Author's response to reviews

Title: Hospital-based, prospective, multicentre surveillance to determine the incidence of intussusception in children aged < 15 years in Germany

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Author's response to reviews: see over
Cover letter

We would like to thank the reviewers for the very constructive comments. We tried to incorporate all of them into the manuscript.

Please note also that we revised the author list slightly as we changed the last author. This is due to a reevaluation of the contributions of the supervisors Prof. Dr. Trampisch and Dr. Holland-Letz. Both managed and controlled the theoretical realization of this study from the beginning but during the recent months, most of the responsibility shifted over to Dr. Holland-Letz and it would be unfair not to recognize him for his devotion. As a consequence, Prof. Dr. Trampisch proposed to change the last author correspondingly. We are sincerely sorry for this last minute change.

Below you can find our specific responses towards the reviewers’ remarks.

Reviewer 1: MAHOMED PATEL

Remarks

(5) Are the discussion and conclusions well balanced and adequately supported by the data?
   - The epidemiological aspects are described adequately. Minor essential revision:
     (a) An alternative method to assess under-reporting cited by the authors is the capture-recapture technique. It would be helpful to describe the relative merits of the two techniques.

(6) Are limitations of the work clearly stated?
   - Yes. Minor essential revision: It would be useful if the authors would
     (a) comment on the validity of the ICD codes for identifying all cases with IS at the hospitals (e.g. the quality assurance methods used to assess validity of the codes in identifying all cases with IS); and
     (b) provide some indicators on the quality of the ESPED data (e.g. peer-reviewed publications of the data or evidence of the quality and usefulness of the system).

(9) Is the writing acceptable?
   a. It is acceptable, but some sentences need further editing to simplify the message e.g. second sentence under the ‘Background’ of the Abstract.

Response

(5) In theory, capture recapture is a valid approach. However, it requires two truly independent samples from the population to avoid bias, which is next to impossible in practice (it would require a central registry of the entire population under risk). In fact,
independence was not achieved in the Swiss trial. Some additional notes on the two different approaches were added to the discussion part of the article:

“It is worth to notice that the method used in [8] does not reflect a truly independent capture-recapture approach in the classical sense as selections on the re-evaluated hospitals and thus restrictions on the population under risk were made. A truly independent capture-recapture approach would need to assess the whole population under risk which was not the case. This may result in a bias of the estimated reporting quote. Another rather strict assumption was that the estimated reporting quote was modeled to be constant and equal for all participating hospitals in order to correct the incidence estimate for IS. This seems unrealistic.”

(6) We tried to access both points:

a. ICD-10 codes K56.1 and K38.8 as well as OPS codes 8.122.x were used to identify cases. These codes are also used for accounting in the German health insurance system. A retrospective assessment based on the medical record was conducted for patients fulfilling the Brighton Collaboration Group Criteria for IS diagnosis (level 1). Only 5 cases (2%) reported to ESPED could not be definitely matched to cases obtained by applying the above mentioned ICD-10 and OPS code. Some background information about the quality of the ESPED data was added in the section “ESPED data collection”.

“The ESPED system has just recently been reviewed and was found to have generated more than 100 publications between January 1992 and August 2008 among them 7 publications with an impact factor above 10. Generally, more than 90% of all German pediatric hospitals participated in surveillance studies if the principal investigator was supported by staff comprising at least two persons or if the mailing of the questionnaire was handled by the ESPED office - as in this study [11]. “

(9) The article has been edited to simplify the message. The corresponding sentence in the abstract has been reworded.

**Reviewer 2: TRABELSI ABDELHALIM**

**Remarks**

(1) Only minor revisions recommended
Response

(1) Proposed revisions were taken care of.

Reviewer 3: YI-HAU CHEN

Remarks

(1) It would be helpful to show a figure for the estimated distribution of underreporting of IS cases \( V(p) \).

(2) I cannot understand the statement on the middle of page 12: "For the age group below two years of age and below one year of age this is the case for 10 and 11 hospitals, respectively." Please clarify.

Response

(1) An additional Figure has been added to visualize the distribution \( V(p) \) of the reporting quota \( p \), please cf. Figure 2 in the re-submitted article.

(2) The corresponding section has been reworded to clarify its meaning.

“For the age group below 15 years of age, 9 of the 31 hospitals neither reported any IS case to ESPED nor revealed any case during the re-evaluation; they did therefore not contribute to the empirical distribution of the reporting quota. This is the case for 10 hospitals for the age group below two years of age and for 11 hospitals for the age group below one year of age.”