Author’s response to reviews

Title: Prevalence of urinary colonization by Extended Spectrum-Beta-Lactamase Enterobacteriaceae among catheterised inpatients in Italian Long Term Care Facilities

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Author’s response to reviews: see over
Reviewer: Beatriz M Moreira

Major Compulsory Revisions

- Manuscript still needs a major review with respect to use of English, Table formatting, and general presentation of research performed.

The article was revised by English professional language editing service.

Minor Essential Revisions

Keywords
- “LTCF”: please spell out. “Resistance”: please complete “Antimicrobial Resistance”

We added it in the paper:
Long Term Care Facilities (LTCFs), Antimicrobial resistance

BACKGROUND
- “...prior reception of ciprofloxacin, prior reception of trimethoprim-sulfamethoxazole..”
  Please substitute the term “reception”. Suggestion: “use”.

We modified the text:
“prior use of ciprofloxacin, prior use of trimethoprim-sulfamethoxazole”

METHODS
- “…specialist surgery 8 (30.8%)…”: please use “30.8%”

We modify 30.8% in 30.8%

Figure 2.
- Legend; “Resistant” means resistant to which drugs?

We modified the text:
Figure 2. Distribution of BLs and ESBL strains stratify by eight Contact Centres (in parentheses the number of microorganisms isolated for each CC).
Reviewer: Christopher Crnich

Major Compulsory Revisions:

- English and grammar of the manuscript is still a major problem.

The article was revised by English professional language editing service

Minor Essential Revisions

- Rather than include a figure from which samples were obtained, it might be better to include a figure demonstrating the number of individuals present in the study facilities on the point-prevalence study day (n = 2258), the number of subjects with a urinary catheter in place for >24 hours (n = 211), the number with a positive urinary culture (n = 185), and the number with an ESBL-producing organism (n = 114).

According to your suggestion we changed the figure 1:
In table 4 it would be better if the 2nd (currently labeled "Total (211)"") and 3rd (currently labeled "Patients with at least one resistant sample (114)"") columns be modified. This should be a single category with two columns. The overall category should be be labeled as No. (%) of Residents with Risk Factor with the first column having a sub-heading labeled "ESBL(-) (n = 97)" and the second column having the sub-heading "ESBL(+) (n = 114)."

According to your suggestion we modified the table 4 in this way:

<table>
<thead>
<tr>
<th>Population characteristics</th>
<th>N. (%) of residents with risk factors</th>
<th>Bivariate analysis</th>
<th>Logistic regression model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ESBL/AmpC (n. 97)</td>
<td>ESBL/AmpC (n. 114)</td>
<td>n.</td>
</tr>
<tr>
<td>Stay longer than 6 months</td>
<td>38</td>
<td>30</td>
<td>0.56</td>
</tr>
<tr>
<td>Hospital admission 30 days before</td>
<td>17</td>
<td>9</td>
<td>0.40</td>
</tr>
<tr>
<td>Surgery 30 days before</td>
<td>5</td>
<td>2</td>
<td>0.33</td>
</tr>
<tr>
<td>Antibiotic therapy</td>
<td>13</td>
<td>16</td>
<td>1.06</td>
</tr>
<tr>
<td>Central Venous Catheter</td>
<td>3</td>
<td>1</td>
<td>0.28</td>
</tr>
<tr>
<td>Pecutaneous Endoscopic Gastrotomy</td>
<td>8</td>
<td>15</td>
<td>1.69</td>
</tr>
<tr>
<td>Decubitus</td>
<td>21</td>
<td>43</td>
<td>2.19</td>
</tr>
<tr>
<td>Co-morbodities*</td>
<td>44</td>
<td>47</td>
<td>0.85</td>
</tr>
</tbody>
</table>

The discussion section of the manuscript would further benefit from more discussion on the limitations associated with their study design in identifying clinical risk factors for urinary colonization with ESBL(+) organisms. Specifically, current antibiotic use may have biased the association (or lack thereof) with antibiotic use. The relationship with decubitus ulcers may be confounded by other clinical factors not included in the model, etc...

We modified the text:
When we explored possible correlations with population variables, we were able to confirm that there is a significant correlation between the presence of decubitus and the presence of at least one beta-lactam resistant microorganism, as was previously reported. We also found that patients with an ongoing antibiotic therapy had a higher number of expanded-spectrum cephalosporins resistant microorganisms among the isolates, compared to patients without antibiotic therapy. This confirms what is reported in other studies [30]. We selected patients characteristics and clinical risk factors that were compatible with a point prevalence study, but this could have limited the capacity to make clear the role of other factors such as previous use of antibiotic in the population. Relationships with decubitus ulcers must be further explore to be not confounded by other clinical factors that are not included in our model.
Due to the sample dimension and to the patient selection criteria (we limited the study only to patients with urinary catheter), this study certainly cannot be considered as being completely representative of the Italian BLs situation, but it does provide a first picture of the problem in the crucial healthcare sector of LTCFs; moreover, it shows the need for urgent investments both in monitoring and controlling antibiotic resistance in LTCFs.