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ORIGINAL ARTICLE

An audit of the efficacy of a structured handover tool in obstetric anaesthesia

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ABSTRACT
Introduction: The SAFE handover tool was developed to reduce critical omissions during handovers in obstetric anaesthesia. It comprises a simple proforma onto which the outgoing team documents patients who fall into one of four anaesthetically relevant categories: Sick patients; At-risk patients (of emergency caesarean section, major haemorrhage or anaesthetic problems); Follow-ups; and Epidurals. We hypothesised that its use would reduce the number of critical omissions at handover.
Methods: The efficacy of the SAFE handover tool was assessed through several audit cycles in a single maternity unit. The four SAFE categories were considered the gold standard, since they encompassed the consensus opinion of senior obstetric anaesthetists with respect to parturients they most wanted to know about at handover. Against these criteria it was possible to compare the number of cases that should have been handed-over against the number that were actually handed-over.
Results: After implementation of the handover tool, patients were four times more likely to be handed-over than without the use of the tool: an increase from 49% to 79% of relevant cases ($P < 0.0001$, OR 4.1, 95% CI 2.19–7.6). The handover tool was particularly effective at increasing the handover rates of Sick and At-risk parturients, which increased from 21% to 67% ($P < 0.0001$, OR 7.7, 95% CI 2.7–21.7) and 25% to 78% ($P < 0.01$, OR 9.9, 95% CI 1.6–61.6), respectively.
Conclusion: The SAFE handover tool significantly increased handover rates of anaesthetically relevant parturients. It is easy to remember and consistent with UK National Health Service Litigation Authority's guidance on risk management in maternity units.

Keywords: SAFE; Handover; Tool; Obstetric; Anaesthesia; Safety

Introduction

A clinical handover has been defined as "the transfer of professional responsibility and accountability for some or all aspects of care for a patient or group of patients, to another person or professional group on a temporary or permanent basis".[1] Handovers between doctors are a ubiquitous practice essential to providing continuity of care and ensuring patient safety. Poor handovers may be associated with an increase in adverse outcomes for patients and subsequent medical litigation.[2] The World Health Organisation, through its High 5s project, and the UK National Patient Safety Agency have identified communication failures as a major cause of adverse outcomes in patients.[1,3]

A national survey of obstetric handovers in the UK showed that unstructured verbal handovers in obstetric anaesthesia led to the omission of critical information, that had either harmed or delayed patient care.[4] In obstetric anaesthesia, attendance at midwifery and obstetric handovers provides important information but attendance is not always practical and may not consistently highlight every patient relevant to the obstetric anaesthetist. Therefore, through local consultation, the SAFE handover tool was developed by consulting senior obstetric anaesthetists for their opinions on which parturients they wanted highlighted at handover, and the best way to remember and communicate that information at the end of a busy shift.[5] It comprises a basic proforma on which the on-call team lists the names of patients who fall into one of four anaesthetically relevant categories:

1. **S**ick patients: including high dependency unit patients, those with sepsis, preeclampsia and severe systemic disease or symptoms.
2. **A**t-risk of emergency caesarean section, haemorrhage or anaesthetic problems: including placental disease, fetal problems, twins, obesity, clotting derangements and difficult airways.
3. **F**ollow-ups: including postdural puncture headaches, massive obstetric haemorrhage or patients with neurological deficit after neuraxial anaesthesia.

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4. **E**pidurals: patients who have them and any problematic ones which need reviewing or resiting.

The SAFE handover tool aims to provide structure to the obstetric anaesthesia handover and act as an aide-memoire so that patients are not lost at handover and can be reviewed in a timely fashion by the incoming anaesthetic team. We wished to assess its efficacy in improving handover rates of relevant parturients through several audit cycles in a single busy maternity unit. We hypothesised that the use of this proforma would reduce the number of critical omissions during obstetric anaesthesia handovers.

Methods

We conducted two audit cycles of obstetric anaesthesia handovers in a single London maternity unit. The audit was discussed with and approved by the hospital's Caldicott Guardian but as it was part of an audit cycle, it was deemed that a formal submission to an ethics committee was not required. In general, staff were aware that performance on a number of levels was continuously evaluated by various departmental and hospital audit cycles. Data about the quality of individual handovers were anonymised.

Data collection took place in an obstetric unit with 5300 deliveries per year. There were two or three handovers per day at 08.00 h, 18.00 h and 20.00 h. At least one anaesthetic trainee or senior trust-grade doctor was resident within the maternity unit at all times and additional senior trainee or consultant backup was available. The labour ward comprised 10 labour rooms, a four-bed postoperative recovery room, a four-bed high dependency unit and two operating theatres. On average the labour ward operated at 70% of its maximum capacity.

Details of the four rounds of data collection are as follows:

Round 1: Before implementation of the SAFE handover proforma (23 handovers)
Round 2: After implementation of the SAFE handover proforma (23 handovers)
Round 3: 15 months later, after several changes in trainee doctors (27 handovers)
Round 4: After re-education of trainee staff and reintroduction of the SAFE handover (27 handovers)

A single anaesthetic trainee was tasked with discretely collating data about the handover they received at the start of a shift, in any given round of data collection. A total of four trainees were therefore involved in data collection, one for each of the four rounds of the audit. All four data collectors were trained in a similar manner, through face-to-face meetings and e-mailed instructions. Additional instructions and examples were available on each data collection sheet. Other non-consultant anaesthetic staff (registrars and trust-grade doctors) were not informed that anonymised data collection was taking place. Handover of all patients who fell into any of the four SAFE categories was deemed to be the auditable standard, since they encompassed the consensus opinion of senior obstetric anaesthetists with respect to the parturients they wanted to be informed about at handover. Against these criteria, it was possible to compare the number of cases per category that should have been handed over against the number that actually were.

Round 1 of the audit assessed verbal handovers between the incoming and outgoing obstetric anaesthesia trainees. At the start of each shift, the number of cases handed over was recorded. The data collector then established the actual number of patients on the labour ward who fell into each of the four SAFE categories, by reviewing the patient board and, where possible, joining midwifery and obstetric handovers.

In Round 2 of the audit, the SAFE handover proforma tool (Fig. 1) was introduced. Round 2 was conducted one month after the end of Round 1. All obstetric anaesthetic trainees were instructed to list the names of patients who fell into one or more of the aforementioned categories on the SAFE handover proforma. Training was given to all staff on how to use this proforma via a detailed e-mail, posters and instructions with examples on the actual proforma itself.

Round 3 of the audit was performed 15 months after Round 2 to establish whether changes seen in Round 2 of the audit had been sustained. In Round 4, staff were re-educated about the use of the SAFE handover tool in a similar manner to Round 2. Data collection for Round 4 started one month after the end of Round 3.

Statistical analysis

Statistical analysis of the results was performed using chi-squared and Fisher's exact test to obtain a two-tailed *P* value (Graphpad™ Software). The odds ratio (OR) and 95% confidence intervals (CI) for differences between the rounds of data collection were calculated. Results and statistical analysis were reviewed and verified by a medical statistician.

Results

In total, 100 separate handovers were audited in four separate rounds of data collection. The data from all rounds of the audit are shown in Tables 1 and 2. On average between four and five patients per shift change fell into one of the SAFE criteria, and therefore should have been handed-over to the incoming anaesthetist. Round 1 assessed verbal handovers (the norm on the unit at that time) and the handover rate of Sick (21%)