Vaccination coverage, incidence rate and laboratory testing for pertussis in Slovenia

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BACKGROUND

In Slovenia, the whole-cell pertussis vaccine was introduced in 1959 and replaced by acellular vaccine in 1999.

Vaccination schedule includes three doses of combined (currently pentavalent) vaccine in the first year of life and one booster dose in the second year. The second booster dose was in use for 4-year-olds from 1970–1990, and reintroduced in 2009 for 8-year-olds after a steep increase in incidence rate in 2006–2007 [1].

METHODS

We reviewed the national epidemiological reports published by National Institute of Public Health on pertussis incidence rate and vaccination coverage in Slovenia (available on: www.nijz.si).

Additionally, the number and positivity rate of pertussis PCR tests performed from 2005 to present were assessed from internal records of the Institute of Microbiology and Immunology (IMI), Ljubljana, Slovenia.

RESULTS

National vaccination coverage slowly but steadily decreased in the last 10 years from 96.9% in 2008 to 93.4% in 2018. The pertussis incidence rate varied periodically with peaks observed every 2–4 years (highest incidence rates: 35.4/100,000 in 2007 and 29.8/100,000 in 2010) (Fig. 1).

Just before the introduction of the second booster dose in 8-year-olds, the highest incidence rate was observed at the age 9-10, whereas after 2009 this peak has been shifting towards older age, from 11-year-olds in 2011 to 14-year-olds in 2015.

From 2005 to present, 2,868 pertussis PCR tests were performed at IMI and 636 (22.2%) of them were positive, which represents approximately 15% of all reported and 20% of laboratory confirmed pertussis cases in the country during this period. Annual positivity rate ranged from 10.0% to 34.6% and roughly reflected periodical peaks with higher incidence rates. The highest number of positive PCR test results was observed in the age group 11–15 (Fig. 2).

CONCLUSIONS

The periodic variations in incidence rate of pertussis in Slovenia were not associated with primary vaccination coverage. The gradual shift in age group with the highest incidence rates could potentially be explained by the change of the vaccine type and introduction of a second booster dose in 8-year-olds. Laboratory diagnostics has been mainly performed by PCR since 2005. At IMI, the average annual pertussis PCR positivity rate is approximately 20%.

REFERENCES