

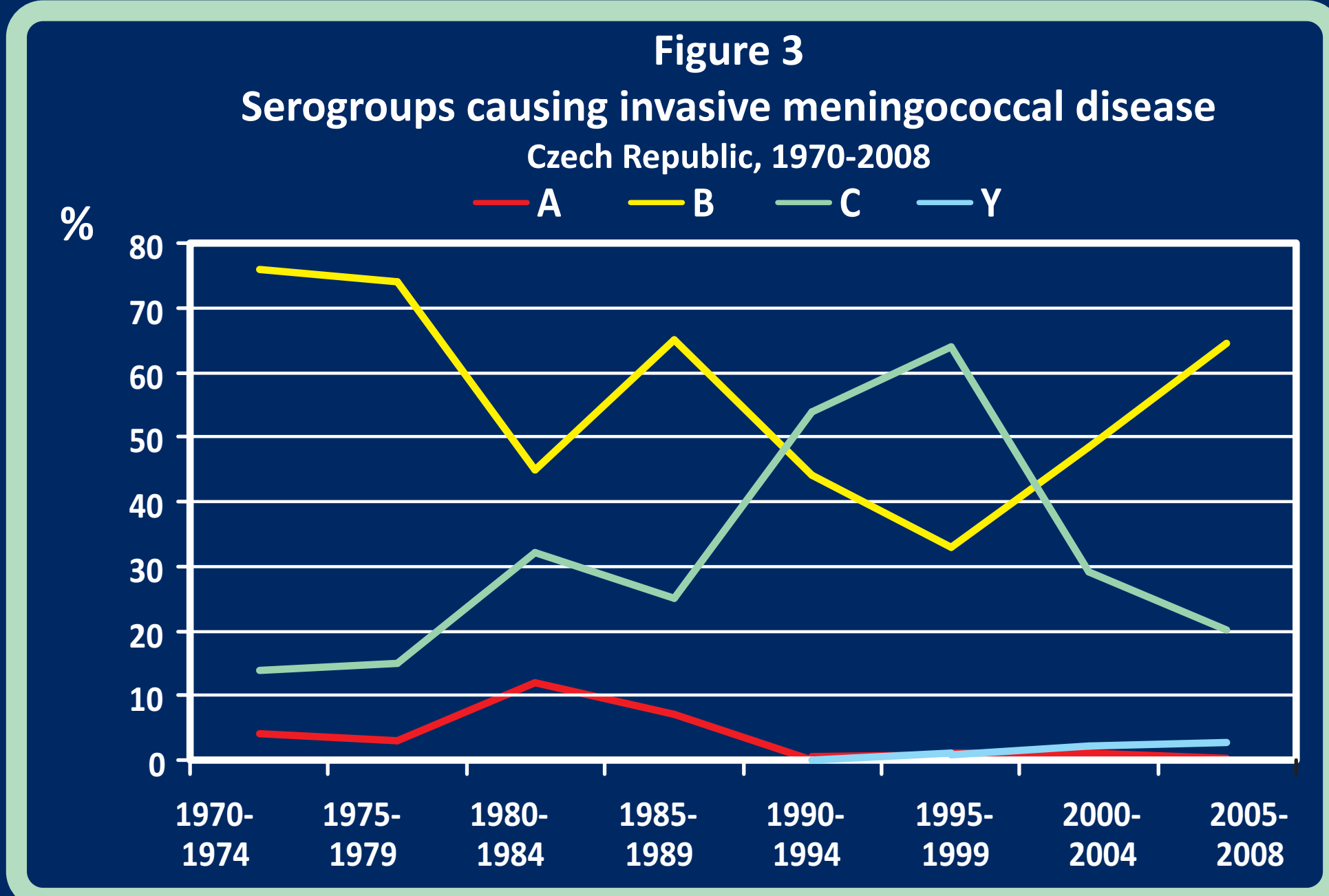
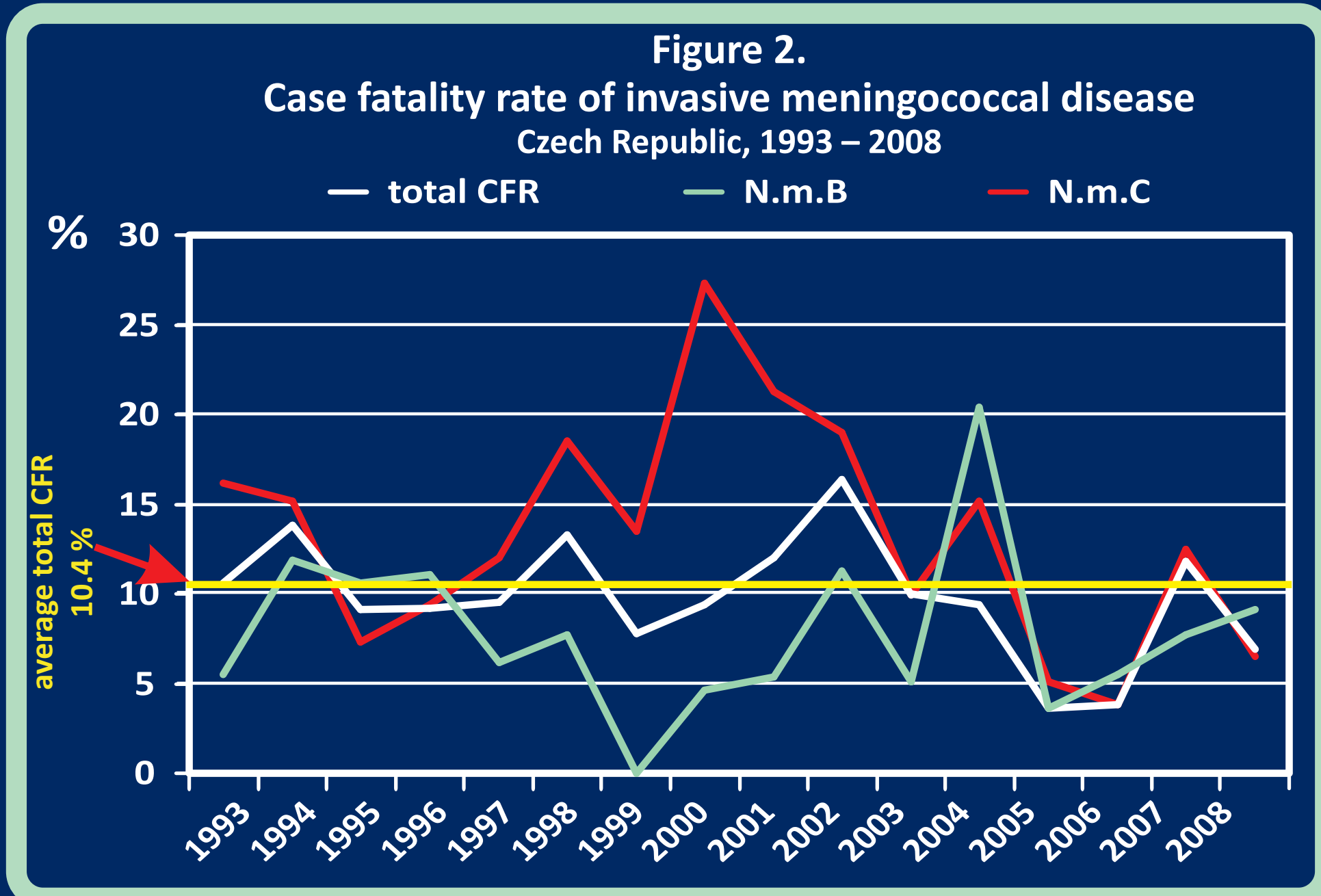
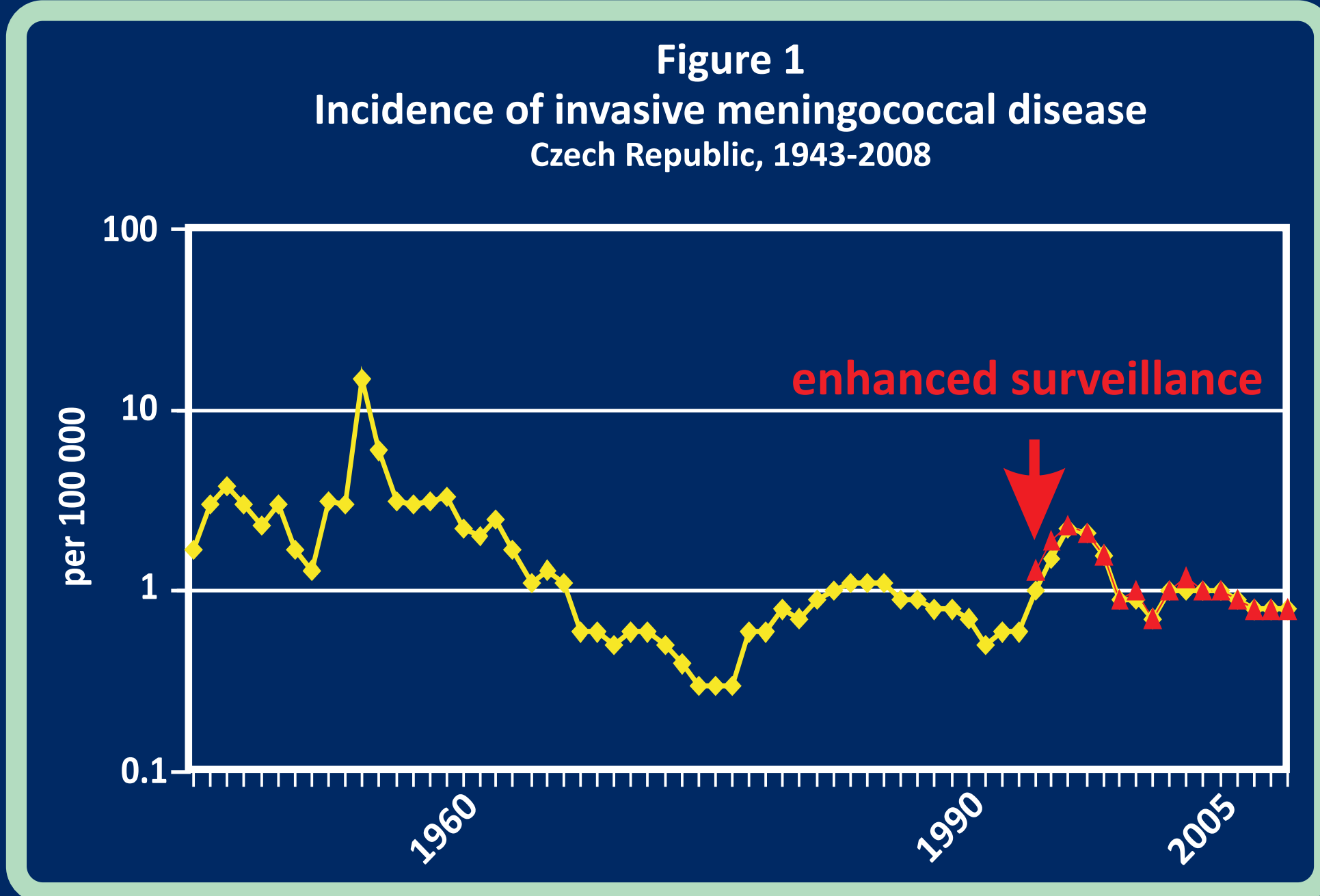
# EPIDEMIOLOGICAL SITUATION OF INVASIVE MENINGOCOCCAL DISEASE AND VACCINATION STRATEGY IN THE CZECH REPUBLIC

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## BACKGROUND

Nation-wide enhanced surveillance of invasive meningococcal disease was implemented by the National Reference Laboratory for Meningococcal Infections (NRL) in 1993.

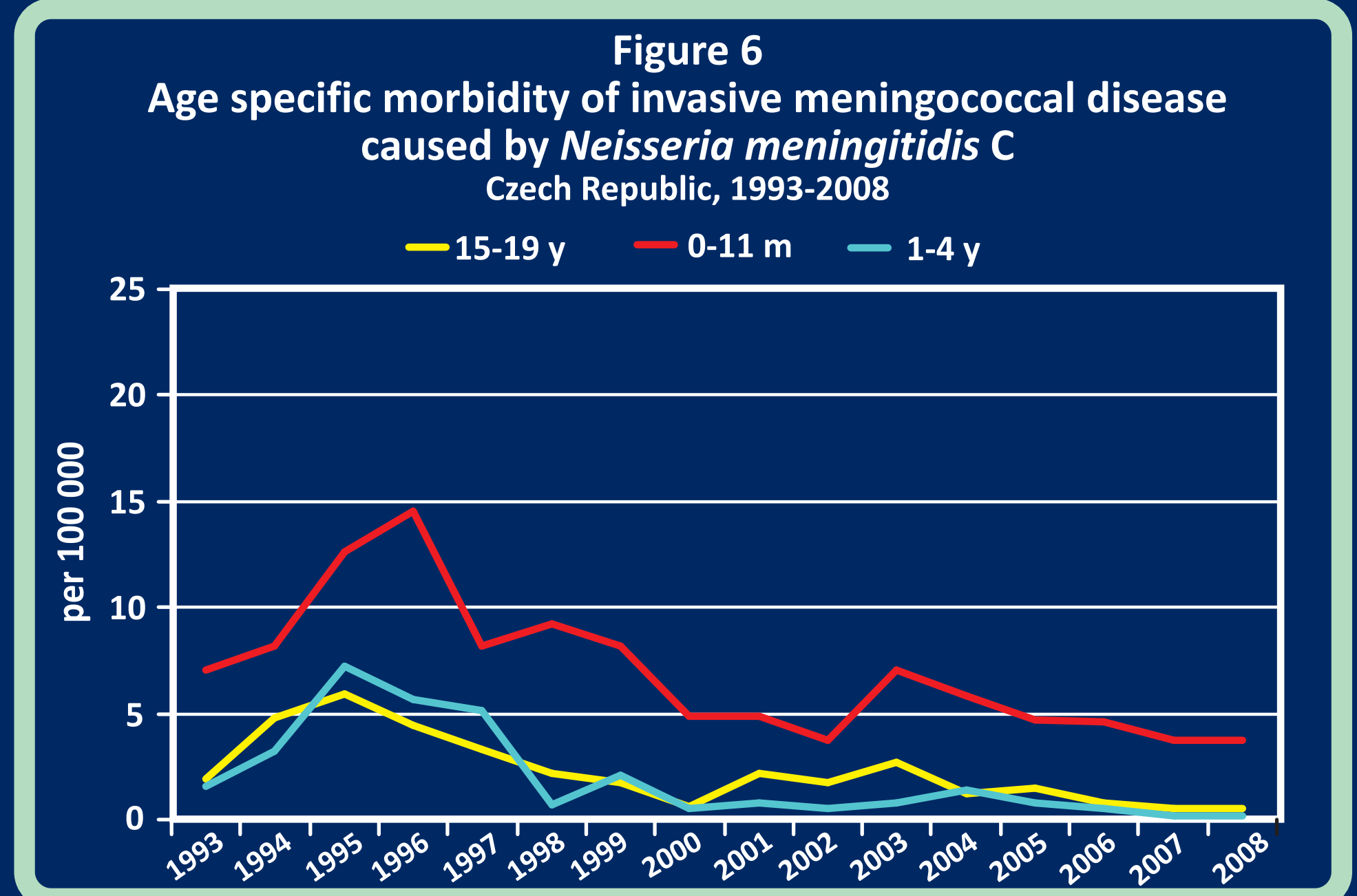
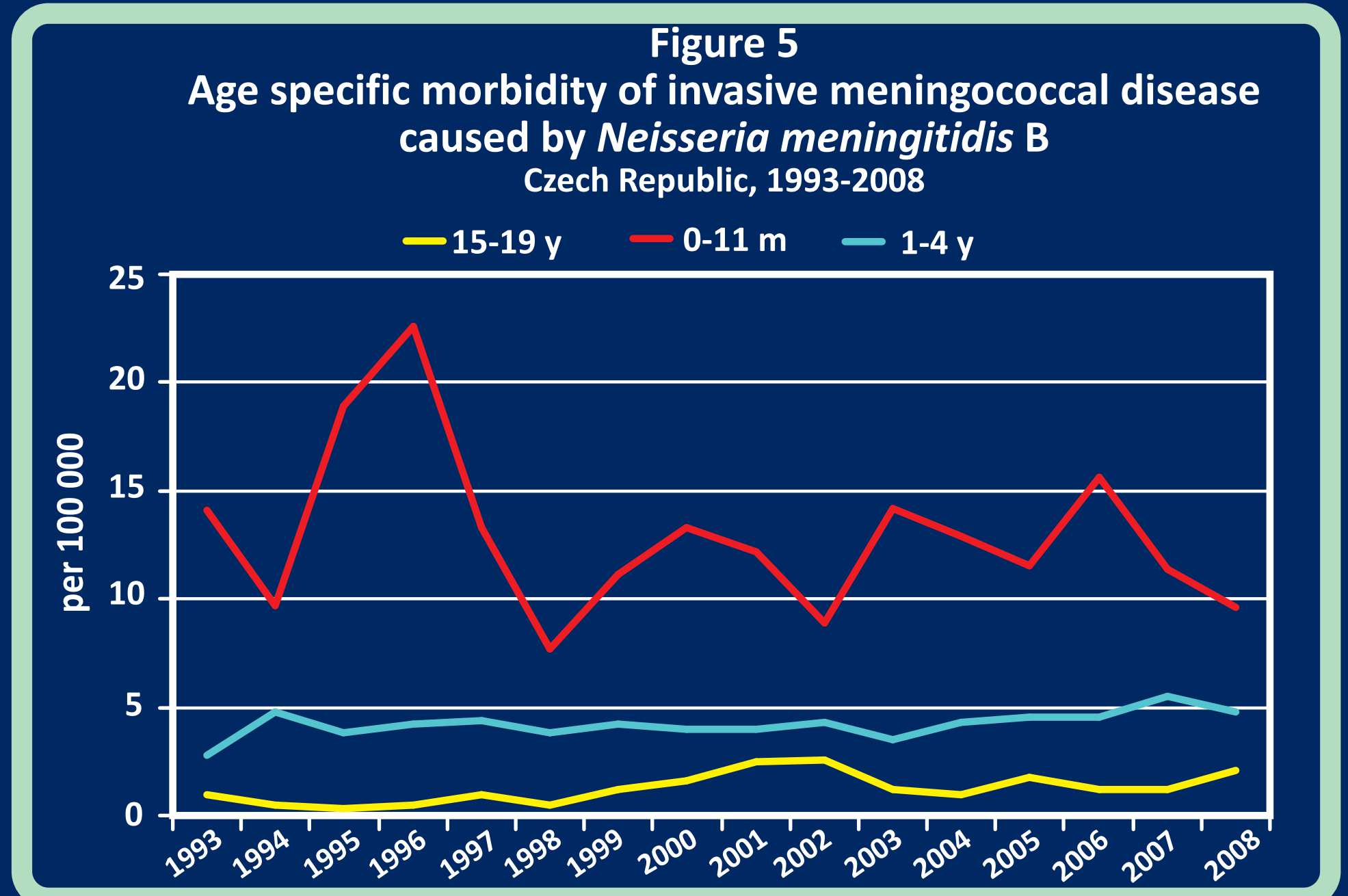
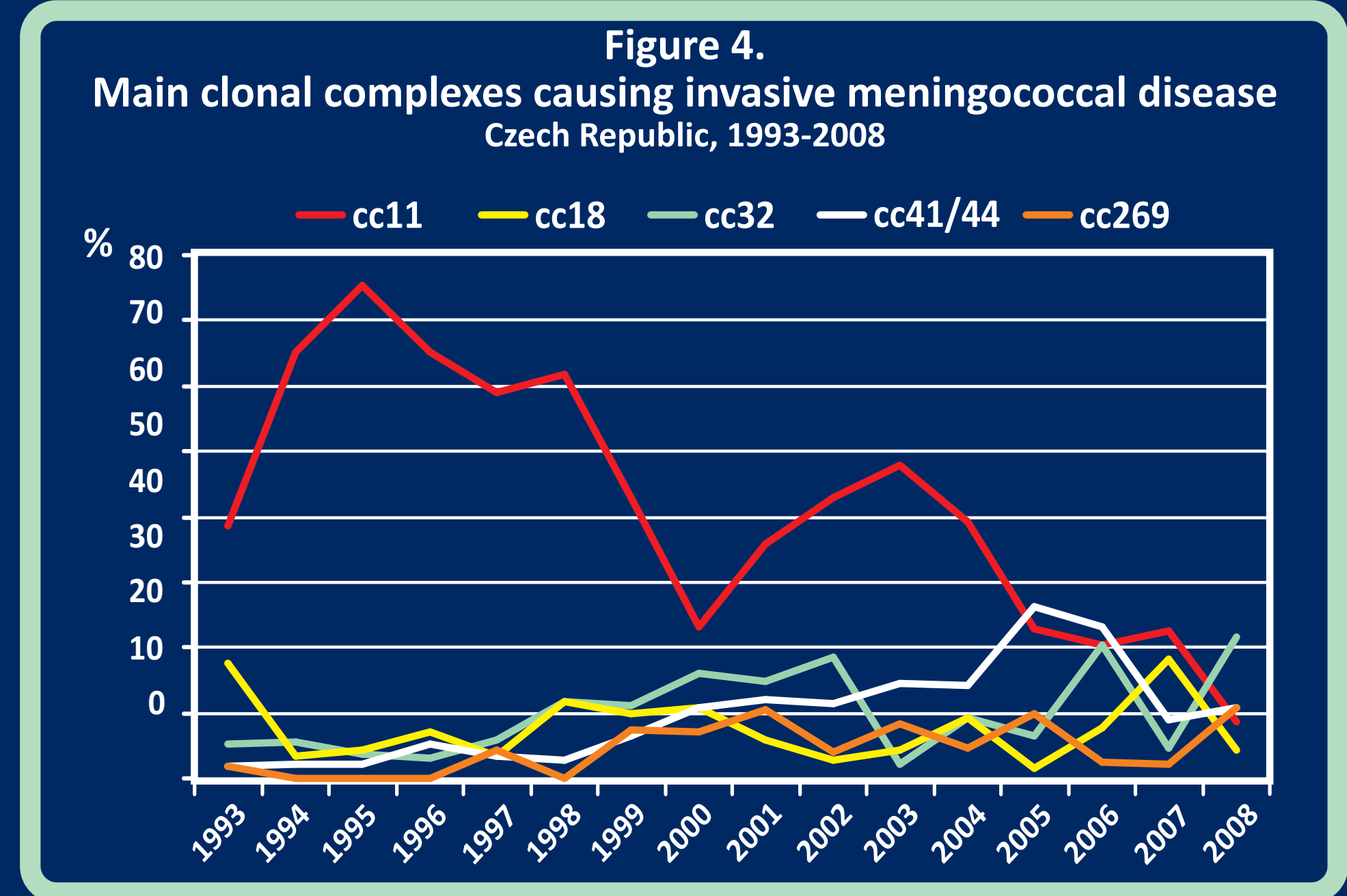


## METHODS

The case definition is consistent with the ECDC guidelines. Notification is compulsory and *Neisseria meningitidis* isolates from IMD cases are referred to the NRL to be characterized by serotyping, *PorA* and *FetA* sequencing (<http://neisseria.org/nm/typing/>) and multilocus sequence typing (MLST) (<http://pubmlst.org/neisseria/>).

## RESULTS

Despite the stable trend in IMD incidence (0.8/100 000) since 2005 – **Figure 1**, the case fatality rate was high (11.8 %) in 2007 and decreased in 2008 (6.9 %) – **Figure 2**. The disease was caused mainly by serogroup B meningococci, followed by serogroup C since 2003 – **Figure 3**. The following clonal complexes were most frequently associated with IMD: cc11, cc18, cc41/44 and cc32. Since 2003, cc11 sharply decreased – **Figure 4**. The highest age-specific morbidity rate was observed in the lowest age group 0-11 months and was associated with high prevalence of serogroup B – **Figure 5**. The case fatality rate was the highest in infants under 1 year of age and for IMD caused by serogroup Y. The incidence of IMD caused by serogroup C is currently low – **Figure 6** and there is no indication for mass vaccination with MenC conjugate vaccine. MenB vaccine is needed for infants, but the sero/subtype coverage by the currently developed porin-based vaccines is low for Czech meningococcal isolates – **Table 1**. Updated vaccination strategy is summarized on **Table 2** and in conclusions.



**Table 1**  
Coverage of phenotypes by currently developed MenB vaccines (porin-based) 383 N.m. B isolates from IMD, Czech Republic, 1997 – 2007

- B:15:P1.7,16 (Norway): 3.9 %
- B:4:P1.19,15 (Cuba): 0
- B:15:P1.3 (USA – Chile): 0
- 6-valent = B:P1.5-1,2-2; P1.5-2,10; P1.19,15-1; P1.12-1,13; P1.7-2,4; P1.7,16 (Holland): 11.5 %
- B:4:P1.7,4 (NZ): 0
- 9-valent = B:P1.5-1,2-2; P1.5-2,10; P1.19,15-1; P1.12-1,13; P1.7-2,4; P1.7,16; P1.22,14; P1.7-1,1; P1.18-1,3,6 (Holland): 24 %

**Table 2**  
Updated recommendation of vaccination strategy in the Czech Republic

- targeted vaccination of selected risk part of the population = when epidemiologically indicate
- vaccination of contacts in the focus of invasive meningococcal disease is recommended (MenC conj.)
- vaccination of professionals in risk (MenC conj.)
- vaccination of recruits (MenC conj.)
- vaccination of patients with underlying disease
- vaccination of travellers (A, C)
- vaccination on request (MenC conj.) ← children before 14 y
- mass vaccination is not provided

## CONCLUSIONS

- There is no indication for mass vaccination with MenC conjugate vaccine in the Czech Republic.
- MenB vaccine is required.
- Other than porin-based vaccine effective against *N. meningitidis* B needs to be developed.
- Conjugated tetravalent ACYW135 vaccine is required.

### Acknowledgement

Sequence characterization of *Neisseria meningitidis* isolates was partly funded by the FM EEA/Norway Project "Sequence characterization of selected bacterial agents causing serious diseases in the Czech Republic" (Project CZ 0127).