Reviewer's report

Title: Quantifying the clinical virulence of Klebsiella pneumoniae producing carbapenemase Klebsiella pneumoniae simultaneously though an in-vivo insect model and translated patient outcomes

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Reviewer: Susan M Logan

Reviewer's report:

It is clearly recognised in the literature that there is a need to more reliably determine the relative virulence of KPC isolates and the current study is focused towards this goal. It was attempted in this study to evaluate quantitatively KPC virulence by:

a) determination of clinical virulence using standard clinical data modeling techniques

b) assessing relative virulence of KPC isolates by examining virulence in a Galleria model of infection

c) using the virulence score from insect model to recalculate KPC virulence in clinical model.

Clinical data modeling techniques are clearly described and data is presented in comprehensive fashion. I am not qualified to assess the rigour of the statistical analysis.

While the initial analysis found an increased virulence for KPC+ patients, this virulence was decreased when measured organism virulence (from insect model) was incorporated into the multivariate models.

The insect model data revealed that KPC+ isolates were less virulent than KPC-isolates suggesting that poor patient outcomes of KPC+ patients may not be due to the virulence of KPC+ strains. The insect model data as presented are very restricted in scope and could be expanded to better explore the virulence phenotypes observed (See recent paper -Insua et al Infect. Immun 81:3552-3565)

Could the virulence properties measured in Galleria possibly not be those which are relevant to virulence in humans?

Overall, while very preliminary in nature the results presented in this study which suggest that it may not be the virulence of KPC+ isolates which lead to poor patient outcomes are somewhat intriguing and deserve further study.

However in its current format, I feel the manuscript makes too small an advance to warrant publication.

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

**Quality of written English:** Not suitable for publication unless extensively edited

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

**Declaration of competing interests:**

I declare I have no competing interests