Reviewer’s report

Title: The Epidemiology of Pertussis in Germany: Past and Present

Version: 2 Date: 30 November 2008

Reviewer: Alberto E Tozzi

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This manuscript attempts to interpret the variable epidemiology of pertussis according to different circumstances occurred in different areas of Germany. Although the scope of the paper is challenging, several interesting points are brought up by the authors to explain different patterns. However the resulting paper seems complex and difficult to follow. Some modifications may be useful to make the manuscript more clear even for the non pertussis specialist reader.

- Major Compulsory Revisions

1. In the introduction Authors may better introduce the main objective of the study anticipating that the epidemiology of disease is the results of several different components including also immunization coverage in the past and recent years, immunization schedule (booster dose at preschool age), type of vaccine in use, and incidence by age group;

2. The objective of the study seems only descriptive according to the statement in the introduction. The Authors may better specify that the study aims to compare the epidemiology of pertussis in two areas of Germany to better understand determinants of epidemiologic pattern;

3. Although the study of determinants of epidemiology of pertussis is a very hard task, Authors may consider to touch and to better explain the role of other factors which are just quoted and may be expanded. A) Circulation of pertussis may be influenced by the number of susceptible individuals in the general population. Since immunity from the natural disease is longer, populations exposed to high incidence may benefit of a longer protection compared to those protected by immunization. This effect is often visible as a cohort effect and, in populations which recently achieved high vaccination coverage, delays the increase in incidence among teenagers and infants; B) The issue of duration of protection by type of vaccine should be expanded and more information on the type of acellular vaccines used in different areas should be given, in particular regarding the number of components; C) When interpreting incidence data by age group one should take into account that older age and immunization cause a less specific clinical presentation leading to an underestimation of the real number of cases in these categories; D) It might be that contact patterns between individuals may explain some of the observed differences. This issue is often underestimated (see Mossong J, Hens N, Jit M, Beutels P, Auranen K, Nikolajczyk R, Massari M, Salmaso S, Tomba GS, Wallinga J, Heijne J,

4. Since differences between areas of Germany are many, the authors may consider to add a table with a synthesis of the most important differences in recommendations, schedules, type of vaccine, and background incidence by geographic area;

5. The Authors fail to mention any seroepidemiology data which may be useful to support their conclusions and to reconcile their findings. This topic merits discussion (see Pebody RG, Gay NJ, Giammanco A, Baron S, Schellekens J, Tischer A, Olander RM, Andrews NJ, Edmunds WJ, Lecoeur H, Lévy-Bruhl D, Maple PA, de Melker H, Nardone A, Rota MC, Salmaso S, Conyn-van Spaendonck MA, Swidsinski S, Miller E. The seroepidemiology of Bordetella pertussis infection in Western Europe. Epidemiol Infect. 2005;133:159-71.

- Minor Essential Revisions

6. The Authors should recall in the introduction that, beside all other factors, the immunization status plays a central role in clinical presentation;

7. Variation in immunization schedules and in regulations for notification should be shown in a table (see comment 4);

8. The Authors should clarify which criteria are used to qualify patients for lab diagnosis (i.e. a formal clinical case definition, or a prescription by the physician);

9. Please provide more details on the IgA assay for pertussis and on which cut-off has been considered for positivity. In general modifications in surveillance and diagnostic methods should be better described;

10. The authors should mention the use of sentinel surveillance in the methods section.

- Discretionary Revisions

11. The Authors should clarify if immunization registries or vendors’ data are available to calculate immunization coverage;

12. Please also clarify if hospitalization and mortality data considered regard principal diagnosis/cause of death only or also considers secondary diagnoses/causes.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a
statistician.

**Declaration of competing interests:**

I declare that I have no competing interests