Reviewer's report

Title: A Clinical Prediction Rule for Diagnosing Human Infections with Avian Influenza A(H7N9) in a Hospital Emergency Department Setting

Version: 1 Date: 4 April 2014

Reviewer: Marianne A.B. van der Sande

Reviewer's report:

Major comments:
1. The authors assume that clinical presentation of those with A/H7 in this first wave will be identical to the clinical presentation in subsequent waves. Previous influenza outbreaks have shown that severity can vary significantly between waves (for better and for worse). Also, health care seeking behaviour (and thus who presents for evaluation or not) can vary significantly over time, also related to social, non-medical reasons. The authors should reflect on this limitation in time and place of their cases as it might also limit the applicability of their prediction tool in another time and place, eg the evolving epidemic the authors refer to.

2. I appreciate the authors used the historical data available as controls, but could another option have been to apply (also) a "test-negative" approach (as is frequently used to estimate influenza vaccine effectiveness) and compare clinical details of those tested pos and those tested neg to assess if this can be used to construct a prediction rule? Unlike with the current selection of controls, cases and controls will then come from the same population. This might be closer to the actual clinical situation this prediction rule is aimed at, where clinicians are faced with a patient suspected to be infected with A/H7 or not, and therefore tested.

3. Rather than restrict themselves to an internal bootstrap validation, why did the authors not also test their prediction rule on patients admitted during the winter of 2013, when many new cases were reported? Is this still possible?

4. The authors indicate that they excluded several laboratory variables if 40% or more were missing; table 1 shows several variables included with 33% missing; and the methods mention that multiple imputations were used to make the most of all (?) available non-missing data. Please clarify why this cut off was chosen (and thereby excluding potential information from the available non-missing lab data) and whether or not sensitivity analyses were done to test this?

5. Could the authors present/discuss to what extent selection of different cut-offs and of a different calculation of risk scores might have modified their conclusions.

6. I was not clear how the categorisation of risk scores into tertiles above the cut-off (76) was defined. The risk scores in the tertiles were 76-80; 81-100; >100, the number of patients in each tertile was 48, 362, 223. Please clarify?

Minor comments:
1. In the conclusions, the authors refer to a potential re-emergence of A/H7 this winter: this has happened and is no longer potential; this can better be included in the background.

2. Typo in heading Table 4: Indies=Indices

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests