I-1. Epidemiology

ECDS case definition for pertussis

ECDC defines pertussis as a cough lasting at least 2 weeks plus a) at least 1 of the following 3 symptoms: paroxysms of coughing; inspiratory "whooping", or post-tussive vomiting; or b) a physician diagnosis of pertussis; or c) apnoeic episodes in infants. Laboratory criteria include at least 1 of the following 3 criteria: isolation of Bordetella pertussis from a clinical specimen; detection of Bordetella pertussis nucleic acid in a clinical specimen; or Bordetella pertussis specific antibody response. Cases are then stratified into “possible” (=clinical criteria fulfilled), “probable” (=clinical criteria fulfilled plus an epidemiological link) or “confirmed” pertussis (=clinical plus laboratory criteria fulfilled).

Surveillance systems in place in various European countries

Unfortunately, surveillance of pertussis in Europe is not harmonized. A review of systems in place performed by an Eastern and Central European Expert Group recently revealed great variability in:

1. case definitions used,
2. reporting systems used
3. methods of laboratory confirmation applied.

In routine practice, surveillance of pertussis is based on passive reporting and comprises both ambulatory and hospitalised cases. Whereas passive reporting is biased towards detection of severe cases, active surveillance can discover cases of any severity and has consistently shown that the yearly incidence of pertussis (defined as cough of 2 weeks duration or longer shown to be caused by B. pertussis infection) on average is in the range of 500 per 100’000 without great variability between different countries.

Description of reported cases by age and time trend

- **ambulatory setting**

Little is known about the occurrence of pertussis in the ambulatory setting beyond limited data from regional, temporary surveillance. Therefore, the true burden of pertussis in the population is largely unknown. Based on ECDC 2016 findings, 3699 (10.5%) of reported 34950 cases with known hospitalization status were
hospitalized. This is a much higher proportion than one would expect as beyond infancy hardly any hospitalizations due to pertussis occur.

- **Hospitalized cases**

  ECDC regularly publishes [epidemiological data on pertussis](https://ecdc.europa.eu/en/disease-topics/pertussis). According to their latest report covering the year 2016, 48446 cases of pertussis were reported in 30 EU/EEA countries. Age-specific rates were highest in infants below one year of age, followed by 10–14-year-olds and 1–4-year-olds (Figure 1).

**Figure 1**: *Rate of reported pertussis cases per 100’000 population by age and gender, EU/EEA, 2016*

![Chart showing rate of reported pertussis cases per 100’000 population by age and gender, EU/EEA, 2016](chart.png)

One should note that there are no uniform time trends with regards to pertussis cases in various European countries and each individual country appears to have its own specificities.
Topic conclusions

Pertussis case definitions are prepared by ECDC. Unfortunately, surveillance of pertussis in Europe is not harmonized. ECDC regularly publishes [epidemiological data on pertussis](#), however data on pertussis in the ambulatory setting is insufficient.