Reviewer's report

Title: Evaluation of drug administration errors in an teaching hospital

Version: 1 Date: 30 September 2011

Reviewer: Siew Siang Chua

Reviewer's report:

General Comments:

The manuscript provides information on drug administration errors. The method of the study was designed with careful consideration to overcome possible deficiencies in other studies.

The aim of the study was clearly stated. The methods used was appropriate but not explained clearly in some parts.

Discretionary Revisions

Statistical analysis

1. Line 1: “Qualitative variables are ....and quantitative variables ...”

More commonly known as : Categorical variables ....and numerical variables...

Minor Essential Revisions

2. The manuscript should be checked for English. For example, the title should be: “Evaluation of drug administration errors in a teaching hospital”

3. Change the term “medication process” to “medication use process” throughout the manuscript.

Introduction

4. Line 3: “...prescription, medication delivery and administration.”

Change “medication delivery” to “dispensing”

5. Line 9: “...(data not shown, submitted).”

Explain this.

6. Line 10: “With the goal of overcoming these limits, ...”

Rephrase this statement.

Methods

Setting

7. Line 4: “...(DxCare#).”

Add in the manufacturer’s name for this CPOE system.
8. Line 7: “..(using Omnicell#).”
Add in the manufacturer’s name and explain what is Omnicell#

9. Line 7: “Nurses were in charge of 6 to 8 patients.”
Change to: “Each nurse was in charge of 6 to 8 patients.”

Study Design

10. Line 6: “The observer was trained in data collection by assisting a senior pharmacist ....”
How long is this training and was there a pilot study? How did the researcher(s) ensure that the observer was familiar with the study?

11. Paragraph 3, line 1: “Emergency drugs, parenteral nutrition and drugs prescribed as needed were not included in the analysis.”
Explain why these drugs were excluded.

12. Paragraph 3, line 6: “characteristics of each patient under the nurse’s care (age, sex) and ..” Does the gender of a patient affect how drugs are administered to him/her? If no, then should omit such unnecessary data.

13. The authors justified that the study was part of an audit... and was exempted from ethical approval. However, ethical approval is still important to ensure that the interest of the ward staff and patients are protected.

Errors

All abbreviation used should be preceded by the full term even though it could be a commonly used abbreviation.

Results

Error rate

15. Line 2: “...counted as a single TOE unit, as explained above (see Methods).”
This statement is not clear. Explain.

Drug classification

16. Line 2: “...cardiological drugs ...”
Should be “...cardiovascular drugs...”


Severity of errors

18. Line 1: “ ...to prevent errors but errors were counted: corresponding to 5 drugs ...”
This statement is not clear, should be rephrased.

19. Should state the 95% CI and p values of all OR.

Discussion

20. Paragraph 2, line 3: “And the error rate without wrong time errors rates from ...(date not shown). Should be: “The error rate without wrong time errors ranges from ...”

Not sure what the authors meant by “(date not shown)”. Explain.

21. Paragraph 2, line 6: “The total error rate in our study was lower than those in the study by Chua ..”

Should be “...by Chua and colleagues...” Do the authors mean “higher than” since the study found an error rate of 27.6% compared to 11.4% by Chua et al.

22. Paragraph 3: “We chose to use disguised ...characteristics of nurses observed).”

This whole section should be under Methods and not under Discussion.

23. Paragraph 3, line 7 – 9: “We reported the number of ...errors. The delay used to determine the wrong time errors is defined.”

These two sentences should be rephrased and explain the second sentence further.

Conclusion

24. Line 5: “...further publications.”

Should be “...further studies.”

25. Line 5 – 7: Should be under Discussion

26. Line 7: Delete “Further studies are required.”

Table 1

27. Not necessary to show the demographic data of patients. Age of patients is important if children are involved as younger children require lower doses or liquid dosage forms which need more manipulation and hence increases the risk of errors.

Table 2

28. This table is too complicated. Better to present the total different types of errors separately from the errors contributed by different groups of drugs. The notes at the bottom of Table 2 explaining what were a,b,c, d and e should be deleted as these caused more confusion than providing additional information.

Table 3

29. Suggest to omit the sex of patient from the table.
References
30. Authors should check the format of references listed.
31. Ref. 6 has no volume or page numbers.
32. Ref. 7: Delete “(study of drug administration errors)” from the title.

Major Compulsory Revisions

Results
33. The paper will be more beneficial to the readers if details of some common drug administration errors observed in the study are given. These will alert other healthcare providers on the various types of errors that can occur and hence help to prevent a repetition of such errors.
34. The authors should consider the number of times a certain ATC group of drugs were administered when calculating the error rates for each group.

Discussion
35. Should discuss the types of errors found in the study and suggest measures to prevent or minimise these errors.
36. More than a third of the Results section constituted the analysis for the determinants of drug administration errors but these were not given the same emphasis in the Discussion. How the findings of this study can be used to prevent or minimise drug administration errors should be included in this section.

Conclusion
37. Should include the main findings of the study and how these contribute to the existing literature on medication safety.

**Level of interest:** An article of importance in its field

**Quality of written English:** Not suitable for publication unless extensively edited

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**
I am interested in the issues of medication safety and am involved in conducting similar studies on medication errors. Two of my papers in this area were cited by the manuscript.