

Clinical manifestation of invasive pneumococcal diseases in children – 2016, Czech Republic

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Background

The surveillance of invasive pneumococcal disease (IPD) was implemented in the Czech Republic in 2007. A sensitivity of the surveillance has improved continuously, as confirmed by capture-recapture analysis. Pneumococcal conjugate vaccine (PCV) is available in the Czech Republic since 2005 (PCV7). PCV was implemented into the National Immunisation Program in 2010 (PCV10 and PCV13 equally). In the age group 0-4 years, we experienced pneumonia, sepsis and meningitis.

Objectives:

The surveillance database is bringing together the data from the National Reference Laboratory (NRL) for Streptococcal Infections and EPIDAT data.

Material and methods

The surveillance of IPD started in the Czech Republic since 2008 and the EU case definition of IPD was adopted. The typing of *S. pneumoniae* was performed in the NRL by the classical Quellung reaction and from 2013 by the PCR method.

Figure 1 IPD – age specific incidence Czech Republic, 2007-2016
surveillance data of NRL for streptococcal infections

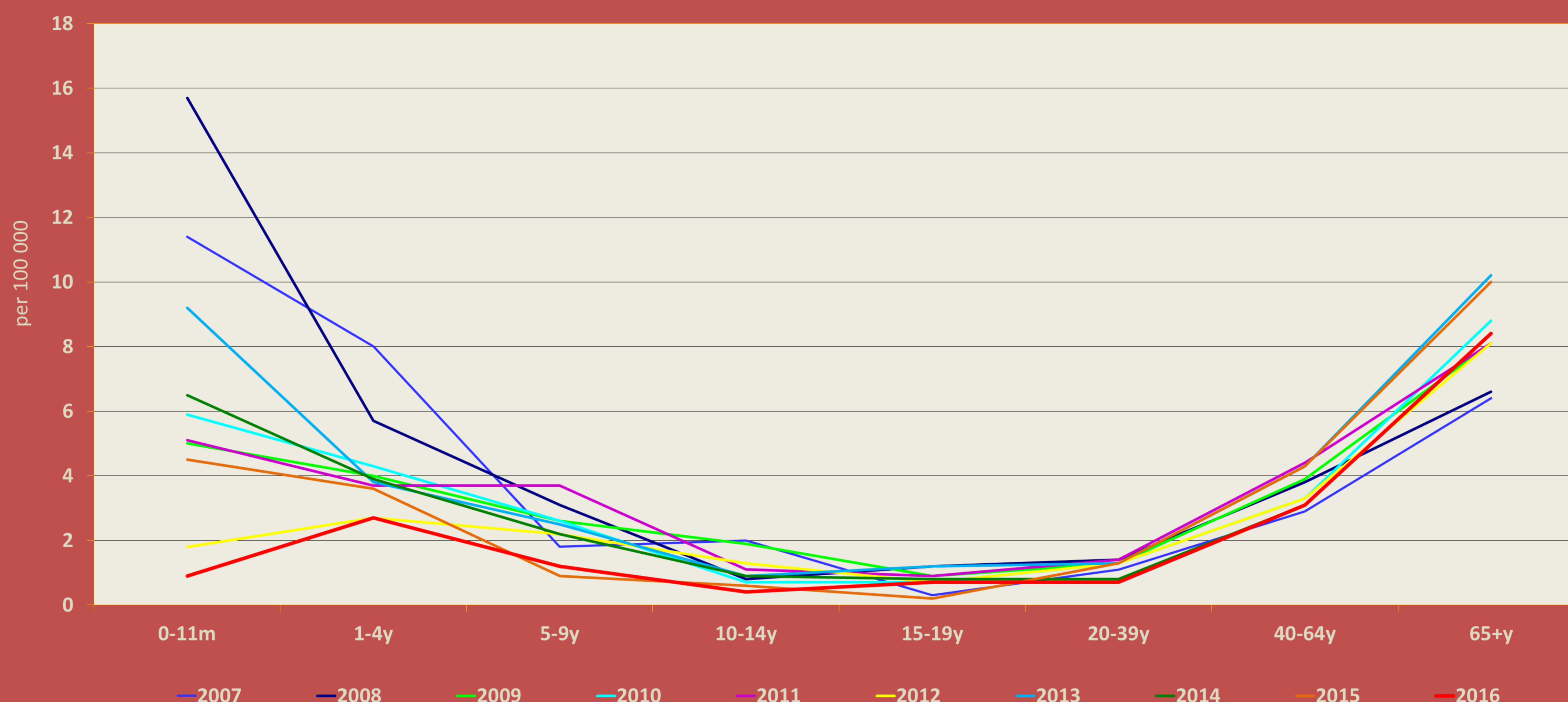


Figure 2 IPD clinical presentation Czech Republic, 2007-2016, under 5 years of age
surveillance data of NRL for streptococcal infections

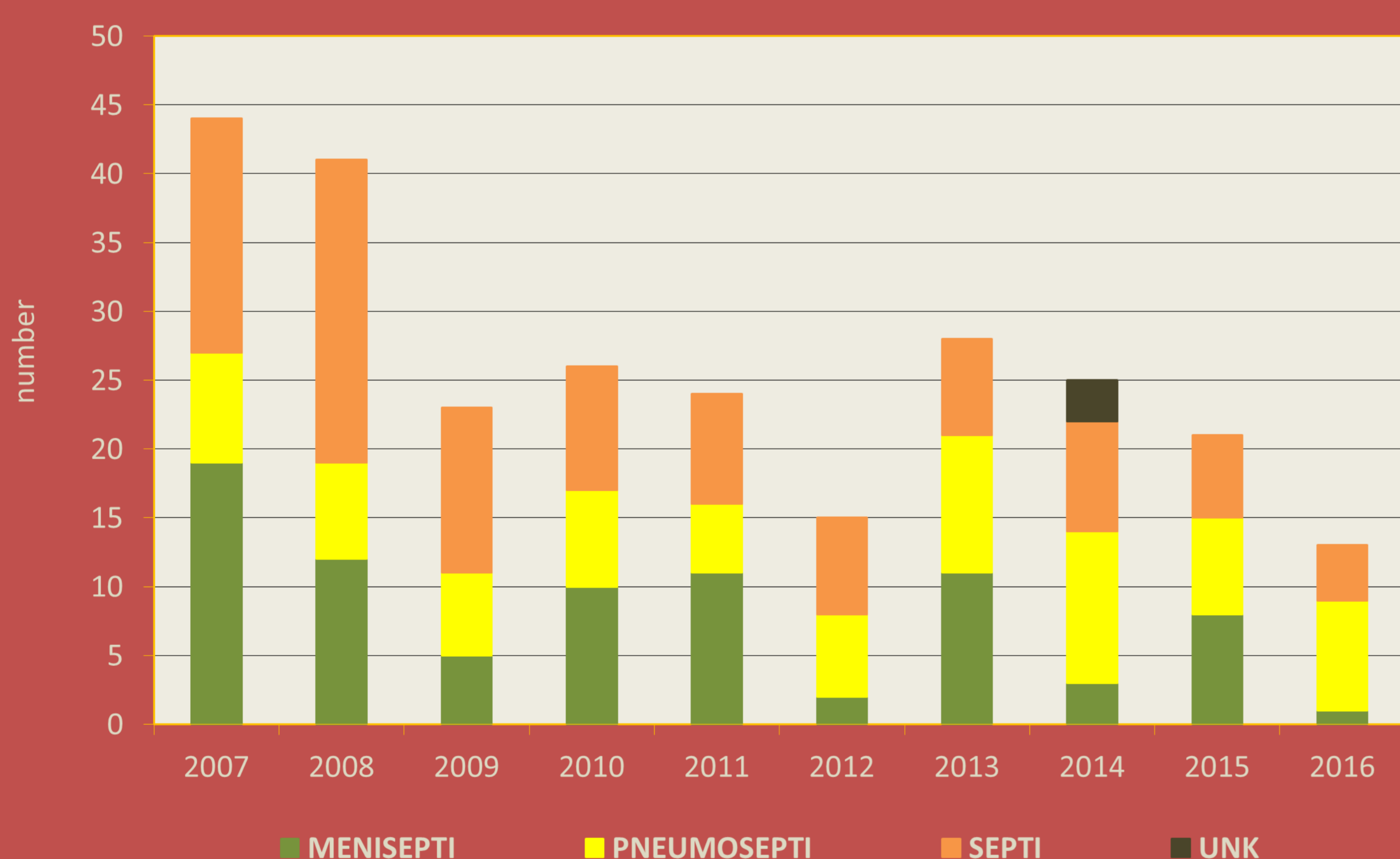
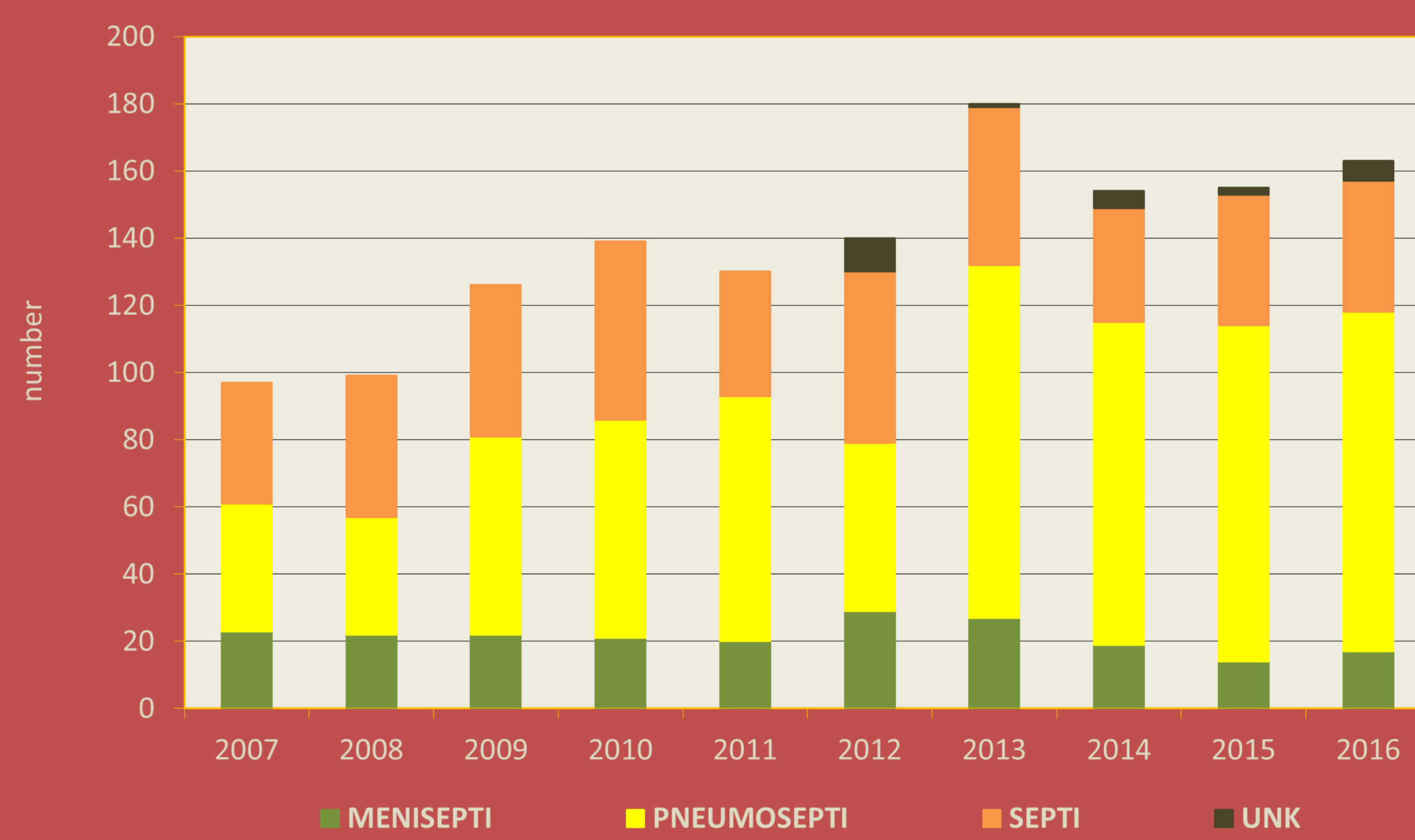


Figure 3 IPD clinical presentation Czech Republic, 2007-2016, 65+ years of age
surveillance data of NRL for streptococcal infections



Results

In 2016, 323 cases of invasive pneumococcal disease (IPD) were entered into the surveillance database merging the data of the NRL for Streptococcal Infections and EPIDAT. The overall incidence of IPD decreased from 3.9 cases per 100,000 population in 2015 to 3.1 /100,000 in 2016. This decrease was seen in all age groups, in particular in children under one year of age where the incidence dropped from 4.5/100 000 (five cases) in 2015 to 0.9/100,000 (one case) in 2016. The highest age-specific incidence of IPD, 8.4/100,000 (163 cases), was recorded again in the oldest age group 65 years and over - **Figure 1**.

Seventeen cases were reported in vaccinated patients, with an increase in vaccinated adults, and the age distribution was as follows: five cases in 1-4-year-olds, three cases in 5-9-year-old children, three cases in adults aged 40-64 years, and six cases in the age group 65 years and over. Three cases were reported in vaccinated children under five years of age and were caused by a serotype included in the vaccine.

The overall case fatality rate increased from 16% in 2015 to 20.4% in 2016. Similarly to 2015, 66 cases of IPD were fatal. Most deaths occurred in the age group 65 years and over (40 deaths, the case fatality rate of 24.5%). No death occurred in children under five years of age.

Three hundred and six (95%) isolates of *Streptococcus pneumoniae* of 323 cases of IPD were referred to the NRL for typing. All cases were reported to the EPIDAT.

Figure 2 and 3 showing clinical presentation of IPD – children under 5 years of age and people 65+ years of age and the changes over the period 2007-2016.

Thirteen cases of IPD were only diagnosed from clinical specimens using a PCR assay. The causative serotype was not determined in 24 cases, and in 17 of them due to the failure to refer the isolate to the NRL.

In 2016, the most common serotypes were 3 and 19A again.

Acknowledgement

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