Reviewer's report

Title: The burden of rotavirus gastroenteritis and nosocomial rotavirus gastroenteritis among children aged <6 years in Japan: A multi-hospital, retrospective, epidemiological survey

Version: 2 Date: 20 October 2012

Reviewer: Julie A Bettinger

Reviewer's report:

Discretionary revisions:
1. The number and proportion of cases with underlying disease should be presented in the results, not the methods section.

2. Typo in the 2nd paragraph of the discussion: study was not done in children <18 years of age.

Minor essential revisions:

2. Please include the approximate percentage of the pediatric population covered by the hospitals participating in the study (i.e. their pediatric catchement).

3. Please clarify whether all cases were included or only those providing consent.

4. There are multiple places where the data are presented both in the text and tables or figures. Please present data either in the text or tables/figures, but not both places. The reader can be referred to the table without a summary of what is included in the table. For example, table 1 include demographic characteristics of the study population rather than describing the median age of cases, which is also shown in the table. Figure 2 is not needed. Either describe the data in the text or figure, but don’t include both. There are other instances of this duplication throughout the manuscript. Please revise.

5. The discussion refers to outbreaks of rotavirus. What is the definition for these outbreaks? How are they determined to be outbreaks? It is well-known that rotavirus exhibits a seasonal pattern with increases in late winter to early spring. Please clarify why this is being referred to as an outbreak.

6. There is evidence from North American studies demonstrating rotavirus occurs in the spring. This is not a new finding. The authors should place this finding in the context of what is known in the literature.

7. The literature review is fairly cursory and would benefit from including some of the major North American studies on this subject especially in sections where the disease burden is discussed.
8. It is not appropriate to compare the burden in developing countries to the results in this study (reference 19). Again, there are many other studies that have examined the burden of both community and hospital acquired rotavirus in developed countries that would be more appropriate to use.

9. Without population based surveillance data, the authors cannot know that the number of hospital acquired cases missed is low. This should be revised as a limitation in the discussion.

Major compulsory revisions:
1. The statistical analyses used in the manuscript are not transparent.
2. It is unclear why the total number of community and hospital acquired cases is not provided in the tables, but rather the percent of total admissions.
3. More details need to be provided on how the risk ratios were calculated. What regression model was used? What logical tests and data validity checks were used and what were the results of these. Given the very small numbers in some of the categories (N=3) multiple regression may not be appropriate, but without additional information this cannot be determined. Because the risk factor data is not adequately presented the arguments in the discussion about these data are not well supported. If these data do not support multivariate regression then the discussion should be modified as well.
4. The mean and median stay for hospital acquired rotavirus should be provided in the results, not just the additional days over community acquired infection. This mean and median length of stay (LOS) for hospital acquired cases can be tested for significant difference against the mean and median for community acquired cases. Furthermore, the calculation for the additional median hospital days due to hospital acquired rotavirus is not appropriate. Using an estimate of days usually spent in hospital determined by doctors based on their professional experience is not an objective measure. If the authors are unable to determine the mean and median LOS for hospital acquired cases this should be stated as a limitation and this portion of the results and discussion should be removed.
5. The finding that the longest mean hospital stay was among children 5-6 months is likely influenced by outliers. The median would be more appropriate in this instance. The sample size for cases in this age group should be provided.
6. All demographic and risk factor variables that were measured should be provided in table 1 for both the community and hospital acquired cases.
7. Greater detail on the laboratory testing patterns and admission criteria at each hospital should be provided. Just over half the defined cases actually had a rotavirus test. Why were the other cases not tested? How is the testing applied at each hospital? If a hospital only had 15 pediatric beds what criteria are used to determine who gets admitted? As we found in our surveillance, testing and admitting patterns can vary widely among hospitals and in order to accurately interpret the data an understanding of these patterns is necessary.
8. The incidence of hospital acquired rotavirus differed significantly each year of the study. The authors should attempt to explain this difference. As well, the
number and proportion of cases attributable to community and HA rotavirus should be provided for each year.

9. The information in the discussion related to costs does not match that from the study referenced. The costs were for a hospital stay of 5.4 days and the authors of the referenced study caution extrapolation. Furthermore, the total number of rotavirus cases Ito et al. determined was 30,000. Regardless of the errors, more rigorous cost estimate studies have already been done in Japan and this current study was not designed to estimate costs therefore

**Level of interest:** An article of limited interest

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare I have not competing interests