



Identifying quality markers of a safe surgical ward: An interview study of patients, clinical staff, and administrators

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ABSTRACT

Background. Postoperative care quality is variable. Risk-adjusted mortality rates differ between institutions despite comparable complication rates. This indicates that there are underlying factors rooted in how care is delivered that determines patient safety. This study aims to evaluate systematically the surgical ward environment with respect to process-driven and structural factors to identify quality markers for safe care, from which new safety metrics may be derived.

Methods. Semistructured interviews of clinicians, nurses, patients and administrators were undertaken for the study.

Results. In the study, 97% of staff members recognized the existence of variation in patient safety between surgical wards. Four main error-prone processes were identified: ward rounds (57%), medication prescribing and administration (49%), the presence of outliers (43%), and deficiencies in communication between clinical staff (43%). Structural factors were categorized as organizational or environmental; organizational included shortage in staffing (39%) and use of temporary staff (27%). Environmental factors considered layout and patient visibility to nurses (49%) as well as cleanliness (29%). Safety indicators identified included staff experience level (31%), overall layout of the ward, cleanliness and leadership (all 27% each). The majority of patients (87%) identified staff attentiveness as a safety indicator.

Conclusion. This study demonstrates that there are a number of factors that may contribute to safety on the surgical ward spanning multiple processes, organizational, and environmental factors. Safety indicators identified across all these categories presents an opportunity to develop broader and more effectual safety improvement measures focusing on multiple areas simultaneously.

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The postoperative environment is subject to preventable adverse events and patient harm.¹⁻³ Variations in risk-adjusted “failure to rescue,” across centers with comparable postoperative complication rates, emphasizes the role of care quality in this period.⁴ Identifying the main sources of errors or deficiencies in care in the surgical ward may allow for timely interventions that prevent harm. Furthermore, determining variability and thus measurability of these factors offers a potential to quantify the risk of harm prior to its occurrence. Indeed, a recent case record review demonstrates mortality rates are no longer a practical measure in determining care quality⁵ lending further weight to the need for new safety metrics.

A number of researchers have assessed the importance of several issues affecting ward safety. The most prominently assessed has been the role of nursing team deficiencies, either in number^{6,7} or skill-mix,^{8,9} or the general effect of these deficiencies on overall morale, burnout and staff retention and its subsequent influence on care quality.^{10,11} Other factors relate to working patterns of clinical staff,¹² communication issues,¹³⁻¹⁵ and environmental features.¹⁶ However adopting a systems approach takes multiple structural and process-based factors into consideration. This can highlight where the most serious failures may occur and lead to targeted solutions.¹⁷ A number of the studies quoted have used administrative data⁷⁻⁹ that requires a degree of assumption on interpretation of data, or qualitative methods such as surveys,¹⁰ which may not afford the participant the scope to express opinions in detail.

The present study used semistructured interview methodology to systematically assess the ward environment from first-hand user experience. The primary objective was to identify the most error-prone processes in a surgical ward and the influence of organizational and environmental factors. The second objective was

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to use this information to derive safety indicators spanning multiple themes. Finally, recommendations on how to improve safety in surgical wards were sought from participants.

Methods

Participants

Participants were recruited from the following groups:

- Doctors (D)
- Nurses (N)
- Administrators (A)
- Elective surgical patients (P)

Purposive sampling was used for both staff and patients to ensure a variety of experience levels and backgrounds. Managers were approached individually via e-mail or in person. Thematic saturation was reached during the study but recruitment continued until balanced representation of each group was achieved.

Setting

Interviews were conducted from February to May 2015 at 3 hospitals within Greater London to reflect teaching, district general and urban hospital settings.

Collection of data

A semistructured interview protocol was developed ([Appendix 1](#)) and piloted prior to recruitment. The protocol allowed for a broad reflection on experiences of surgical ward safety before probing specific areas. Prompts were used to focus the discussion (e.g., to consider potential failings in vital daily processes like the ward round). However, opinions were only incorporated into the analysis if participants were able to expand on the topic and give examples of where errors can occur in that process/structure rather than only an agreement of the potential for error.

Overall 6 sections were addressed:

1. Identifying the problem
2. Defining processes
3. Defining structural/organizational factors
4. Defining environmental factors
5. Identifying quality markers for safety on the surgical ward
6. Identifying how practice could be improved

Informed, written consent was obtained from all participants. Interviews were held face-to-face with all participants by a single interviewer (YH) and digitally recorded.

Data analysis

Recorded interviews were anonymized before transcription by an external service (Page Six Transcription Services Limited, www.pagesix.co.uk). Content analysis of transcripts was performed manually by YH, with PS as a second reviewer for 25% of transcripts selected via a random number generator. Initial coding was performed in vivo before categorizing data to extract themes. Categorized data was checked by the second reviewer.

Ethical considerations

This study was reviewed and approved by NHS Research Ethics Committee (NRES Committees, North of Scotland).

Results

Participant demographics are illustrated in [Table 1](#). Fifteen patients, 15 doctors, 16 nurses, and 5 administrators were recruited. Interview lengths varied from 10 to 60 minutes.

Identifying the problem

In the study, 97% of staff interviewed (35/36; D = 15/15, N = 15/16, A = 5/5) thought that variation in safety existed between surgical wards. Several individuals elaborated on contributing factors:

“... depending on the facilities and physical layout... the number of beds and the disability of the patients that are in the beds and the level of staff or the skill mix that you’ve got looking after those particular patients” Administrator 2

“There are lots and lots of factors that make the ward safe. To mention a few that come to mind, there is obviously how well trained the staff are. Staff morale and staff motivation. There are other factors such as how well the team works together and how well the different professions work together as well. Another major factor I think is leadership...” Nurse 3, 5 years’ experience

Although 67% (10/15) patients had had previous experiences on other surgical wards, only 2/15 (13%) were aware of any variation. In addition, 14/15 (93%) respondents felt safe on their current ward at the time of interview.

Table 1
Participant demographics.

Doctors				
	n	M:F	Experience: median (range)	
Attending	4	4 males	5.5 y as attending (3–18 y)	
Residents	6	4:2	5 y in practice (4–10 y)	
Interns	5	3:2	8 mo in practice (8 mo–4.5 y)	
Surgical nurses	n	Staff nurses: Charge nurses*	Experience in nursing: median (range)	
	16	12:4	9.5 (6 mo–23 y)	
Administrators	n	Background	Length of experience in role	Length of experience in healthcare
	5	All Nursing	2.5 y (2–11 y)	20 y (range 5–24 y)
Patients	n	M:F	Mean age (range)	
	15	7:8	65 y (31–80 y)	

* Charge nurses are more senior and may lead the daily running of the ward.

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