Reviewer’s report

Title: The cost of diagnostic uncertainty: A prospective economic analysis of febrile children attending an NHS Emergency Department

Version: 0 Date: 10 Nov 2018

Reviewer: Robert H. Pantell

Reviewer's report:

This is a well executed study that provides important data on the management and costs of febrile illnesses in children. It supplements information about utilization of services and costs; it is an important contribution for those working in this field.

Some clarifications would be helpful:

Line 89 How is this a "representative" cohort. All patients, random sample, other?

Line 103 9.9 fold increase compared with those not receiving antibiotics?

Line 138 1 in 400 from data in reference 4 addresses children 3-36 months. The proportion is higher in infants < 3 months addressed in this paper. OK to leave but explain age group referenced.

Line 141 References are 40 years old and address only pneumococcal bacteremia

Line 152 sensitivity of 30-40% seems low and is not referenced

Line 155 does not necessarily imply "repeated" investigations so much as more accurate or precise investigations

Line 183 was this any reported history of fever or history of temperature taken by thermometer with
recording > 38?

Table 1. Nice work! Thank you.

Line 249 Later in paper you provide table 4 with utilization for urine sample. As this could be urinalysis, urine culture or both, are you referring to any of those?

Lines 262-265 Does this mean there was a single cost applied for all infants admitted for < 3 days as opposed to separate costs for <1, 1-2, 2-3?

Line 431 yes, the largest study. However because of the # of patients excluded from this study, reference 23 reports on the largest # of patients, but they are all < 90 days.

Lines 435-436 and line 486 (cautiousness) One of the things to consider incorporating is the fact that the prevalence of invasive bacterial infections, bacteremia and bacterial meningitis, are highest in the first 3 months. This is a major independent factor in driving physician behavior towards this age group.

Lines 486-489 One thing possibly worth mentioning is the cost of newer diagnostics. Some of the newer multiplex PCR tests cost 50 to 100 times as much as an antibiotic and about the same as a day in the hospital. Sad but true. Of course, diagnostic test costs can be anticipated to decline whereas hospital costs will not.

Line 538 As written implies causation between antibiotic prescribing and hospitalization rather than association.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.
Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.
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