

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	A RETROSPECTIVE CROSS SECTIONAL REVIEW OF SURVIVAL RATES IN CRITICALLY ILL CHILDREN ADMITTED TO A COMBINED PAEDIATRIC / NEONATAL INTENSIVE CARE UNIT IN JOHANNESBURG, SOUTH AFRICA, 2013-2015
AUTHORS	Ballot, Daynia E.; Davies, Victor; Cooper, Peter; Chirwa, Tobias; Argent, Andrew; Mer, Mervyn

VERSION 1 - REVIEW

REVIEWER	Maher Eldadah, MD Beijing United Family Healthcare Beijing, China
REVIEW RETURNED	26-Dec-2015

GENERAL COMMENTS	I am not sure what the aim of this study is. This is basically a review of this unit performance over a 2 years period. This unit has unacceptably high mortality rate. The authors do not clearly show the reasons behind this high rate. The paper mentions lack of dedicated pediatric intensivists as a reason for high mortality but there is no justification in the paper. The project could be used as a first phase for quality improvement in this unit. The authors can put into action a quality plan to address some of the reasons for the high mortality then collect data after the implementation of the plan and compare before and after results. This may be of benefit but as it is this paper adds nothing to the current medical knowledge.
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REVIEWER	Professor Miriam Adhikari (Professor Emeritus) University of KwaZulu Natal Durban South Africa
REVIEW RETURNED	08-Jan-2016

GENERAL COMMENTS	The title does not indicate the site/country of this intensive care unit. This is important for the reader. In South Africa the Eastern Cape and Gauteng are two very different areas with respect to health provision for the population. The abstract should indicate this ICU admits medical and surgical patients. The predictors of mortality could have been included unless the word count does not allow this. Other statements such as the lead statement in the abstract and the statement referring to the severity of illness score could be excluded to include the predictors of mortality Scientific background and rationale is reasonable. The comments of the difficulties of intensive care in LMIC is correct. A comment on the mortality of babies under one year excluding newborns would have been appropriate. These babies have a higher mortality of up to 40% in less privileged countries. KwaZulu Natal is not an affluent
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	<p>province.</p> <p>Study Design Medical and surgical problems are managed in the unit. The surgical patients were not indicated in the methods which they should have been – this was presented in the results.</p> <p>Participants Concerns are in the group of babies >1500gms there were babies weighing >2499 gms. Babies over 2499gm have different medical issues. The suggestion is that these should have been analysed as a group of its own. In paediatric patients group the ages are not given and babies < 1yr of age have a higher mortality and may have skewed .the mortality results</p> <p>Study Size In the results additional patients were included from the high care where babies were offered NCPAP. These patients should have been indicated in the study design. The sample size stated in the methods was 1272 and in the results it increased to 2318 with the inclusion of those treated with NCPAP in high care.</p> <p>Statistical methods As indicated above the 'bigger babies' and the paediatric groups could have been further subdivided for greater clarity in outcomes</p> <p>Main results The tables are difficult in that the numbers of babies with a condition along with the percentages and CI are given but the number of the babies without the condition not given but the percentages and CI are presented. This requires analysis of those without the condition in order to understand the results better. The mean age of the survivors and non-survivors in the paediatric group suggests the majority of the admissions were less than one year of age.</p> <p>Discussion. Reasonable discussion including the ethical issue raised. However, not discussed were the predictors of mortality which would be an important message for those involved in caring for babies such as these.</p> <p>Overall a reasonable study in this setting, giving an insight to the causes of illness and the predictors of mortality. These results could be considered in any of the units not only in South Africa</p>
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REVIEWER	Gerri Sefton- Advanced Nurse Practitioner PICU Alder Hey Children's NHS Foundation Trust, Liverpool United Kingdom
REVIEW RETURNED	20-Jan-2016

GENERAL COMMENTS	<p>This is an interesting paper which captures many of the challenges of PICU and NICU provision in a resource limited country. It is important that all of these Units are pro-active in reviewing mortality and identifying contributory factors so that the provision of PNICU is optimised to provide care for those most likely to have functional survival.</p> <p>I attach my suggested corrections. The main one being that I recommend removing the data on NCPAP which confuses what you set out to report in this paper. If you have good enough data that may form another paper.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer 1:

Comment Response

I am not sure what the aim of this study is. This is basically a review of this unit performance over a 2 years period. This unit has unacceptably high mortality rate. The authors do not clearly show the reasons behind this high rate. The paper mentions lack of dedicated pediatric intensivists as a reason for high mortality but there is no justification in the paper. The project could be used as a first phase for quality improvement in this unit. The authors can put into action a quality plan to address some of the reasons for the high mortality then collect data after the implementation of the plan and compare before and after results. This may be of benefit but as it is this paper adds nothing to the current medical knowledge.

Thank you for your comments. The aim of the study (as stated) was to describe survival rates of children admitted to a combined neonatal/ paediatric intensive care unit (PNICU), as opposed to a dedicated paediatric ICU. We agree that the mortality rate is high. Reasons for this may partly be the lack of a dedicated paediatric intensivist or the level of illness of the children who are admitted. Unfortunately scores of severity of illness were not available during the study period (as stated under limitations of the study). This study provides information on critically ill children cared for in a predominantly neonatal ICU, rather than a dedicated paediatric ICU, in a middle income country. There is not a lot of data on this topic in this context; our results are of relevance to critically ill children cared for in low and middle income countries. Most reports on children in combined ICUs refer to those admitted to predominantly adult ICUs in high income countries. We agree that, having established that the mortality rate is high, we need to take this further, firstly by identifying modifiable causes and then implementing strategies to improve this. This study is the first step in the process.

Reviewer 2

Thank you for your very detailed input.

Please see the responses below point by point to the concerns raised

Item # Comment Response Location in document

1 The title does not indicate the site/country of this intensive care unit. This is important for the reader. In South Africa the Eastern Cape and Gauteng are two very different areas with respect to health provision for the population. The title has been amended as suggested. The predictors of mortality have been incorporated into the abstract. Also added 2013-2015

Title page

2 The abstract should indicate this ICU admits medical and surgical patients. The predictors of mortality should be included The abstract has been re-written to include this information Page 4 and 5

3 A comment on the mortality of babies under 1 year would have been appropriate This has been added to the opening statement of the Background Page 6

4 The surgical patients were not indicated in the methods Surgical patients have been added to the methods Page 7

5 Babies > 2500 grams and infants (<1 year) may have different disease profiles and may be a source of bias in the study These two subgroups were analysed and there is no significant difference in mortality compared to the other categories. This is discussed and reported under "Discussion" di Page 17,18

6 Definitions of variables unclear The variables are defined in detail in a supplementary file which also provides more information on PICU. This is required in order to keep within specified the word count Supplementary file

7 Additional babies treated with NCPAP have been added which confuses the sample size As recommended by another reviewer, all reference to NCPAP has been removed from the paper.

8 The tables are difficult to interpret as only percentages are given and no the total number of children in each column. The proportions were removed from the tables and only the percentages with 95% CI

reported as the tables are very busy otherwise. Further, it will be duplication in Tables 1-3 if we put that column because the title specifies number of patients, then second column shows number of children with condition. Including a column on number without condition will be a simple complement of this. Hence, we decided to exclude that column.

Pages 11-16

9 Predictors of mortality were not discussed The predictors of mortality are included in the discussion and have been added to the abstract Page 17 and Page 5

Reviewer 3

Comment Response Page

Title – indicate a combined unit Title has been reworded Title page

Include secondary outcomes in abstract and reword concluding statement in abstract Secondary outcomes have been included and concluding statement reworded Pages 4 and 5

Not sure what statement about paediatric ICU admissions at the expense of neonates Omitted Page 5

References should be xxx [1]. And not xxx.[1] The xxx.[1] is correct as per the BMJ website i.e. punctuation mark and then reference without a space.

Various minor edits in Background These were accepted Page 6 and 7

NCPAP is not part of the study aim and should be omitted As suggested, all reference to NCPAP has been removed throughout the paper Page 8, 9, 17

Table 1 – what is the difference between surgical and post-operative patients This has been defined in Methods Page 8

Table 2 what does born before arrival mean? This has been changed to born outside health facility Pages 13 and 15

Minor edits in Discussion suggested Suggested edits accepted Pages 16/17

What is the rate of intubation? Intubation rate specified Page 17

Only a fraction of ICU beds are paediatric – be more specific Percentage specified Page 18

Admission criteria to ICU may improve objective decisions regarding admission The PICU did have admission criteria – similar to the Argent ones. This has been added to the Methods Page 7

Under conclusions – pre ICU stabilization may improve outcome Although pre ICU stabilization is important, the point is that, in the absence of intensivists, general paediatricians need to look after ICU patients . This has been reworded. Page 18

Incorrect font size Font size corrected

Reviewer 3

Thank you for your comments.

- As suggested, the NCPAP data and related figure has been removed.
- Secondary outcomes have been added to the abstract and the concluding remark of the abstract has been changed.
- The article summary has been reworded.
- The referencing (as per the BMJ Open website) is for the reference to appear immediately after the punctuation mark with no space e.g. www.[1]
- Post-operative patients have been defined in the methods (elective post-surgical admissions)
- Born before arrival has been changed to born outside a health facility
- The edits in the discussion have been incorporated.
- The rate of intubation has been added
- The actual percentage of PICU beds has been added.
- Paragraph has been reworded.
- Font size adjusted
- There were admission criteria for ICU – this has been added to the methods

- The point is not pre ICU stabilization, but that general paediatricians should know how to care for ICU patients in the absence of intensivists. This has been reworded.

VERSION 2 – REVIEW

REVIEWER	Professor Miriam Adhikari (Professor Emeritus) Professor Emeritus (Paediatrics) Currently Postgraduate Advisor in the School of Clinical Medicine. Provide assistance with protocol development, publications and dissertations to Postgraduates doing their masters and PhDs University of KwaZulu Natal, Durban South Arica
REVIEW RETURNED	03-Mar-2016

GENERAL COMMENTS	One reviewer questioned the aim of the study which is a review over a two year period. The authors addressed this well. Two of the three reviewers submitted detailed comments and there were many similarities in the comments of the two reviewers. The authors have addressed each comment of each reviewer in a constructive manner. The paper is greatly improved and there is greater clarity on many aspects that were raised by the reviewers. It will set the ground work for the prospective work from this unit and for others in similar LMIC to address the issues in their units.
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REVIEWER	Gerri Sefton Alder Hey Children's NHS Foundation Trust United Kingdom
REVIEW RETURNED	16-Mar-2016

GENERAL COMMENTS	This is much improved from the previous submission. If I was being picky I would condense the abstract further to highlight the 3 or 4 main predictors of mortality for each group instead of 7 to 8. I am happy with the overall content
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