Reviewer's report

Title: Community acquired infections in older patients admitted to hospital from care homes versus the community: cohort study of microbiology and outcomes

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Reviewer: Werner C. Albrich

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Marvick and his colleagues compare in this well written manuscript of a retrospective cohort study the prevalence of antibiotic resistant bacteria and clinical outcomes in older patients with infections admitted to hospital from care homes versus from their own homes. The question posed by the authors is well defined and clinically and epidemiologically relevant. While there was a trend, antibiotic resistance was not associated with poor outcome, which is likely a problem of small numbers. In contrast, there did not seem to be a difference in outcomes between patients from own homes vs. care homes. Even though it probably does not affect the primary endpoint, more recent data than 2005 might have demonstrated even higher rates of resistant Gram-negatives and possible fewer MRSA cases in the UK.

- Major Compulsory Revisions

1. The aim of the study is clearly described. However, the Results section of the abstract does not address this, but rather states that the only independent predictor for 30 day mortality was severe sepsis. I suggest reporting the OR for the comparison between patients from care homes and patients from their own homes in the abstract.

2. In the main text, it might be interesting to also see a comparison of outcomes between patients from care homes and patients from their own homes, stratified for the presence or absence of antibiotic resistance.

3. One inclusion criterion was one sample sent for microbiology, but the time point of the sample was not considered. Whether the sample was drawn before or after the beginning of antibiotic therapy remains unclear and may be impossible to clarify due to the retrospective nature of the study. The phlebotomy after initiation of antibiotic therapy would explain why only 45 of 161 patients had significant bacterial isolates, which likely affects the power of the study. Comparatively larger numbers were reported in the cited study from Australia (638 specimens of blood, 425 sputum, 4044 urine and 785 wound cultures).

4. The primary endpoint (death within 30 days) was a relatively rare event, reached in 42 cases; there were no significant difference among the groups. Including additional outcomes other than mortality, such as ICU admission or major complications of these infections (septic shock, requirement of ventilatory or vasopressor support, etc) might be important and increase the number of events. The small sample size should be mentioned as a limitation of the study.
5. The authors recommend empiric antibiotic therapy in older patients with severe sepsis that is active against MRSA and resistant Gram negative organisms, but their own regime with amoxicillin, gentamicin and metronidazole might be suboptimal for MRSA. This recommendation appears quite suddenly in the Conclusions of the abstract since these organisms are not mentioned in the Results of the abstract. Due to geographically very different resistance prevalences, I don’t think that this should be generalized, for a) all countries, and b) for all severity levels.

- Minor Essential Revisions
1. Which cut offs of colony forming units for urine bacterial isolates did the authors use? All isolates from urine were coded as clinically significant, but also if there were $10^3\text{cfu/ml}$ or $10^4\text{cfu/ml}$?
2. MRSA was not significantly more frequent in patients from care homes. It was just a trend.

- Discretionary Revisions
I find it interesting that in a population of elderly adults and care home residents, E. coli was not considered relevant.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**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