Summary

The aim was to document the trend in pertussis in the Czech Republic (CR) with regard to the infant population under one year of age, which is at highest risk for pertussis. Another point was to answer two questions: 1) whether the recent rise in pertussis cases in the CR is caused by new lineages of *B. pertussis*, against which the available vaccines are not effective, and 2) whether the circulating strains of *B. pertussis* are susceptible to antibiotics of choice.

Data on pertussis cases were derived from the surveillance programme. Two hundred and sixty-five children under one year of age with laboratory confirmed pertussis, diagnosed between 1997 and 2013, were included in the study. *B. pertussis* isolates obtained within the surveillance of pertussis were examined by molecular biological methods – MAST (multiantigen sequence typing), MLVA (multilocus variable-number tandem-repeat analysis), and MLST (multilocus sequence typing). *B. pertussis* strains isolated from patients between 1967 and 2010 were tested for susceptibility to first-line antibiotics for the treatment of pertussis.

The analysis of the epidemiological situation confirmed an upward trend in pertussis in the CR since the 1990s in all age categories, including children under one year of age. Nearly 77 % of children acquired pertussis during the first four months of life before receiving the vaccine; 79 % of children with pertussis were not even recipients of a single dose of pertussis vaccine.

Molecular biological methods revealed new clones of *B. pertussis* in the CR, that emerged under vaccine selection pressure, with properties enabling vaccine escape.

No strain of *B. pertussis* from the collection of Czech isolates required a higher concentration of erythromycin, clarithromycin, azithromycin, ciprofloxacin, or co-trimoxazole for inhibition.

To improve the monitoring of the situation, enhanced surveillance of children under one year of age with confirmed pertussis has been implemented in cooperation with the Ministry of Health and regional epidemiologists since 1 January 2015.

The proposal of the recommendation for pertussis vaccination in pregnancy was submitted to the Ministry of Health of CR.