Reviewer's report

Title: Polymicrobial bloodstream infections in the neonatal intensive care unit increase mortality: A case-control study

Version: 1 Date: 6 May 2014

Reviewer: Michael Carter

Reviewer's report:

Major compulsory revisions

Were polymicrobial infections treated as aggressively as monomicrobial? Potential for disregarding polymicrobial infections as contaminants/less severe infections, therefore giving shorter (perhaps less effective) courses of antibiotics.

Were the polymicrobial infections more likely to have organisms resistant to common antibiotics (e.g. penicillin resistant Enterococcus faecalis)?

Use of multiple logistic regression analysis for mortality, at least including presence or absence of surgery into the equation (as a significant risk factor), and arguably also including CVC presence or absence (although I note that p=0.20 for the association with polymicrobial infections, so this may or may not be appropriate).

Why were umbilical catheters not included as a CVC? It would make sense to include them as a CVC? Please justify non-inclusion.

Minor revisions

Abstract

• Line 30: "neonatal unit" (not plural)

Main article

• Throughout paper species names not be "Candida species", but should ideally be "Candida spp." etc. to be consistent (see lines 115 and 116 for inconsistencies here). There are lots of occurrences of this error.

• "gram" should be Gram when referring to Gram staining (proper noun)

• Line 129: "Bell's" classification (proper noun)

• Line 142: "Student's t-test" (proper noun)

• Line 158: Candida spp.

• Line 193: Remove "busy" – it sounds like an excuse for poor care, but I am sure that you are providing exemplary care!

• Lines 202 to 203 almost an exact repetition of 194-195, perhaps rephrase?

• Lines 221: extracorporeal membranous oxygenation could be abbreviated to "ECMO" as previously in the manuscript
• Line 225: give percentages to one decimal (as previously in paper)
• Line 227: "Staphylococcus aureus", "Escherichia coli"
• Generally TPN is actually PN (as the neonates are often also partly enterally fed) hence it may be more accurate and appropriate to use "PN" not "TPN"

Table 1
Spelling and formatting errors: "Escherichia coli", "Klebsiella oxytoca", "Bacillus spp."

Table 2
Give numbers AND percentages (e.g. I doubt 41.18% in born in both groups until I see the data). Give percentages to one decimal. Don't use standard error about a mean, use 95% confidence intervals – much easier to interpret for the reader. Use regression analysis adjusted (at least) for surgery (see note above).

Table A1
Give numbers AND percentages. Give percentages to one decimal. Don't use standard error about a mean, use 95% confidence intervals – much easier to interpret for the reader.

Discretionary revisions
Perhaps the discussion could mention the potential future use of molecular techniques for the identification of causes of sepsis (and therefore the likely increase in identification of multiple causes of sepsis).

Figure 1 Could you identify why polymicrobial episodes seem to have decreased since 2010? Is this statistically significant? Could you use some time series statistics on this?

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

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests