Reviewer’s report

Title: Incubation periods of viral gastroenteritis: a systematic review

Version: 3 Date: 29 May 2013

Reviewer: ben lopman

Reviewer’s report:

Major comments
This paper by Lee and colleagues presents a systematic review and pooled-analysis of the incubation periods of key agents of viral gastroenteritis. The paper is clearly written and presented. The motivation for the paper and the need for improved evidence-based estimates of the incubation period are nicely laid out. One of the simpler, but striking conclusions of the paper is to demonstrate the oft-cited estimated of the incubation period are based on judgment or authoritative texts, with little supportive data. My main reservation concerns the data for the pooled analysis. It seems (though it’s not stated here) that the systematic review included search terms like ‘incubation period’. This would severely limit the search to papers where the authors specifically reported on the incubation period, though this is not strictly necessary because papers reporting time of exposure and time of onset would provide valuable data. From looking at the bibliography, it is clear that many papers with those types of data were not included. It may be that the authors considered this approach, but determined it was too non-specific and therefore unwieldy. It could also be argues that the limited data they did find was sufficient to generate robust estimates, though not for all pathogens, and certainly not enough to perform subgroup analysis (e.g. by age).

Please clarify how the data were extracted for the pooled analysis? Did these studies all report individual level data, and those data were abstracted. Following that is a question about the statistical analysis: assuming that it was in fact individual level data that were used, it seems that they were all counted as equally weighted observation, not accounting for the fact that they come from different studies. Why not use a random effect model that allowed for between study variation?

I am actually surprised how few articles were identified. Matthews et al, Epi & Inf 2012 identified ~2400 articles just on norovirus outbreaks from a more limited search just on norovirus using PCR diagnostics in a defined time frame. It is not stated in the methods here if the terms related to incubation period were used (is stated in Lessler 2009), but that may have severely restricted the numbers of papers identified. In addition to the outbreak studies reviewed by Matthews are the challenge (i.e. volunteer) studies, mainly for norovirus. There about ~15 of these that I am aware of only 3 were included in this review.

Minor comments
Introduction

Line 83: The characterization of astrovirus being the second most common cause of AGE in children is outdated. Norovirus is the second most common cause in most places, and perhaps the most common in places with rotavirus vaccine use. See for example Payne et al, NEJM 2013 or Amar Eur J Clin Micro 2007.

Ln 87 + elsewhere: May also be worthwhile to distinguish the human caliciviruses into noro and sapoviruses.

Ln 97: In the absence of laboratory diagnostics, ‘Kaplan’s criteria’ are frequently used to ascribe viral etiology in outbreaks. The incubation period is one key feature of these criteria. Kaplan et al AJPH, 1982

Methods

Ln 153: Why consider breakfast between 0h and 10h; or dinner between 14h and 0h? Would it I am not clear how the individual incubation period was determined using a wide (and variable window of possible exposure. The sentence starting “We report the range of incubation..” I think it meant to clarify this, but I did not follow.

Ln 165: For each disease? Does this mean for each pathogen? [they all cause the same, or similar disease: gastroenteritis]

Ln 166: clarify the meaning of “doubly interval centered observations”

Ln 169: mean each norovirus genogroup – calicivirus includes sapovirus. In general, better to say human caliciviruses (HuCV) as the caliciviuses are a diverse group, mainly affecting animals.

Results

Ln 192, 214, 234, 291: this is background material. Should It be included in the results section? It gives the impression that these citations are from the lit review. In fact, the citations for these sections come from the same textbooks that are criticized for making statement that are not well-grounded in data on the incubation period. I think the authors would find the same of the other characteristics (e.g. frequency of vomiting for specific pathogens), so it may make sense to boil down these clinical description to aspect strictly relevant to estimating incubation and to move them to the introduction.

Ln 251: Again, 15 observations from 3 experimental studies were included, but there are many more. Most are for GI noroviruses.

Discussion

Ln 334: There are relatively few rota and astro outbreaks in healthcare facilities, compared with norovirus, for which there are hundreds, or even thousand per year, just in the US.

May be worth adding a comment on the serial interval, of which the incubation period makes of 1 or the 2 components. While the incubation period may be a biological entity and may not differ greatly between settings, the serial interval may. It is hard to distinguish the two, when the timing of exposure cannot be
defined (e.g. health care facility outbreaks).
Ln 359. It not exactly clear why knowledge of the incubation period is crucial for understanding vaccine failure, etc. Also, why will vaccine efficacy improve?

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Acceptable

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

Declaration of competing interests:
I declare that I have no competing interests