Reviewer’s report

Title: Burden of carbapenem-resistant organisms in the Frankfurt/Main Metropolitan Area in Germany 2012/2013 - first results and experiences after the introduction of legally mandated reporting

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Reviewer: Yvonne Pfeifer

Reviewer’s report:

As the title indicated the authors present results of the first twelve month of mandatory reporting of carbapenem-resistant organisms in Frankfurt/Main, Germany. Interesting results but a lot of information is missing, is redundant or is repetition. Table 1, Figures 1 and 2 are not necessary. Major comments and comments for every part of the manuscript are below-mentioned.

A) Since the mandatory reporting was introduced in the whole German federal state (Hesse) it would be interesting to have some common facts: Please give the number of inhabitants and hospitals in Hesse and the whole number of noticed CROs in the 12-months period.

B) Keywords: Please use only keywords that were not mentioned in the manuscript title and avoid unnecessary abbreviations.

C) Table 1: It is not a table – delete it and include the information in the part “Methods”.

D) Table 2: It is very uncommon that a K. pneumoniae produces OXA-23 and an A. baumannii produces OXA-48 – Please check these results again and repeat the analyses (species and carbapenemase confirmation).

E) Figures 1 and 2 are not necessary – the information can be included in brief in the manuscript text – Please delete these figures.

F) Methods: please include the criteria for mandatory reporting in according reference 15 and table 1.

G) Methods: Please describe how carbapenemase confirmation was performed in the laboratories – Which phenotypic tests and which genotypic test systems were used?

H) One risk for emergence and selection of CROs is the usage of carbapenems – were information collected on the previous treatment of the patients?
I) Discussion: This part is very long and contains a lot of repetition of results – comments see below.

Further comments:

Line 43-45: Include one or two sentences with reporting criteria (include the information “Frankfurt residents” from line 49 in this sentence).

Line 61: Imipenem was introduced in 1985 – more than 25 years ago. Please rephrase.

Line 64-67: The meaning of these sentences is not clear – please rephrase this part and avoid the word “reserve antibiotics”.

Line 87: Quit the sentence after “2012” and include further information from line 88-91 in the part “Methods”.


Line 128: Explain what is meant with “not fulfilling criteria” and give the number of patients after the number of isolates.

Line 134: Give in brief in which (most prevalent) species a carbapenemase was detected and give the three most prevalent carbapenemase types that were detected. Include information how the carbapenemase detection was performed.

Line 136-138: Here more information would be helpful – which species were involved (carbapenemase producers? infection or colonisation?) and what is known about the patients (travel history?, nationality?, hospitalisation abroad?, in countries with high prevalence for CROs? Previous antibiotic treatment?)

Line 140: What is known on these outpatients regarding previous hospitalisation? Give information on infection/colonisation, travel background etc. (maybe include it in the discussion part).

Line 143-152: Characterise (maybe in the discussion part) the hospital with the most reported cases and the hospital with the highest incidence/100patient days – are they identical? What are the properties of these clinic(s) in comparison to the others (number of beds/patients, special patients/wards, screening procedures etc.? Explain what is meant with “case mix and unit-based”.

Line 157-159: Include the three main foreign countries/regions that were identified.

Line 161: Explain which kind of infections – if the following sentence includes this information.

Line 165: Explain “history of inpatient treatment”.

Line 165-168: Is there a correlation between sampling site and occurrence of infection – which CRO species causes the most infections?
Line 169: Was a routine screening (of patients at risk?) introduced in the hospitals or were the finding of CROs in the first two days due to occurrence of signs of infection with admittance to the hospital?

Line 174-186: Long and the repetition of the categories is not necessary – give only the main facts for Germany: occurrence of sporadic cases and outbreaks (give references) and suspected regional spread of carbapenemases (which types? – give references).

Line 193-194: Include information that the patient was from Serbia according references.

Line 197-203: Repetition of results – discuss it: Is anything known about the screening frequency in the 17 hospitals, esp. the ones with the highest incidence of CROs. Here can be given other properties of these hospitals (size, beds, number of patients, special patients/wards etc.)

Line 204-208: Repetition of results – discuss it: What is known on these outpatients? Give information on infection/colonisation, travel background etc.

Line 208-211: Repetition of results – discuss it: What is known on this single hospital (give characteristics)?

Line 214-217: Repetition of results – make it short!

Line 220-222: Give examples (countries with high prevalence) and references.

Line 224-225: How many of these patients were hospitalised/came from abroad?

Line 228-231: What is meant with “several” – please give the number. “could” the patients be isolates or “were” they isolated? Please explain.

Line 235: Give the CRO (carbapenemase type) for the two cases/patients.

Line 238-244: The paragraph is not clear - What does it mean? Should the CDC prevention strategies be introduced or not – rephrase and discuss.

Line 245-264: Combine the two paragraphs – name implemented measurements and the problems in detail, e.g. the problem of late reporting (carbapenemase confirmation) and the consequences.

Line 270: Give details – species and carbapenemase type (if detected).

Line 285-289: Explain how these “major efforts are being made” (information events, training programs, controls etc?).

Line 290: What is meant with medical tourism – patients that came from abroad only for surgical interventions? How big is the problem in Frankfurt/main region – how much patients in the present study were “medical tourists”? Were German patients with previous hospitalisation abroad also included in this definition?
Line 297: This is a result – make a conclusion. It indicates a possible community spread of CROs (if travel abroad, previous hospitalisation etc. can be excluded in these six cases?). Please rephrase.

Line 300-302: The call for a country-wide reporting should be included in the conclusion.

Minor comments:
Line 39: Modify “…federal state of Hesse, Germany, introduced a…”.
Line 47: Start with: Within the period of twelve month 236 CROs…”.
Line 49: Delete “for Frankfurt residents”.
Line 72: Delete “as early as” and write “in”.
Line 74: Delete “certain”.
Line 78: Quit the sentence after “[9]” and start with “Furthermore, the number of NDM-type carbapenemases is increasing slightly…”.
Line 81: Delete “such”.
Line 84: Delete “against this background”.
Line 87: Quit the sentence after “2012”.
Line 92: Start with “Here we present the results..”.
Line 126: Give only month and year.
Line 132: “K. pneumoniae”
Line 133: “E. coli” in italics
Line 137-138: Delete this sentence and include the number of patients in line 128 after the number of isolates.
Line 144: Give percentage for “20 isolates”.
Line 170: write “…and 20% of the CROs have been detected...”.
Line 195: Give the year instead of “recently”.
Line 219: Give the number.
Line 228: Give the number.
Line 231: Write “The patients without known carrier status (number)...”.
Line 273: “multidrug-resistant”.
Line 297: Start e.g. “Regarding 236 CROs in twelve month the situation...”.

Table 2: Write the carbapenemases not in italics. Give the study period only in month/year. Write in the legend which 3 other Enterobacter species were identified.

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

**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.