Reviewer's report

Title: Evaluating the importance of defining healthcare associated bloodstream infections

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Reviewer: Anne SAVEY

Reviewer's report:

General comments:
The authors are using an existing cohort database concerning adults with BSI admitted to hospitals in a large area in Canada, in order to describe the main characteristics (age, gender, Charlson score, LOS, M-Organisms, in hospital mortality) of the 3 different categories of BSI: Hospital acquired (HA), Healthcare-associated (HCA) and Community-acquired (CA).

This interesting project is adapted from a previous study (Freidman 2002) that first proposed this sub-classification (prospective study, patient chart review, 504 patients included) and stressed the importance of well defining HCA to better consider empirical antibiotic therapy for this category of "nosocomial-like" BSI.

The strength of this article is the size of the population included (8 year period and 7'712 patient cases).

However, authors will have to consider the following revisions in order to clarify and complete the methodology and discussion.

*** Major revisions:

Methods

1) briefly explain the "Charlon score" for lectors or countries that are not used to it.

2) BSI-definitions: why do you use 5 days for the max delay between 2 samples? (usually it is within 48h or 2 days, i.e CDC)

3) HCA-BSI definition: criterion 1: explain the minimal cut off at 5 days in "prior 5-30 days before onset" (why not 0 or 2 ?)

4) HCA-BSI definition: a main criteria is missing concerning exposure ambulatory/at home cares as in Freidman original definition (IV therapy, immunosuppressive therapy, chemotherapy, wound care, specialized) nursing care) is missing, leading to an underestimation of your HCA cases.

Justify your choice in the discussion, or if these data are not available in the ESS database to complete the definition, this important difference must be listed in the chapter "limitations".
5) In this retrospective study, the authors are using a database already existing for the analysis. We understand that the classification in the 3 categories HA/HCA/CA is done "de novo" for the study, using the items previously collected. If so, they should add information concerning the quality of the data and validation procedures.

Because for BSI occurring < 48h of hospital admission, if items concerning the definition criteria are missing, they are by default classified as CA-BSI, potentially overestimating them (--> underestimation of HCA-BSI)

6) As the worth of this work is mainly in the field of epidemiology, the authors should also list the differences between their definition and those previously used in the literature to define HCA-BSI (not only the Freidman classification). A table comparing the different criteria of HCA definitions could be useful to illustrate this important methodological aspect.

Discussion:

7) In the discussion, the authors mainly refer to the Freidman study but their results are also compared with other studies. They should insist on how differences in definition criteria can influence/explain the variability of the results.

8) Limitations of the work should be more clearly stated and completed:
- cf differences with the Freidman definition, missing cares delivered at home (--> underestimation of HCA-BSI)
- no data on antimicrobial resistance (except MRSA) which minimizes the real impact of using the definition for guiding empirical antimicrobial therapy
- no data concerning "origin of BSI" in particular intravascular devices, which limits the interest of the study to an epidemiological matter (no practical interest in terms of infection control and prevention).
- no information concerning the quality of database ? (if data are missing concerning the case classification --> underestimation of HCA-BSI)

9) p. 13: We don't agree with the authors saying that "in surveillance studies, decreasing rates of HA-BSI may be incorrectly attributed to success in reducing infections if rates of HCA-BSI are not measured". This argument is not available because if HCA-BSI are not distinguished using this classification, they are confounded with CA-BSI, not with HA ones.

10) Title: can be better adapted to the real objective of the study that is: describing HCA-BSI cases and outcomes in comparison with HA and CA ones. With using the present title "evaluating the importance of defining HCA-BSI", we would expect more results on the practical impact of using such a definition.

11) Abstract:
- methods: to be completed (retrospective study, existing data base...)

***Minor Essential Revisions
12) Abstract / background: objective OK: to describe and compare HCA-BSI patient characteristics and outcomes in comparison with HA and CA-BSI.

13) p.10: "This study confirms HCA-BSI as a distinct … (instead of "HA-BSI")

14) p. 21-Table 2: third column: HA (%)

15) Authors could add more details on ESS database: initial purpose and usual utilisation, data providers ...

***Discretionary Revisions

16) p5: prefer: "As a result, patients may now present themselves in a hospital with infections from the community that share many characteristics of a HAI"

17) p. 11: "Like with our study" --> "As in our" ...

**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'