Reviewer's report

**Title:** Clinical Features and Risk factors for Severe and Critical Pregnant Women with 2009 Pandemic H1N1 Influenza Infection in China

**Version:** 1  **Date:** 25 October 2011

**Reviewer:** Rodica Gilca

**Reviewer's report:**

Major Compulsory Revisions

General comments:
- The purpose of the study should be clearly defined. In its current form, there are discrepancies between objectives presented in the abstract, main text, and results section. Title should be modified in order to convey objectives.
- The paper tries to deliver too many messages (characteristics of patients, efficacy of NIV and corticosteroid treatment, risk factors for maternal and neonatal death). Some of them are not supported by the methods applied. Choosing 2-3 messages and supporting them with pertinent methodology and interpretation would improve the quality of the paper.
- Conclusions should concentrate on what this specific study tells us.

Abstract:
Should correspond to objectives and messages of the main text

Introduction:
Please keep only the most pertinent references.

Methods
Study patients:
Criteria of patients' inclusion/exclusion in the study should be clearly presented.

Analysis
How variables for univariate and multivariable analyses were selected? How multivariable models were built?

Results
Clinical description of the cohort
How BMI was defined? Although it is not indicated, it seems it was collected from hospital charts. When describing pregnant women, previous papers used BMI calculated from pre-pregnancy period, or from early antenatal period. For example, in the reference 42 cited in your manuscript authors from Australia used the BMI from before 20 weeks of gestation. Since ¾ of your population are
in the 3rd trimester of pregnancy, proportion of obesity is most probably overestimated. This is important to verify and correct if necessary because the influence of BMI on outcomes is one of the main study conclusions. Also, why BMI is treated differently depending on the model – as indicator variables for 4 categories in Table 3; as a continuous variable in Tables 4 and 5?

Medication
Additional information is needed regarding the corticosteroid medication (drug, dose, indications). According to supplemental table 2, steroids were given to women with more severe presentation. As such, it is not surprising that you detected a significant difference in disease severity between women who received steroids and those who did not.

Mechanical ventilation
- What were indications for applying NIV? What is the definition of successful and failed NIV? What were indications to change from NIV to invasive ventilation? To conclude about the effectiveness of NIV, the patients with failed NIV should be comparable to those with successful NIV as to basic characteristics, and it is essential controlling for potential confounding factors, especially severity of disease.

- Acute liver damage – It is surprising to see that there is no chronic liver disease as an underlying disease in your population, given high endemicity of hepatitis B infection in China. Were these women tested for HBsAg (in hospital or during prenatal visits)? AST/ALT elevation may be due to exacerbation of chronic liver disease. This should be acknowledged.

Maternal and fetal outcomes:
- Please detail how variables were selected and retained in the multivariable models.
- How many of patients with lethal outcome had underlying diseases as compared to those who survived?

Discussion
- The discussion resuming study results seems too long. Also, it may be reduced by focusing on 2-3 main messages.
- How representative is your population as compared to general population of pregnant women in China?
- How do you explain lower prevalence of underlying diseases in this report as compared to other countries? Is there a possibility that some underlying diseases were missed or underreported (for example, chronic hepatitis B?)
- Discussion on corticosteroids and NIV should be focused depending on answers to comments above. In particular, the potential confounding effect of indications should be dealt with a lot of precaution.
- How obesity was defined? One can presume from table 1 that obesity was
defined as a BMI >=30, however it should be clearly stated.
- It might be of interest making a link between the vaccination coverage against pandemic influenza in China, and the results observed in pregnant women.
- What new data this study brings?

Conclusions in their actual form are not sufficiently supported by the data.

References: number of references could be reduced

Figure 1
Why patients are divided into 2 groups (received mechanical ventilation and women who delivered)? Does this mean that women who delivered did not receive mechanical ventilation? If groups are mutually exclusive, numbers do not sum up to the total of 394 (186+211= 397)

Table 1
- BMI – see comments above
- Gestational age: should define trimesters

Table 3 and Table 4
What variables were adjusted for in the multivariable analysis?

Minor Essential Revisions
Table 1
Line "H1N1 or seasonal flu vaccination" may be deleted since this is presented in the text.
In the Notes to all tables, correct "no.(%) /total no. (%)" to "no./total no. with data available(%)"

Table 2
Add heading to the table

Minor issues not for publication

Spelling and grammatical errors should be verified

Discretionary Revisions
- Supplemental table 2 may be deleted
- Brief description of pandemic wave in China would be useful
- How many hospitals participated in the study? Where are located the 27 provinces participating in the study (north/south)? Are there any differences in the population from these provinces/hospitals?

Level of interest: An article whose findings are important to those with closely
related research interests

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests