Reviewer's report

Title: Hospitalizations for varicella in children and adolescents in a referral hospital in Hong Kong, 2004 to 2008: A time series study.

Version: 1 Date: 7 November 2010

Reviewer: Samer El-Kamary

Reviewer's report:

This is a very well written manuscript that provides interesting and biologically plausible association between decreased humidity and increased incidence of Varicella infections.

Major compulsory revisions

1. The authors used GEE to model the monthly varicella incidence. However, this method is used to account for clustering, whether in cases where there are multiple repetitive admissions of the same subject, or if there were multiple admissions at different units e.g. at each hospital. In this study, there is only one hospital and the admissions across time or of different individuals. Hence, this method is not appropriate for this study, and should be eliminated from the analysis.

2. The authors used ARIMA (auto-regressive, intergrated, moving average) model as an alternative modeling methodology for comparison. However, ARIMA is used for continuous data not for counts which is the data used in this study. One option is to use other time-series methods such as GARMA (generalized autoregressive moving average), or methods such as those described in Dominici F et al, JAMA. 2006 Mar 8;295(10):1127-34; and Peng RD et al, JAMA. 2008 May 14;299(18):2172-9.

3. In their results section, the authors show an inverse correlation between humidity and varicella cases without adjusting for temperature and rainfall. They should include rainfall and temperature in their model. It is possible that the authors found no correlation after the adjustment. However, this does not invalidate their findings and they should display the results with and without adjusting.

Minor Essential revisions

The authors displayed the data in Tables 1, 2 & 3 as coefficients which is more difficult to interpret. They should exponentiate the coefficients to relative risks in their Poisson model which are easier to interpret.

Level of interest: An article of importance in its field

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