Author's response to reviews

Title: Hospitalization for Pertussis in the United States: Profiles and Case Costs by Age.

Authors:

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Author's response to reviews: see over
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Editorial Team
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Via email: editorial@biomedcentral.com

Re: Hospitalization for Pertussis in the United States: Profiles and Case Costs by Age.
MS ID: 9775132635823488

Dear Editor:

As requested, we are resubmitting the above referenced manuscript for publication in the BMC Journal. We have carefully considered the reviewers’ comments and provide a response on the attached pages. Revisions have been made to the text.

Thank you for your consideration of our revised manuscript. Please feel free to contact me if you have any questions or require any further information.

Sincerely,

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Re: MS. #9775132635823488, Hospitalization for Pertussis in the United States: Profiles and Case Costs by Age

Authors’ Response to Referee’s Comments:

Referee #1:
The authors wish to thank the referee for his review and recommendation to accept without revision.

Referee # 2:
The authors wish to thank the referee for her review and thoughtful comments. We have addressed her questions and comments below.

Major Compulsory Revisions:

Authors’ Response to Comment #1:
The cost of a hospital stay was determined by direct data analysis of the data from the four states cited. Only charges are reported in these databases; therefore, a cost-to-charge ratio was applied.

Costs related to physician services provided during the hospital stay are not provided in the data; therefore it was necessary to employ cost modeling to estimate these costs by creating a likely resource use profile of physician services using information provided in data elements from the discharge databases for the same pertussis cases analyzed to determine the cost of the hospital stay.

Text pertaining to these points has been added in the Methods section to make the approach taken clearer for the reader.

Authors’ Response to Comment #2:
This paper reports costs based on an analysis of the costs for care covered by all payers for the cases used in the analysis. Costs were not analyzed for any one payer and the proportion of the total cost by payer was neither analyzed nor reported. The reporting of payer information in the Results section is provided to show the proportion of cases covered by payer type. We have used standard text to report this and believe that the language used “responsible payer for xx% of cases” does not require revision.
Authors’ Response to Comment #3:

Detailed utilization data by unit of utilization are not reported in all of the databases used in the analysis. Only one state database has useable cost information that could be used to identify portion of hospital stay attributable to accommodation versus ancillary services. We do not think we should report a breakdown of this nature based on the data from only one state when we have established the cost per stay based on data from four states. The additional text added to the Methods section should make the source of costs for hospital care and physician care and the adjustment made clear to the reader.

Authors’ Response to Comment #4:

We agree with the referee that the two studies by Pichicero are examples of very good studies examining the economic consequences of Pertussis. We did not include a comparison to those studies in our paper as our analysis had a narrower focus and is limited to reporting hospital costs; whereas, those studies examined the cost of hospital care as just one component of their much broader analysis. A direct comparison of the hospital costs or cases used in those studies with our analysis would not be appropriate as the costs reported pre-date ours, cases from only one county in New York were examined and the source of hospital cost data was billing data from hospitals within that one county. We have added text to the discussion; however, alerting the reader to those studies and emphasizing that the costs of pertussis encompasses more than just the cost of hospital care.

Authors’ Response to Comment #5:

We have removed the phrase “in the United States” from the title.
Minor Essential Revisions:

Abstract

Authors’ Response to Comment #1:

Given the word limitation of the abstract, it is not possible to describe more fully the sources used. We have added the names of the states used and the additional text added to the Methods section should make the sources clear to the reader.

Authors’ Response to comment #2:

We have reviewed the inpatient case fatality rates as reported and agree that to report such a rate by age group is misleading given the small number of cases in the adolescent/adult group. We have revised the abstract to reflect the overall low case fatality rate for all cases and have only left the text in the results section regarding the one death that occurred in the older group when reporting results for the adolescent/adult group. Table 1 has been edited to reflect this change as well.

Background

Authors’ Response to comments #1 and 2:

Based on the referee’s comment, we have reviewed the incidence data reported by the CDC and agree with the points made by the referee. We have revised the text in this section to reflect the correction.

Authors’ Response to comments #3:

The range reported was based on published information from the papers cited.

Methods

Authors’ Response to comments #1:
At the time of the analysis, because we needed to use data from multiple states and extract data from several years, these data were the latest available that met the necessary requirements.

Authors’ Response to comments #2 and 3:

We did examine all secondary diagnosis codes for all cases. Encephalopathy was coded in < 1% for all cases. It was coded in 0.2% of infant cases. We have so noted this in the text. No codes were found for any of the analyzed cases noting pulmonary hypertension.

Authors’ Response to comment #4:

Additional text has been added to the Methods section explaining the cost-to-charge ratio used.

Authors’ Response to comment #5:

The four states were selected based on availability of multi-year data for analysis, quality of the data, our extensive experience working with those databases and that they represent different areas of the country.

Authors’ Response to comment #6:

All acute care hospitals within each of the states are required to report discharge data to their respective regulatory authority. Data are reported by the hospitals on a quarterly basis and the data are compiled by the reporting agency on an annual basis. Each state has requirements for accepting the data from hospital based on quality checks. For any given quarter, the data from a hospital might fail a quality check and the hospital would have to resubmit. Each state has parameters for releasing the data and while some data may be missing from a few hospitals in interim data releases, the annual data are not usually released by the regulating authority if a substantial number of hospitals have not provided data. Based on documentation accompanying the data, we do not know the number of hospitals within Florida and Washington not reporting data, but we only used
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the annual release and thus believe we have examined data from most of the hospitals within those states. California and Massachusetts declared that all acute hospitals reported their data.

Authors’ Response to comment #7:

The same data sources were used for all age groups. We have added text in the Methods section to make that point clearer.

Discussion

Authors’ Response to comment #1:

According to published information from the CDC, reports based on data from 1997-2000, reveal that pneumonia occurred in 5.2% of all reported pertussis cases and in 11.8% of infants < 6 months. Our findings report an overall pneumonia rate of 6% for all ages and 12% for infants in our analysis. For seizures/convulsions, we report a 1% rate for all cases and <1% for infants and the CDC reports 0.8% for all cases and 1.4% for infants. For encephalopathy, the CDC reports a rate of 0.1% for all cases and 0.2% for infants. We found in our analysis and are now reporting in the revised manuscript, a rate for all cases of 0.3% and 0.2% among infants. The results of our analysis and the rates reported by the CDC for all cases and infants appear comparable. Unfortunately, rates for other age groups were reported by the CDC based on age ranges not comparable to the ones we used in our analysis so a direct comparison can not be made. It does appear however that our rates of 15% and 11% for pneumonia reported among the cases for children (age 1-11 years) and adolescent/adult cases in our analysis are higher than were noted by the CDC for cases over age one year. There could be a number of reasons for the difference. This may be due to the fact that we are examining only hospitalized case whereas the CDC is reporting on all reported cases, or the population in our analysis could be older, or have more comorbidities. Or, it could be a coding error. We can only speculate as to the reason. We have added text referencing the CDC rates and making note of this in the Discussion section.
Authors’ Response to comment #2:

We agree that this information would be useful, but it has not been done and is beyond the scope of this analysis.

Authors’ Response to comment #3:

Text has been added to the Discussion section. We have also amended the text to reflect the very recent approval of a booster vaccine for older children.

Authors’ Response to comment #4:

This section has been revised in the Discussion.

Figure 3.

Authors’ Response to comment #4:

The Y axis label has been corrected to reflect that the figure is reporting % of cases, not number of cases. The total number of cases for each age group has been added.

Referee #3:

The authors wish to thank the referee for his review, his comments and recommendation to accept without revision.

Discretionary revisions:

Authors’ Response to comment #1:

Additional text has been added in the Methods section regarding the cost-to-charge ratio.

Authors’ Response to comment #2:

Please see response to Referee # 2 above regarding age of data used in this analysis.