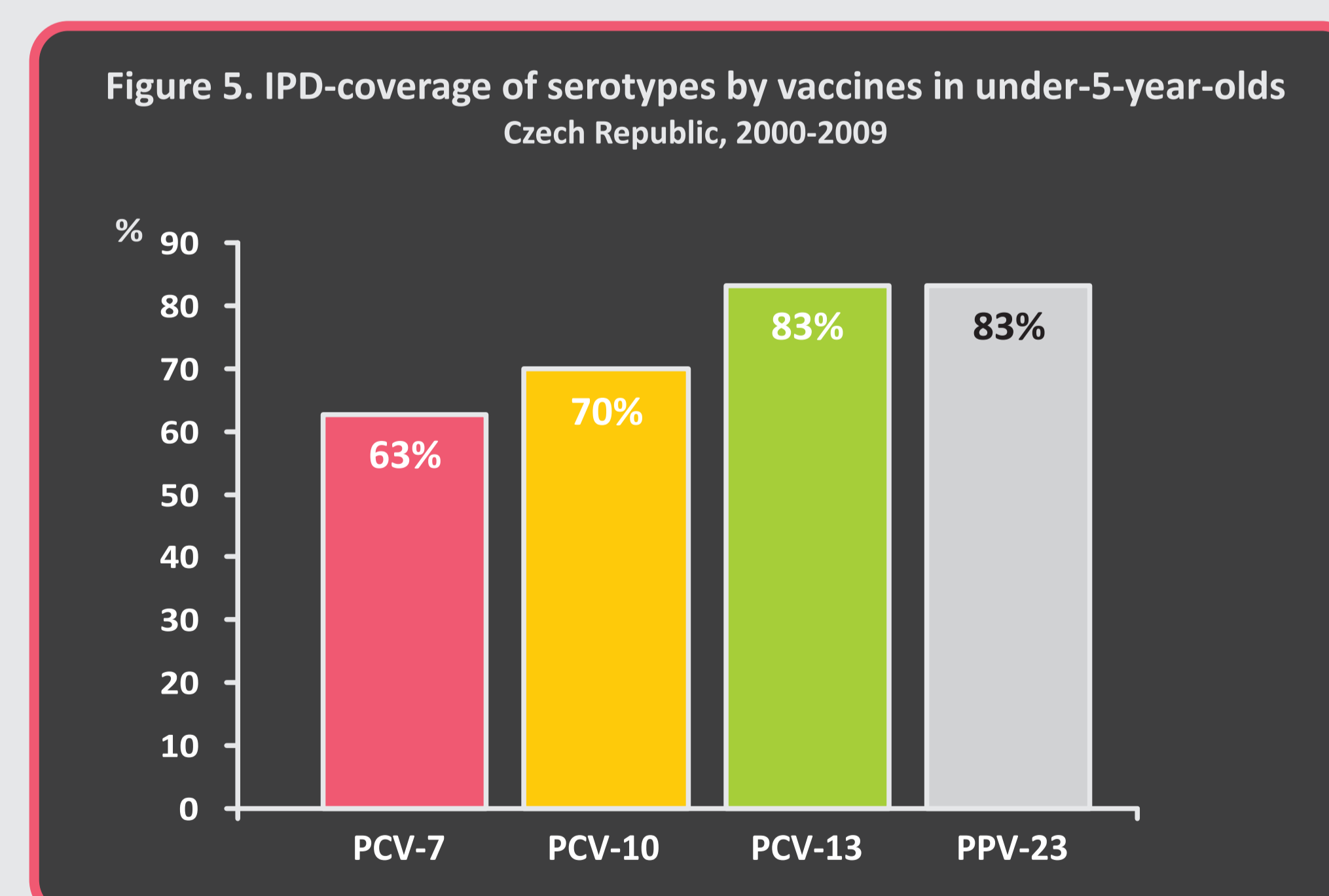
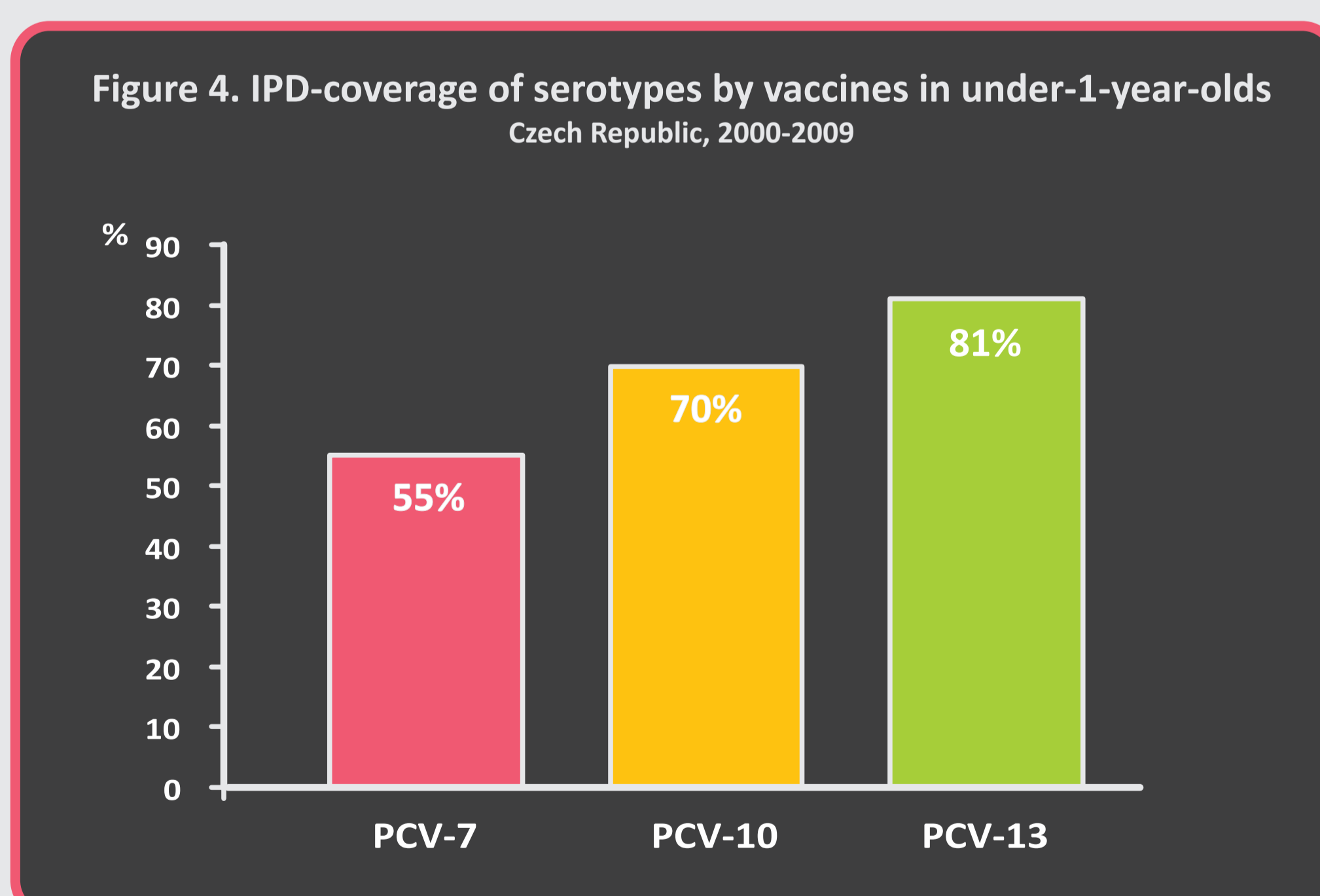
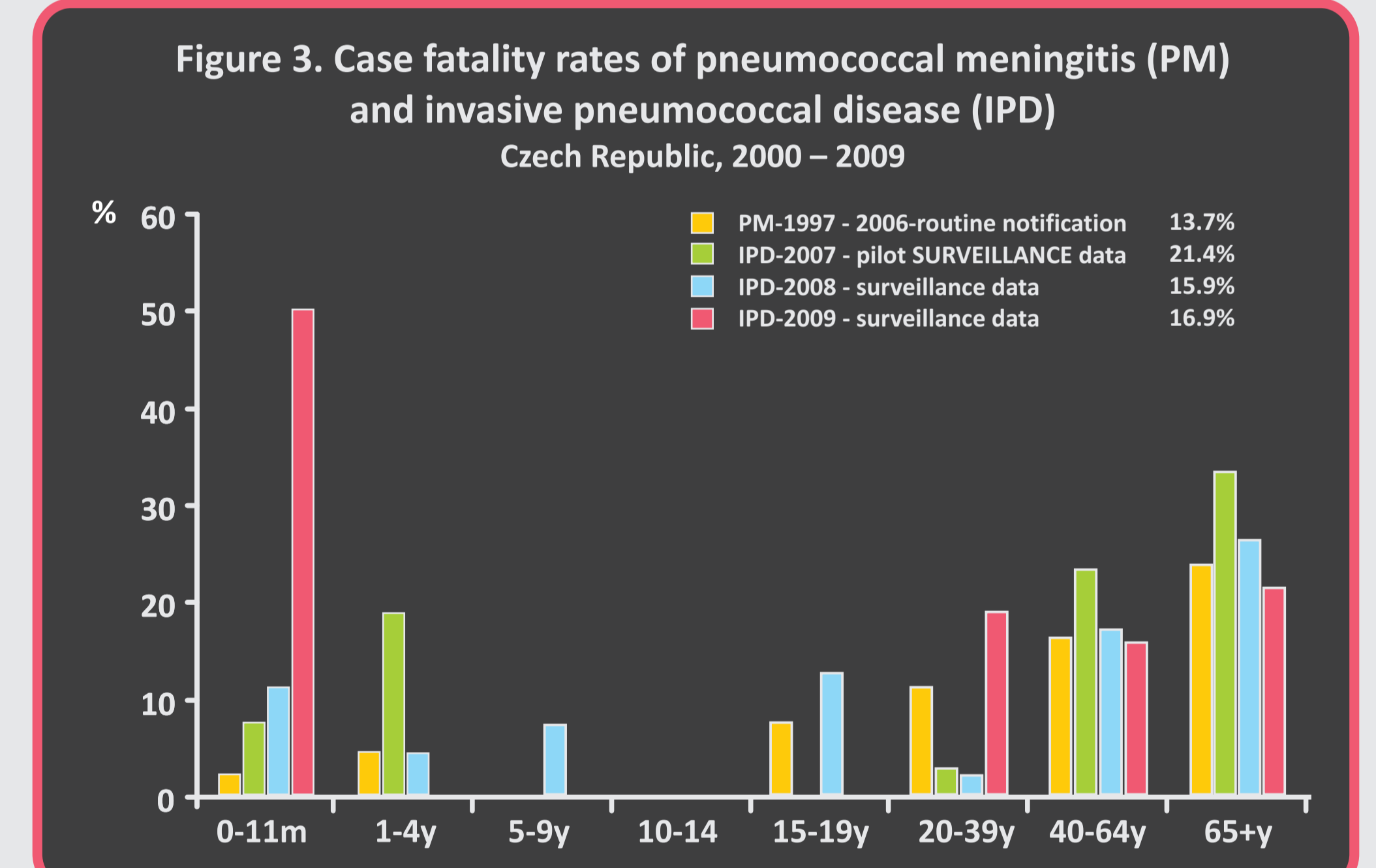
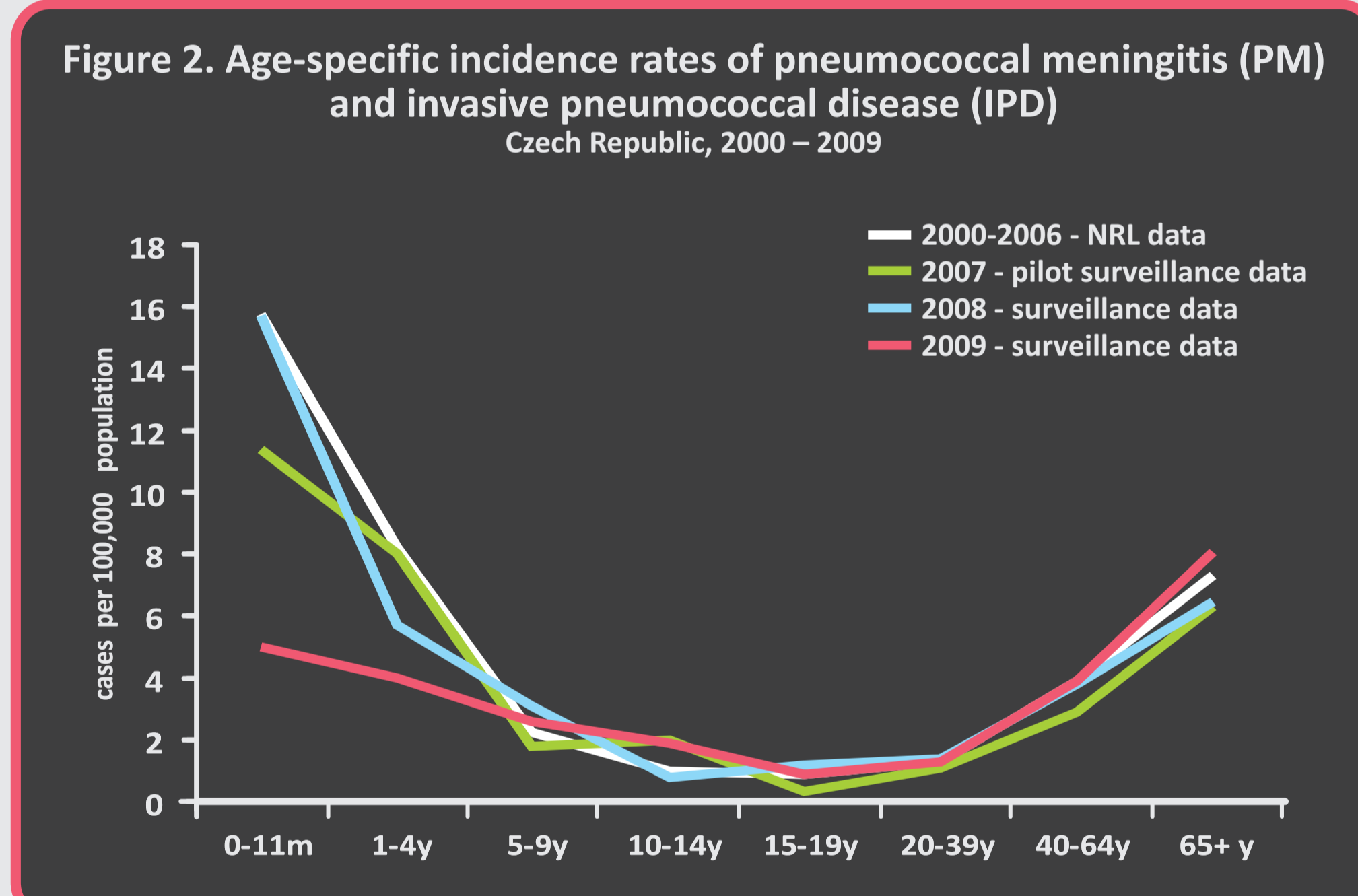
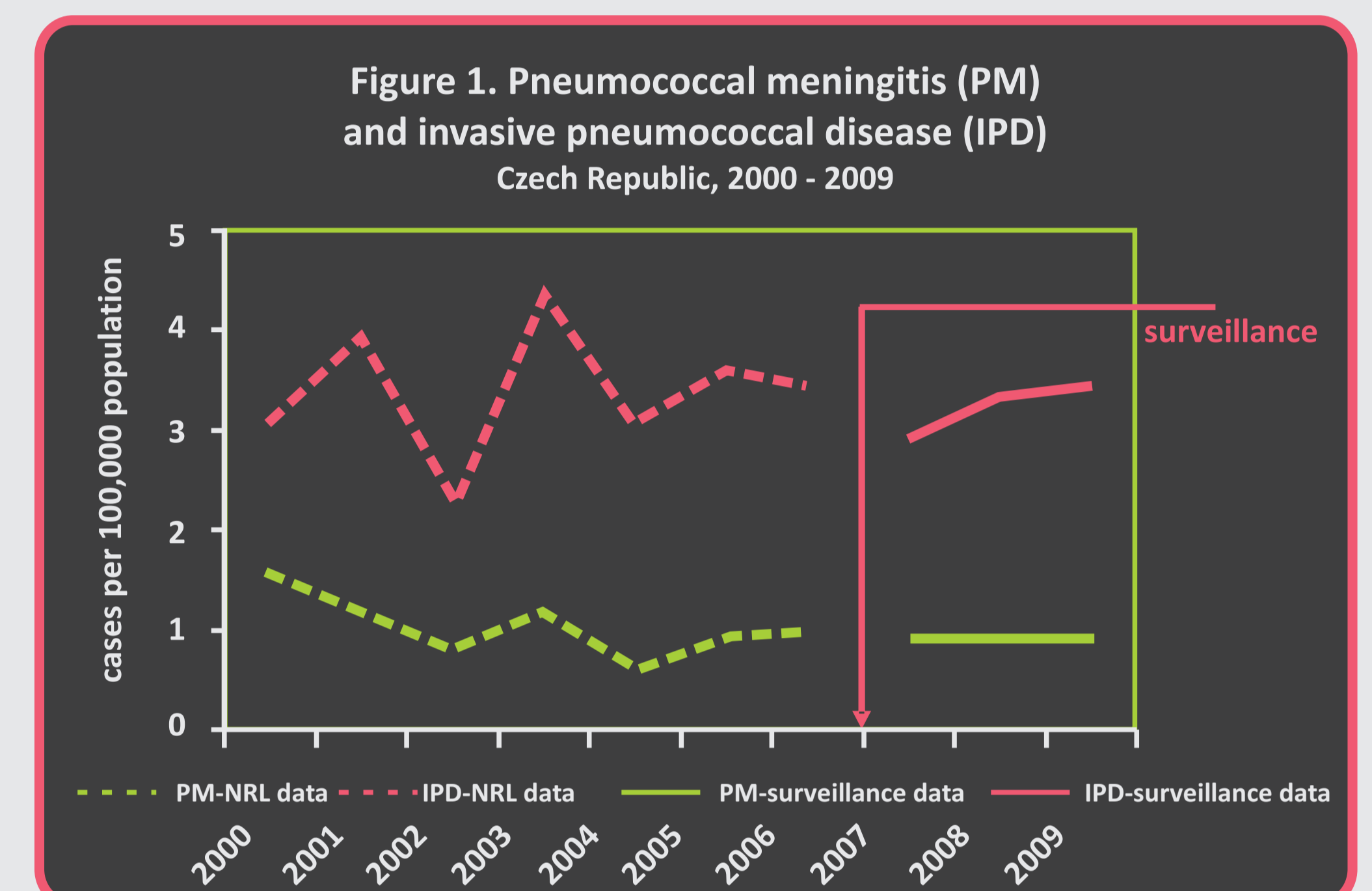
| year | routin notification | | NR data | | surveillance | |
|------|---------------------|-----|---------|-----|--------------|-----|
| | PM | IPD | PM | IPD | PM | IPD |
| 1997 | 0.6 | - | - | - | - | - |
| 1998 | 0.4 | - | - | - | - | - |
| 1999 | 0.4 | - | - | - | - | - |
| 2000 | 0.6 | - | 1.6 | 3.1 | - | - |
| 2001 | 0.6 | - | 1.2 | 3.9 | - | - |
| 2002 | 0.6 | - | 0.8 | 2.3 | - | - |
| 2003 | 0.6 | - | 1.2 | 4.3 | - | - |
| 2004 | 0.5 | - | 0.6 | 3.1 | - | - |
| 2005 | 0.5 | - | 0.9 | 3.6 | - | - |
| 2006 | 0.6 | - | 1.0 | 3.4 | - | - |
| 2007 | - | - | - | - | 0.9 | 2.9 |
| 2008 | - | - | - | - | 0.9 | 3.3 |
| 2009 | - | - | - | - | 0.9 | 3.4 |

PM = pneumococcal meningitis IPD = invasive pneumococcal disease

From the laboratory surveillance data it follows that the IPD incidence rates varied from 2.3 to 4.3 per 100 000 population between 2000 and 2006. Based on the enhanced surveillance data, the incidence rates were 2.9 in 2007, 3.3 in 2008 and 3.4 in 2009 - **Table 1** and **Figure 1**.

The age-specific incidence rates were the highest in the youngest and oldest age groups – **Figure 2**, similarly to the case fatality rates – **Figure 3**.

In the period 2000-2009, the coverage by PCV-7 was 55 % in the under-1-year-olds and 63 % in the under-5-year-olds, the coverage by PCV-10 was 70 % in both age categories and the coverage by PCV-13 was 81 % and 83 %, respectively – **Figures 4 and 5**. The most frequent sequence type was ST-306, followed by ST-124 and ST-180 – **Figure 6**.



Conclusions

- Active surveillance of IPD consistent with the European IPD surveillance has been implemented in the Czech Republic since 2008.
- Pneumococcal conjugate vaccine was included into the Czech national immunization programme for infants in January 2010.
- It is desirable to continue the IPD surveillance programme to assess the efficacy of the nationwide immunization of infants with pneumococcal conjugate vaccine.

Acknowledgements

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