Author's response to reviews

Title: Clinical decision-making: midwifery students' recognition of, and response to, post partum haemorrhage in the simulation environment.

Authors:

Julie Scholes (J.Scholes@brighton.ac.uk)
Ruth Endacott (ruth.endacott@plymouth.ac.uk)
Mary A Biro (maryanne.biro@monash.edu)
Bree Bulle (breebulle1@bigpond.com.au)
Simon JR Cooper (simon.j.cooper@monash.edu)
Maureen Miles (maureen.miles@monash.edu)
Carole Gilmour (carole.gilmour@monash.edu)
Penny Buykx (penny.buykx@monash.edu)
Leigh Kinsman (leigh.kinsman@monash.edu)
Rosemarie Boland (rose_boland@optusnet.com.au)
Jan Jones (janet.jones@monash.edu)
Fawzia Zaidi (F.Zaidi@brighton.ac.uk)

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Author's response to reviews: see over
Dear Professor Gallagher

**Manuscript Title:** Clinical decision-making: midwifery students’ recognition of, and response to, post partum haemorrhage in the simulation environment.

Many thanks for inviting us to revise our manuscript. Please find below our response to the reviewers’ feedback

**Reviewer 1 report**

**Reviewer:** Linda Birch

**Major Compulsory Revisions**

1. The method section needs further clarity. It is not clear to the reader if the students entered the room alone or in groups. Later in the paper there is reference to the presence of a junior doctor who had limited engagement in the management of the emergency situation, being in the room, but this is not declared in the method section. There is no reference to the stage of training the students were at.

   The following text has been added:

   The students conducted the simulation individually. They were able to interact with a researcher who posed as a junior doctor who could undertake specific tasks on request i.e. prescribing medication and or undertaking medical procedures. The students were all in their final year of midwifery training.

2. A single junior student midwife and a junior doctor with limited engagement in management of the emergency, in a room alone, present a very unrealistic scenario and this should be acknowledged and explained. Why was a more realistic scenario not adopted?

   In response to this helpful comment we have added to the text the following clarification (under methods)

   The student conducted the simulation individually. They were able to interact with a researcher who posed as a junior doctor. The junior doctor was ‘unhelpful’ and was there only to provide medical interventions on request. Although stressful to the students, the focus of inquiry was on the students’ capacity to recognise and respond to deterioration and make timely requests for assistance and drive upwards their calls for assistance to more senior staff. The delay in the arrival of the emergency response team was considered to be a realistic potential that enabled the research team to observe the full repertoire of the students’ emergency skills.

3. Given that the students voiced concerns that the scenario was unrealistic, the researchers acknowledge an inconsistent approach and the qualitative interviews tended to be led by the researcher rather than the student, the authors need to be very clear about what this paper actually adds to current knowledge.

   The interviewer facilitated the students’ reflection on their own action within the scenario. The questions served to prompt the student to explain what they did when and how and on what knowledge. Experience demonstrated that students remained mute when they watched themselves if not aided to articulate their thinking. Therefore, the facilitation was to enable the students to focus on a ‘conversation with a purpose’ rather than forcing a desired response. The lack of consistency was an artefact of using an actress to approximate real world practice – but we did feel that the fidelity of the situation was more important than exact replicability in each student encounter as no statistical tests were applied to these qualitative data. What we feel has emerged
is a theoretical explanation of decision making in the management of sudden maternal deterioration.

We feel that this paper adds some insight into the way the students’ used their knowledge, or lack of it, to deal with the situation. We have highlighted in the discussion that the contribution is in how we might consider further training of students to equip them with a response to emergency situations.

Minor Essential revisions

4. Page 4, reference 4. The wording suggests that the WHO are stating that PPH is the leading cause of death rather than the authors of reference 4. Also, the reference appears to be a secondary source, rather than a primary reference. Some minor rewording would clarify this.

We are hopeful that the relocation of the referencing helps to distinguish the attribution of references more clearly (see revised text below).

5. Page 5 reference 6. Reference is made to the CEMACH 2003-5 report. This is a triennial report and later versions are available and it would provide greater validity to the figures quoted, if the latest statistics were used rather than older ones.

Thank you the text and references have been revised to:

In the UK, the incidence of PPH is on the decline\(^{6}\) with the number of maternal deaths from PPH halved to 5 in the reporting period 2006-2008\(^{7}\). This has been attributed to prophylactic oxytocic administration, and the swift and skilled multidisciplinary response to a haemorrhage once it has been recognised\(^{7}\). This means that midwives and obstetricians need to be vigilant and highly skilled in identifying and managing very sick women and making timely and appropriate interventions to reduce preventable harm\(^{8}\).

The next paragraph has been revised as follows:

Suboptimal clinical care contributed to 67% of maternal deaths in the UK 2003-05\(^{9}\) but three out of the five deaths reported in the period 2006-8 were due to a lack of routine observation and response to rapidly changing haemodynamic measurement\(^{7}\). Substandard care (SSC) is attributed to 70% of direct maternal deaths which includes PPH as a cause\(^{8}\). Similar recommendations have been stated in The Confidential Inquiry into Maternal and Child Health (CEMACH) report\(^{10}\) and latterly in the CMACE 2011 report\(^{7}\) to address SSC. They include: improvements in communication notably reporting concerns ‘upwards’ to more senior colleagues; improvements in senior support; the use of early warning scores to help identify sick women; general improvements in the clinical knowledge and skills of midwives and doctors to help manage emergency situations that include basic and advanced life support skills; better management of higher risk women and reviewing and learning from serious incidents or untoward incident reporting\(^{8}\).

References added:

findings-causes- maternal-deaths-and-care-pregnant-women downloaded 1/2/11. (retained as this is the latest report that talks about decline in PPH rates in UK – the latest version refers to deaths as a result of PPH. We hope the redrafting and inclusion of these additional references (7 & 8) now make the review more contemporary.


6. The students were self selected. The limitation of this as a research method should be acknowledged. 

*The following text has been added:* 

**Limitations**

Students opted into the study. This self-selection process means that data should be viewed with some caution. The outcomes across the whole student cohort might illuminate greater variation in performance and decision-making than those reported from the 35 students who volunteered to participate. However, participants’ biographical data indicated that the volunteers were fairly representative of their peers in age and range of experience.

In this study we were able to get students to articulate their thinking that informed action. The data were analysed to acknowledge different modes of thinking: analytical and responsive. The post review by students of their own video performance engaged them in reflective insight immediately after they had completed the scenario. This interview invited verbal retrospective, analytical insights that might have provided more conscious, deliberative and reason-based accounts than their initial performance indicated i.e. it appeared more intuitive, automatic, associative and fast, or in some cases, ‘frozen’ thinking.

Analysis of the reflective interview specifically addressed the sequencing of accounts relative to performance. It was noted that some students would speak ahead of their performance accounting for what they were about to do rather than what was happening in real time. Although this can be considered a significant limitation when considering the findings, other strategies such as speaking aloud decisions as they unfold would equally prompt analytical thinking rather responsive action more akin to live performance. In this design we were able to align this potential bias toward analytical thinking and balance that with the video vignette of actual performance and have provided these examples in the paper to illustrate this phenomenon.

Discretionary Revisions

7. The information in table 2 may be better presented as a graph rather than a table.

**Level of interest:** An article of limited interest
Reviewer's report
Title: Clinical decision-making: midwifery students' recognition of, and response to, post partum haemorrhage in the simulation environment.
Version: 2 Date: 12 September 2011
Reviewer: Helen Cheyne

Reviewer's report:
Thank you for inviting me to review this very interesting paper. The topic of how midwifery students respond to emergency situations is both topical and relevant both to midwifery practice and education. The methods used in this study are appropriate, use of hypothetical scenarios followed by interviews while reviewing video recordings is well established for investigating decision making in a range of emergency and other settings. The aims of the study are clearly stated and the methods and data analysis are well described in some detail.

Major compulsory revisions
1. However, I do not think that this paper currently draws the maximum value from the study which has been conducted, I think that it currently undervalues the study considerably. A sample of 35 students is quite large for a decision making study and the use of video analysis of what was actually done by the students along with the follow up interviews provides the opportunity for a much more developed section in the results and discussion about how the students were actually making decisions.

The 1st research question is - How do student midwives make decisions and respond to an obstetric emergency?

The first part of the results describes how the students respond to the emergency - what they actually did. This is very interesting although there is some crossover between the description of methods and the results. For example table 1 is discussed in the methods but not in the results.

Table one has been used to demonstrate the analytical approach. We extracted data to illustrate 10 students’ response to calling for assistance – how we interrogated the data with working hypotheses and drew out analytical memos to drive forward subsequent data analysis. This is a simplified version of dimensional analysis (a school of analysis within the grounded theory school). The collation of these data are discussed under the heading: ‘calling for help’ within the results section. We would be happy to present all these data but felt that the detail might be over burdensome on the reader.

2. The table itself could do with more clarification as it contains very interesting and relevant information but it is not used to its best. It may be that it is included to describe the method of data collection rather than the results however, the various times that the students called for assistance is interesting. I feel that the second part of
the results is less well presented and much more could be made of it. In the methods the student's (10) response to PPH is to be discussed under key clinical management strategies, however I am not able to find a section in the results or discussion entitled key clinical management strategies.

Table 2 now presents data from all 35 students. We summarise the response of all 35 students under each of the key clinical management strategies or 4 Ts response. We have amended the subtitle in the results and discussion to explicitly use the term ‘key clinical management strategies’ – thank you for drawing this omission to our attention.

3. Further the results presented here relate only to one student (33) given that 35 students took part this seems very restricted and not enough to determine that the students were using inductive or deductive reasoning or something else such as intuition. We have used an example of student 33 data to illustrate the category. We have extensive data from all 35 students but had to select examples to evidence the explanatory theory we are building. The vignette from Student 33 is used to illustrate the inductive deductive cycles the students’ use in their decision making. Other examples have been included from the data to saturate the categories that inform the decision making cycles.

4. Coiffi has investigated midwives response to haemorrhage and concluded that heuristics were dominant. It may well be that the student midwives were using a more rational approach to the decisions they made but the data presented here doesn't support either way. The data illustrates how the students try to use ‘rules’ they have been taught and pay homage to protocols. However, they also demonstrate that memory recall is problematic and that in reality they would use others to help prompt them into action. These points are made in the discussion.

5. I feel that this is an important study and that the authors should restructure the results section to include much more data on the way in which students made their decisions - this would maximise the value of their chosen study method.

I would also suggest that they include in the background section some discussion of the various theories of decision-making. I feel that this would then inform their presentation of results.

Thank you for this helpful comment – we have added a section on theoretical decision-making models and related this back to the work of key researchers’ who have contributed to the discourse on midwifery decision.

Decision Making in Midwifery
Midwives would ideally consider their approach to decision making to be founded on a partnership model with the mother. In critical illness, the mother’s compromised capacity to share decision-making shifts this partnership model to one where the midwife has to assume temporary control. A midwife has to draw upon irregularly rehearsed skills to respond effectively to the situation, use more systematic approaches to decision-making and defer to expert medical intervention. Institutional and organizational factors will prevail in times of emergency.
student midwife needs to learn how to respond to rapid physical deterioration under pressure.

Theoretical decision-making can be examined through three perspectives: prescriptive; normative and descriptive. Prescriptive theory assumes error and examines ways in which for example, clinical decisions systems can facilitate timely and accurate decisions. Normative theory focuses on rational decision-making and how to optimise authority, reason and conscience acknowledging that these decisions are influenced by social organisational and contextual factors. The final typology, descriptive decision theory, focuses upon the process of decision-making the factors that influence a decision including complexity, affect, time and other reference points influencing a decision, including emotion. The approach examines the use of heuristic devices to assist memory recall and facilitate mental shortcuts to facilitate decision-making. However, it is these heuristic devices that can lead to initial fixation error, bias or contradiction. The work of Coiffi has explored descriptive decision theory to explain midwifery decision-making and the importance of heuristic devices, whilst Rattray offers prescriptive solutions (such as clinical decision-making systems) as a prompt to assist timely and accurate decisions in the use of fetal monitoring in low risk labouring women. In general, the greater the risk and likelihood of adverse outcomes, prescriptive solutions are advocated by an organisation or central policy. In the case of managing post partum haemorrhage, the policy set out in CEMACH and CMACE directed institutions to introduce early warning scores and protocols to determine the clinical response. However, bureaucratic decision-making, driven by risk and litigation averse policies and procedures were found to be dominant in midwifery decision-making in their every day work, not just emergencies.

This study has taken a descriptive approach to explore how:

1) student midwives make decisions and respond to an obstetric emergency

2) we can enhance student midwives’ decision-making and clinical skills in response to a simulated PPH.

We have also pulled through some of the other key research into decision making more broadly as well as in midwifery in the discussion section.

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