



Surveillance of invasive meningococcal disease and vaccination strategy in the Czech Republic

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Objectives

The aim of this study is to assess the actual epidemiological situation of invasive meningococcal disease (IMD) in the Czech Republic with the purpose of updating the vaccination strategy accordingly.

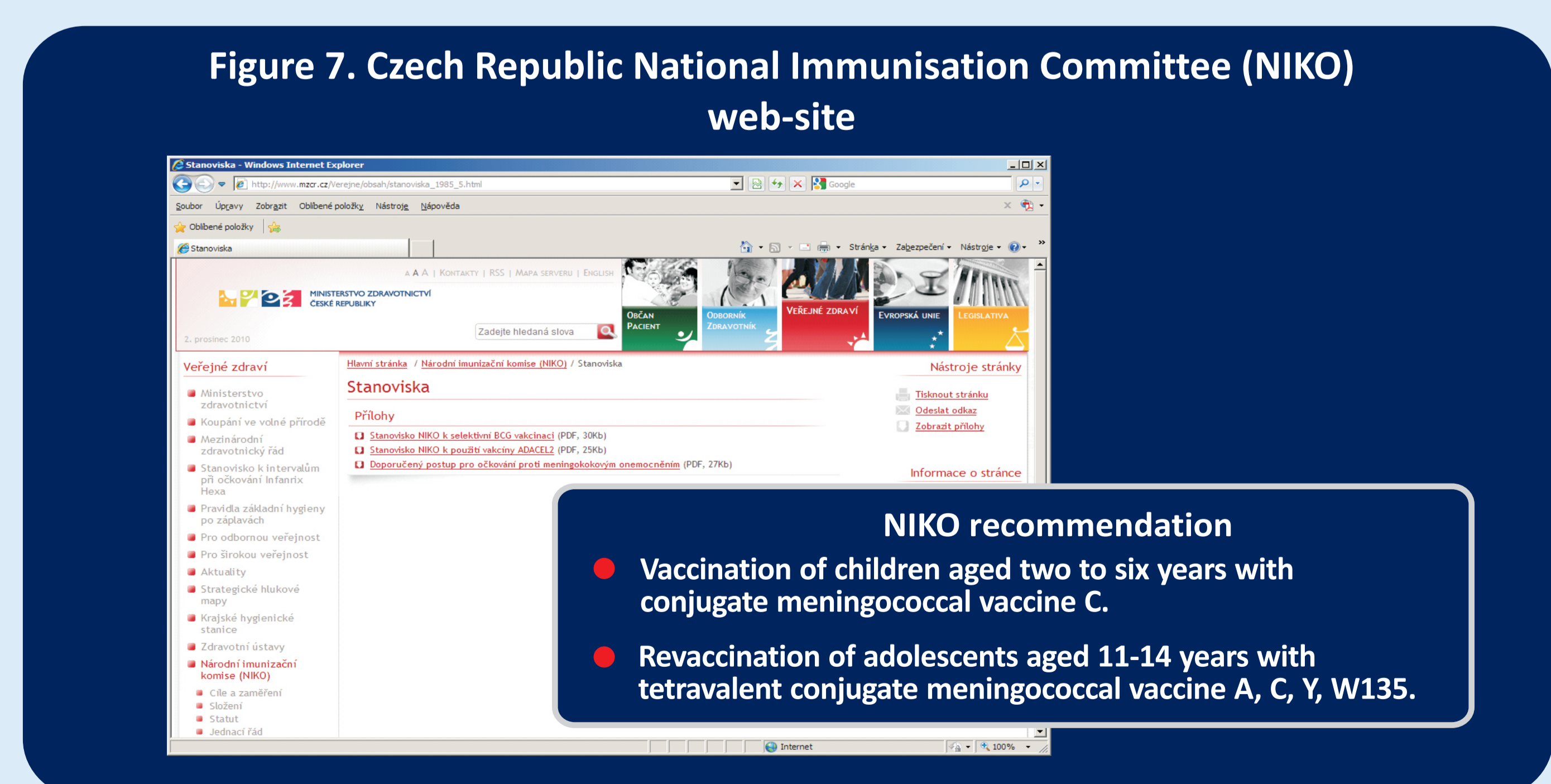
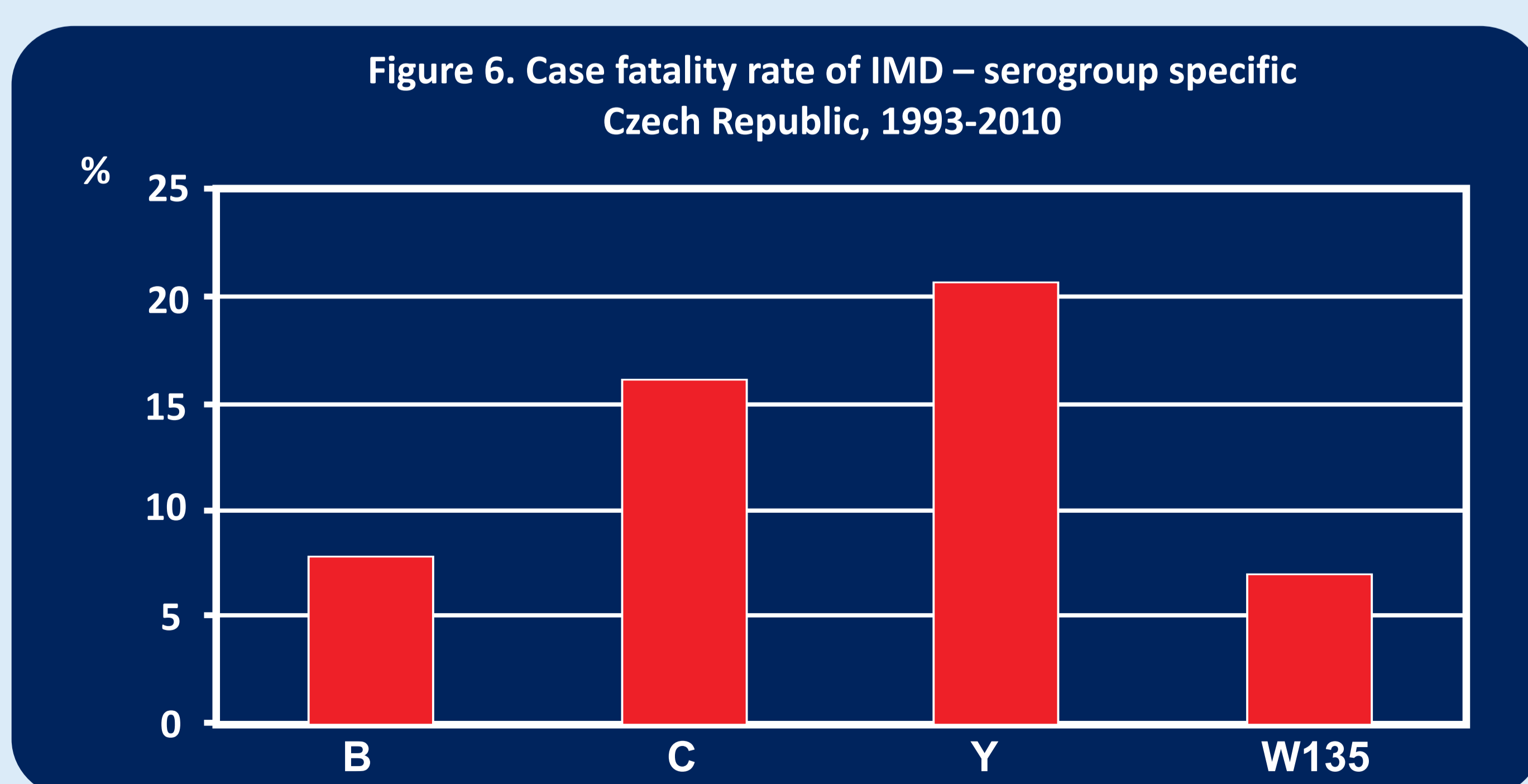
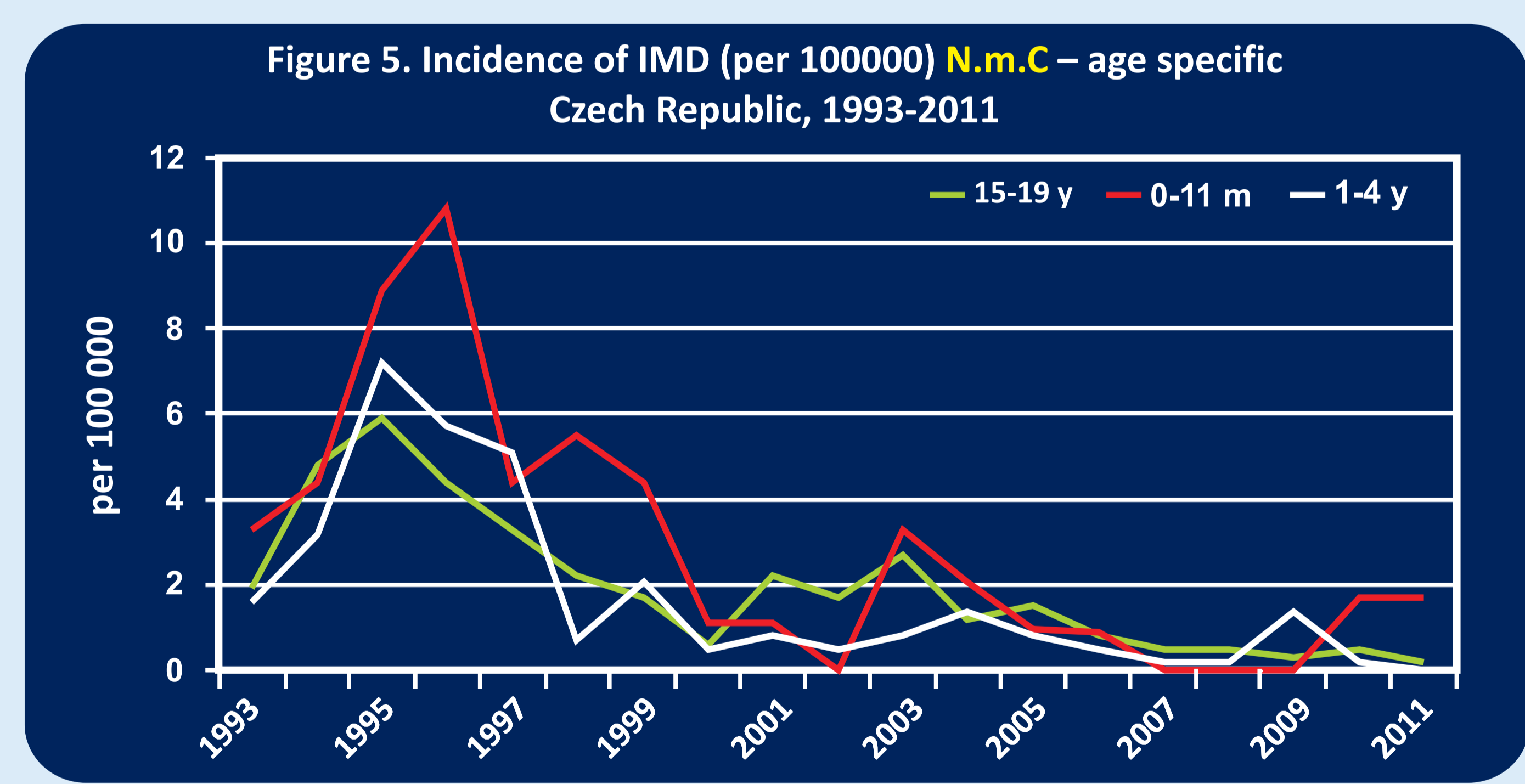
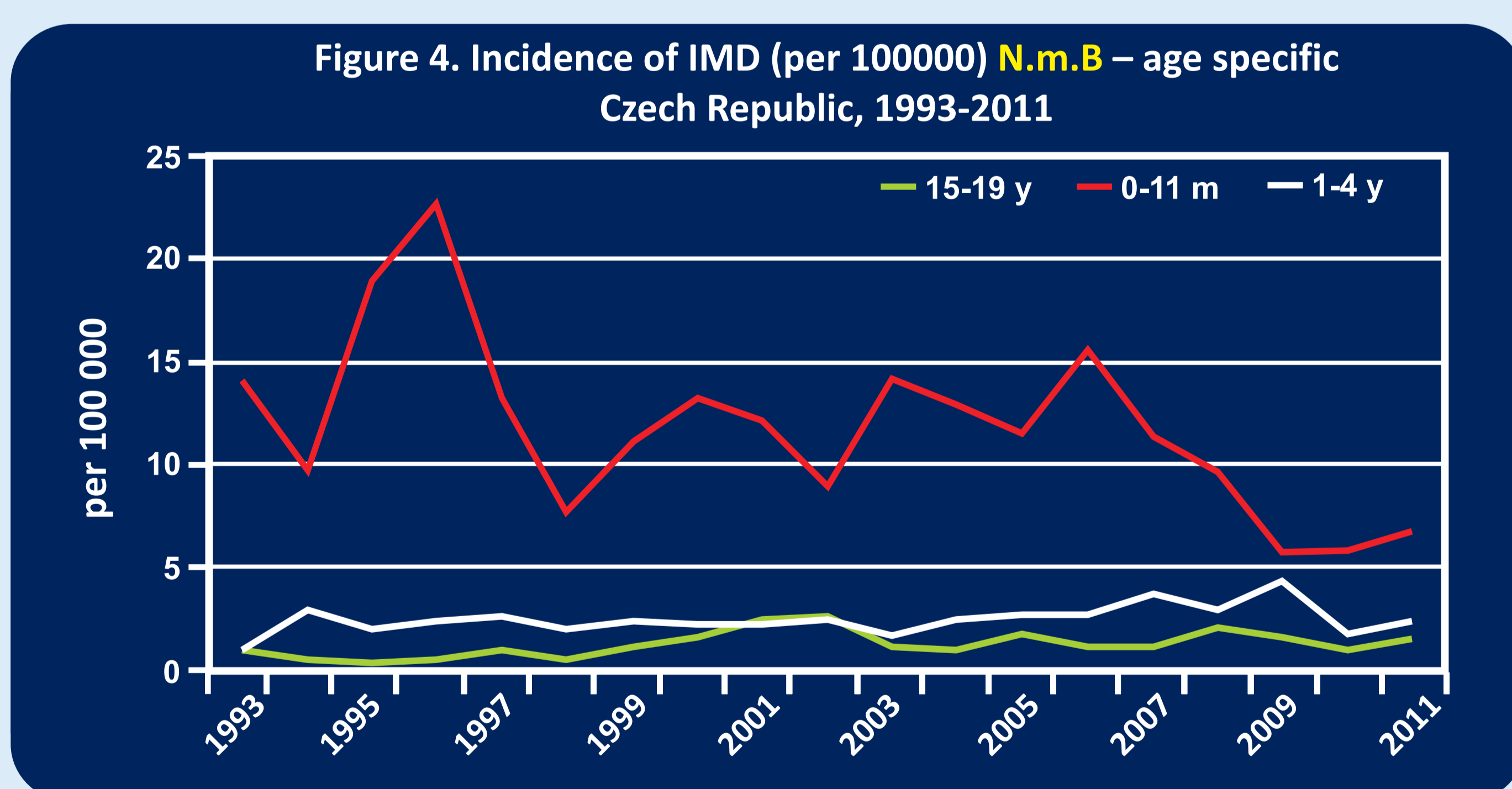
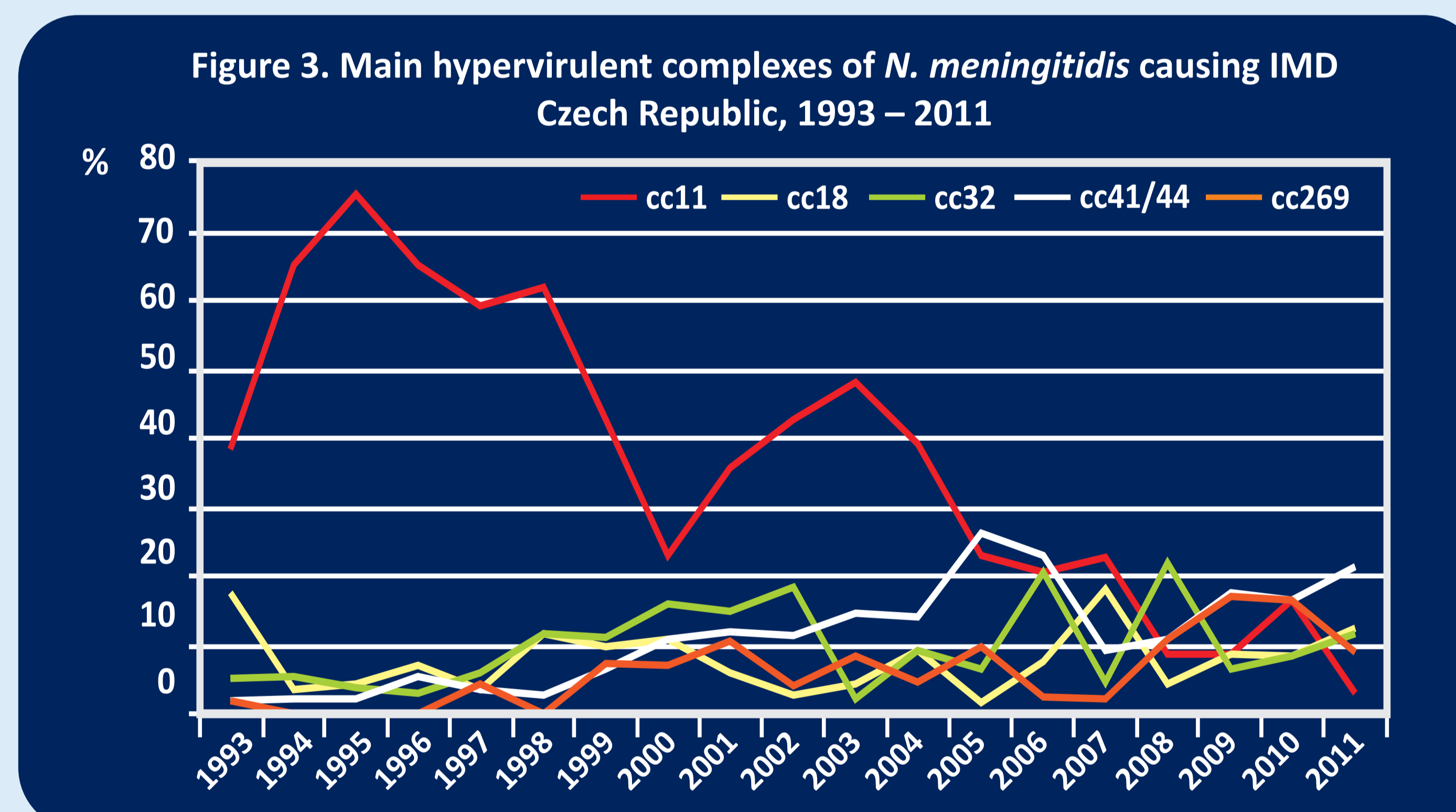
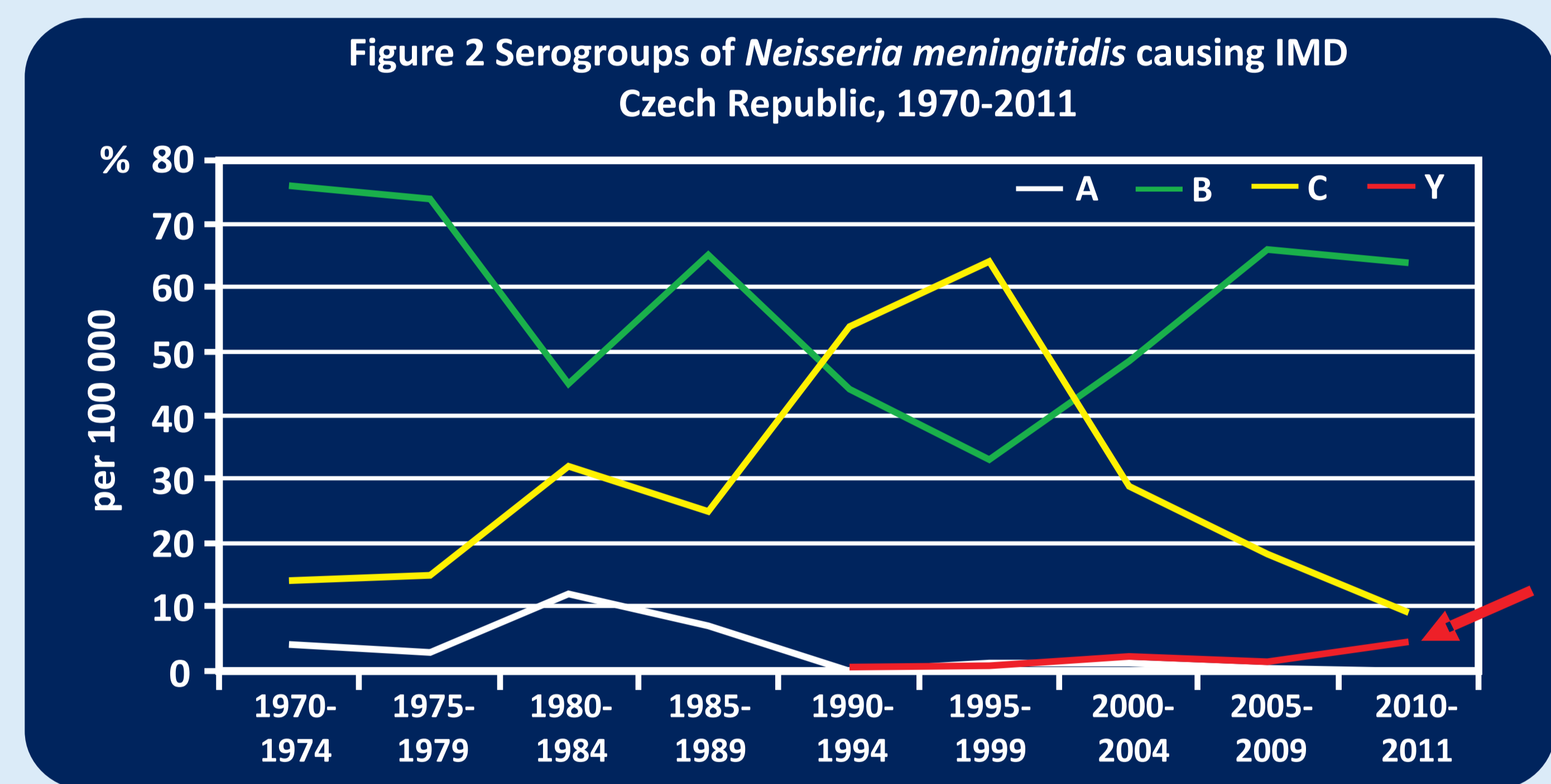
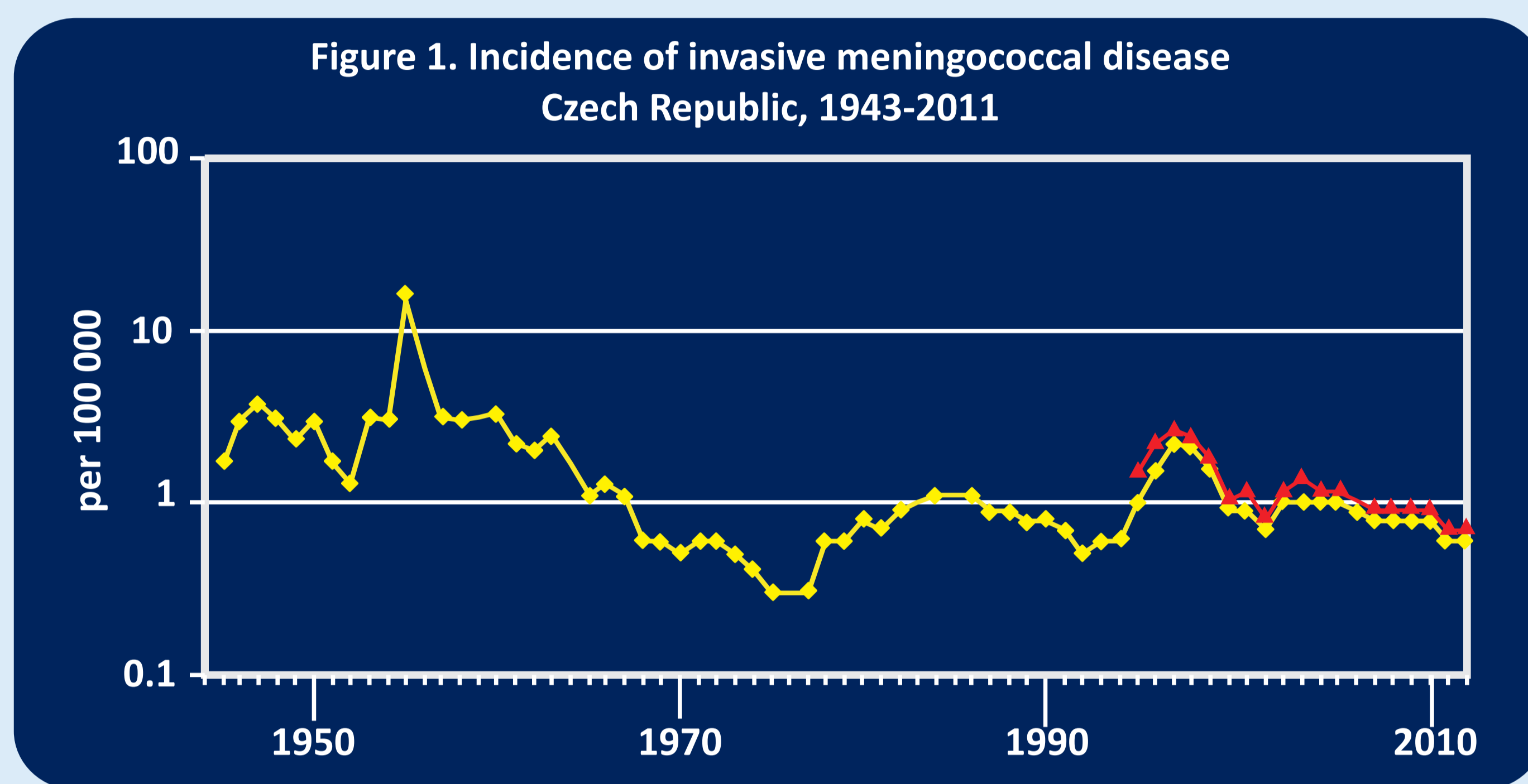
Methods

Nation-wide enhanced surveillance of IMD was implemented in 1993. The case definition is consistent with the European case definition. Culture and PCR are used for confirmation of cases. Notification is compulsory and *Neisseria meningitidis* isolates from IMD cases are referred to the National Reference Laboratory for Meningococcal Infections to be characterized by serogrouping, *PorA* and *FetA* sequencing (<http://neisseria.org/nm/typing/>), and multilocus sequence typing (<http://pubmlst.org/neisseria/>).

Results

The IMD incidence has been stable since 2005 (ranging 0.6-0.9/100 000 annually **Figure 1**, with an average case fatality rate of 8.4%. The disease has been caused mainly by serogroup B meningococci (ranging 56.7-71.3 % annually), followed by serogroups C (decreasing trend, ranging 28.9-5.8 % annually) and Y (increasing trend, ranging 1.1-6.0 % annually) – **Figure 2**. The following clonal complexes have been most frequently associated with IMD: cc11, cc18, cc41/44, cc32 and Cc269 – **Figure 3**. The highest age-specific morbidity rates have been observed in the lowest age groups, i.e. 0-11 months and 1-4 years and have been associated with high

prevalence of serogroup B – **Figure 4**, **Figure 5**. The involvement of serogroup Y in IMD cases has recently increased, causing the highest serogroup-specific case fatality rate – **Figure 6**. New vaccination guidelines for IMD were issued by the Czech National Immunisation Committee in 2010: vaccination of children aged two to six years with conjugate meningococcal vaccine C; revaccination of adolescents aged 11-14 years with tetravalent conjugate meningococcal vaccine A, C, Y, W135 – **Figure 7**. Vaccine effective against *N. meningitidis* B is needed for infants.



Conclusions

- Detailed surveillance of invasive meningococcal disease including molecular epidemiology is essential for updating the vaccination strategy.
- New vaccination guidelines for IMD were issued by the Czech National Immunisation Committee in 2010.