

Team communications in surgery - creating a culture of safety

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Team communications in surgery—creating a culture of safety

ABSTRACT

As a key department within a healthcare organization, the operating room is a hazardous environment, where the consequences of errors are high despite the relatively low rates of occurrence. Team performance in surgery is increasingly being considered crucial for a culture of safety. The aim of this study was to describe team communication and the ways it fostered or threatened safety culture in surgery. Ethnography was used, and involved a six-month fieldwork period of observation and 19 interviews with 24 informants from nursing, anaesthesia and surgery. Data were collected during 2009 in the operating rooms of a tertiary care facility in Queensland, Australia. Through analysis of the textual data, three themes that exemplified teamwork culture in surgery were generated: *building shared understandings through open communication, managing contextual stressors in a hierarchical environment and intermittent membership influences team performance*. In creating a safety culture in a healthcare organization, a team's optimal performance relies on the open discussion of teamwork and team expectation, and significantly depends on how the organisational culture promotes such discussions.

BACKGROUND

The complexity of hospital environments present healthcare professionals with dynamic challenges and highly variable conditions in the provision of safe and reliable patient care. Yet, this complexity of healthcare is not inexorably linked to the large number of providers; rather it is complex because of the interdependencies of the healthcare professionals who provide that care (McKeon, Oswaks, & Cunningham, 2006). Healthcare professionals are tasked with the mandate to 'do no harm' nevertheless evidence of substantial public harm as a result of inadequate patient care has mounted over the last two decades (Kohn, Corrigan, & Donaldson, 1999; Reason, 2005; Sutcliffe, 2011; Wilson et al., 1995). The landmark report, *To Err is Human* by the Institute of Medicine (IOM) emphasized the notion that healthcare is not error-free, with medical errors causing up to 98,000 deaths yearly (Kohn, et al., 1999). The IOM report identified that patient care is largely delivered by a collective of individuals and acknowledged the critical role of effective teamwork in the delivery of safe healthcare. The results of this report have spawned significant research into the causes of medical errors in an effort to make healthcare organisations safer through the introduction of safety initiatives (de Vries, Ramrattan, Smorenburg, Gouma, & Boermeester, 2008; Leape & Berwick, 2005; Reason, 2005; Vincent, Neale, & Woloshynowych, 2001). Recommendations arising from the IOM and the subsequent body of research have centred on the imperative to move healthcare organisations towards building a safety culture.

The safety culture of an organisation is the product of individual and group norms, beliefs, attitudes and values that determine the commitment of an organisation's management of critical safety issues (Pronovost et al., 2009; Wiegman, Hui, Thaden, Sharma, & Gibbons, 2004). Thus in healthcare, creating a safety culture involves an organisation-wide

commitment to patient safety. 'High reliability organisations' have developed a culture sensitive to safety that enables employees and systems to cope with uncertain and time-dependent threats (Sutcliff, 2011). Reliability as a proxy for safety is crucial in hazardous milieus such as the Operating Room (OR), where up to 41% of all hospital adverse events occur (de Vries, et al., 2008). Healthcare organisations cannot achieve a safety culture unless employees are committed—and their actions are effectively and efficiently coordinated (Bagnara, Parlangei, & Tartaglia, 2010). Therefore, it is crucial to understand the ways in which interdisciplinary teams negotiate their roles and tasks in a healthcare organisation's quest to achieve a safety culture.

METHODS

The aim of this ethnography was to describe team communication in surgery and the ways in which it fostered or threatened safety culture.

Design

Ethnographic methods are often used to study culture. A mini-ethnography focuses on describing a social microcosm (Savage, 2000); and was used here to identify features of culture in relation to team interactions. Thus, the researcher spent a specific length of time in the OR environment with the intent of exploring predetermined objectives using an observational template covering data on procedure, team membership, miscommunications, and interruptions. In surgery, culture is epitomised by the communication and teamwork practices of the interdisciplinary team (Bleakley, et al., 2006;

Gillespie, Wallis, & Chaboyer, 2008; Kitto, Gruen, & Smith, 2009). Data were collected during 2009-10.

Setting

The research was undertaken across 10 surgical specialties (i.e., ENT vascular, cardiac, general, ophthalmology, neuro-surgery, facio-maxillary, plastics, urology, orthopaedic) in the OR department of a large tertiary-care hospital in Queensland, Australia. The department was staffed by over 250 health care professionals who held medical, nursing, and ancillary roles and operated around the clock.

Participants

In this facility a team consisted of a mix of surgical and anesthetic consultants and their registrars and residents, and registered and/or licensed nurses practicing in instrument, circulating or anesthetic roles. The choice of surgical procedures and informants was purposive and participants were drawn from these interdisciplinary groups worked in 10 different surgical specialties. Purposive selection of informants was criterion-based, founded on their ability to render "information-rich" insights into the phenomenon being explored, and therefore answer the research questions (Patton, 2002). In asking informants about teamwork practices in surgery, it was anticipated that they would reveal diversity in their experiences and perceptions of teamwork, based on their disciplinary orientations.

Respondent validation (Kitto, Chesters, & Grbich, 2008) was sought by offering informants the opportunity to confirm findings through other sources such as observations made by other team members. Maximum variation sampling was used and we sought to obtain diversity in interview participants to reveal multiple perspectives (Kitto, et al., 2008) around team work culture in the OR. Maximum variation sampling ensures representativeness by

seeking a wide range of extreme and typical cases, and thus is appropriate for gaining a holistic perspective of the phenomenon under study (Kitto, et al., 2008).

Data Collection

Fieldwork

Ethnographic data were collected over a six-month period and methods included participant observation, field notes, and in-depth semi-structured interviews. The trustworthiness of an observational study must be considered in the light of broader tensions pertaining to the inseparable nature of the 'emic' and 'etic' perspectives of the ethnographer, and the informants within the culture under study (Richardson, 2000). At the technical level, there are concerns about combining "scientific" (objective) and "literary" (subjective) approaches because speaking on behalf of others may be covertly motivated by the ethnographer's political or ideological agendas. Hence it is important to examine human activity using a reflexive lens—being aware of the multiple influences that the researcher has on the research process and how the research affects the researcher (Kitto, et al., 2008; Richardson, 2000).

The first author (BG) had practiced for many years as an OR nurse and was familiar with the nuances and routines of the environment, performed the field work observations and interviews. During surgery, BG was positioned away from the OR table, with each member of the team and all entrances to the room in view. As an intermittent participant-observer, BG was able to engage in some group activities and use the 'self as instrument' (Richardson, 2000). During fieldwork it was essential that BG be able to sufficiently distance herself from the culture in order to identify the similarities and differences of the situations that occurred as part of team members' teamwork practices.

Interviews

Semi-structured in-depth interviews (Roper & Shapira, 2000) were used to elicit informants' perspectives on teamwork practices. Interviews lasted from 25 to 60 minutes, and were conducted at the discretion of the informant in a room away from the main work area. An interview guide (Patton, 2002) was used to assist BG to remain focussed on the topics under discussion, and to ensure that issues that were central to the research questions were covered with all informants. Topics covered during the interviews explored issues surrounding interdisciplinary team communications in surgery, and the contextual factors that fostered or threatened teamwork. Open-ended questions included, *Can you describe the characteristics of an effective team in surgery?* and, *Based on your experience, what are some of the obstacles to teamwork in surgery?* Data saturation was evident as the analysis progressed and precipitated an end point to data collection when no new information was revealed (Pope, Ziebland, & Mays, 2000). Prior to commencing the interviews, demographic data were collected in respect to age, years of experience, and professional role. Interviews were digitally recorded and transcribed. Based on their personal preference and availability, informants were either interviewed in groups, or individually.

Medical participants were interviewed individually as there were constraints with their availability. Using the interview guide, issues around teamwork practices were discussed to elicit the informant's particular world view (Roper & Shapira, 2000). The questions asked were open-ended and moved from the general to the specific. Occasionally, informants would deviate from the topic and BG would reorient the discussion to ensure that it remained focussed on the topics being explored. When informants mentioned issues that

were relevant and not previously considered by BG, these were explored in greater depth so that new insights could be illuminated (Patton, 2002).

Group interviews were conducted with nurse informants who belonged to the same staff category to diffuse potential status differentials (Klueger, 1994). Similar issues around teamwork practices were covered. Emphasis was placed on group interactions and the moderator (BG) encouraged informants to talk with each other, ask questions and comment on experiences and personal perspectives (Klueger, 1994). This afforded informants the opportunity to regulate their opinions or statements based on the variability of the group discussion. As moderator, BG used a mild, unassuming manner which allowed informants to share their experiences with others rather than with her.

Fieldwork included over 500 hours of observations of 63 nurses, 26 anaesthetists, 39 surgeons, and 15 ancillary staff. During fieldwork, 160 surgeries were observed across 10 surgical specialties. A total of 19 interviews were conducted with 24 informants. 16 were individual interviews while three were group interviews (Table 1). Informants' ages ranged between 23 to 66 years, and their years of clinical experience, from 12 months to 40 years.

Ethical Considerations

Ethics approval was given by the relevant human research ethics committees. Informed written consent was obtained for all observations and interviews. Participants received written information detailing the study's aims, procedures, risks, and benefits. Entry into rooms was not assumed or necessarily guaranteed: Consent was renegotiated throughout the study and participants were informed about their right to withdraw.

Data Analysis

In data analysis, investigator triangulation was used as all members of our interdisciplinary research team contributed to interpretation of the findings using diverse perspectives and discipline-specific expertise (Shih, 1998). In analysing the data, we linked events witnessed during fieldwork and described in interviews to specific behaviours that promoted a safety culture in surgery. For instance, speaking up when there was a potential threat to patient safety. From the textual analysis of field notes, interview transcripts and diary entries, analysis occurred in an iterative manner to develop themes (de Laine, 1997). Thematic analysis involved a process of breaking down, comparing and conceptualising data to enable recognition of emerging patterns to identify major themes and their subthemes (DeSantis & Ugarriza, 2000). The extracted themes and their corresponding explanatory data were cross-checked among researchers to ensure consensus. In labeling the themes, a thick description to indicate the context in which the study was conducted.

Research Rigour

The tenets of credibility, auditability, triangulation, transferability and reflexivity were considered as components of rigour (Guba & Lincoln, 1994; Kitto, et al., 2008; Richardson, 2000). In this study, the congruencies among informants' experiences were examined and taken back to informants to corroborate the authenticity and fidelity (markers of credibility) of the transcriptions and interpretation of these experiences. An audit trail, which was supported by memos linked with pieces of data confirmed the emergent subthemes. A triangulated approach was used at two levels. First, we utilized several sources of data which enabled a broad range of issues to be cross-checked, achieving convergent validity or

confirmation of the data (Shih, 1998). Second, investigator triangulation was evident in the interdisciplinary approach we used to examine the data set, and thus minimised the potential for bias that is inherent in any study. Transferability of findings to other similar contexts was rendered through the variety of informants selected for interview, and an assortment of situations and events that were observed during fieldwork. Finally, reflexivity was considered through the researchers' acknowledgement of the impact of their personal and professional subjectivities, the selection of informants, and the research topic may have had on the interpretation and reporting of the findings (Kitto, et al., 2008; Richardson, 2000). Before, during and after field work, BG diarised any preconceived perceptions in an effort to reduce her propensity to accept taken-for-granted internalised assumptions of the culture and context (de Laine, 1997).

FINDINGS

From the analysis of the texts generated through the focused interviews, field notes, and journal entries, three themes emerged; *Building shared understandings through open communication*, *Managing contextual stressors in a hierarchical culture* and *Intermittent membership influencing team performance*. Themes and subthemes, although separate, were interconnected (Table 2).

Building shared understandings through open communication

The first theme encapsulated the significance that team members ascribed to building an appreciation of each other's activities, sharing common perspectives and the behaviours observed around communication practices. Establishing rapport with others, including patients prior to commencing a procedure or a list was initiated in an informal and

unstructured manner while performing individual tasks. BG often witnessed communications in the form of self-introductions, greeting the patient, and surgical pre-briefings creating an opportunity for open dialogue through asking and confirming, and allowed the team to agree on a plan of action with a common intention—the basis for shared understandings. In his preparations for undertaking long and difficult surgeries, one senior surgeon believed it was imperative to establish rapport with team members, particularly those with whom he had not met or worked:

It is direct continuity of that rapport, of that motivation, of that mutual agreement. When I meet a person for the first time my intention is to establish that relationship as such that next time I meet them we will be able to start at the best level so we can go on from that, whether it is an administrative, technical or maybe even an emergency circumstance. (Surgeon, Informant # 18)

A lack of familiarity coupled with the promise of a prolonged procedure provided the impetus for informants to actively seek connection with other team members previously unknown to them. Self introductions were seldom observed but when they did occur, they diffused the trepidation associated with establishing new professional acquaintances and negotiating task allocation. In some rooms, team members' names were written on a whiteboard fixed to the back wall of the room. However, most informants asserted that it was an unrealistic expectation that mutual trust and respect be established in the first encounter. Rather, it was necessary for a working relationship to be nurtured over time. The lack of a shared working "history" contributed to team members' hesitancy and reservation, culminating in lost opportunities when the need to exchange information or clarify concerns was imperative. The apprehension associated with clarifying or resolving an issue intensified when team members did not know each others' first names. An anaesthetist revealed:

Sometimes I don't know the name of a surgeon and I feel very much resistant to talk to them because you sound a bit stupid. So to know the person's name or know them from having worked together more, that makes it easier to address things. (Anaesthetist, Informant # 3)

These sentiments were confirmed by many of the nurse informants, and were typically reflected in this nurse's account,

When you don't know the person, you are less likely to ask them things you need to know when you need to know them. Maybe you make more assumptions, not try and figure things out on your own without discussing it...knowing people and identifying who you are working with is really important. (RN, Informant # 13)

While team pre-briefings were espoused by most informants as essential to establishing shared understandings they were observed in only 20 (12.5%) of procedures. Moreover, when they were performed, some key team members were neither present, nor were these pre-briefings performed in their entirety. BG also observed instances when barely a word was spoken between team members during case preparation or throughout the entire operative period. These field observations were corroborated:

I could do an ortho [orthopedic] case and really not speak to the surgeon at all. I did a urology list the other day and the surgeon didn't speak to me for the entire surgery, didn't say "hello" when he walked in, didn't say anything at all, apart from when the patient coughed he grunted something at me. (Anaesthetist, Informant # 14)

The absence of professional respectful acknowledgement and basic communication between team members frequently thwarted any effort by others to cultivate shared understandings, critical to enhancing team performance.

Managing contextual stressors in a hierarchical environment

The second theme was characterised by observed and described scenarios in relation to procedural challenges (e.g., bleeding) and the combination of individuals that comprised

particular teams. Informants described the inherent difficulty in negotiating tacit hierarchical boundaries that were palpable within and between disciplines. The behaviours depicted by team members centred on their ability to disclose concerns and speak up, stay focused, provide backup, and maintain control of the situation. The interaction between behaviours used to provide back up, remain focused on the task and maintain certitude in the midst of uncertainty in surgery is supported in other discourse (Jin, Martimianakis, Kitto, & Moulton, 2012). In this study, providing backup for others was a valued feature of teamwork and ensured that the operative procedure ran smoothly and without incident:

A really good scout¹ can totally prop up the inexperienced scrub and not only does she [sic] run things and keep things like a well oiled machine she [sic] is also giving stuff to the scrub before they know they need it. If they are inexperienced they do not know they need it and then they turn around and the scout is there getting it. (RN, Informant # 2)

Many of the surgeon informants identified procedural complexity as challenging and stressful, especially when performing plastic, neuro, ophthalmic and cardiac surgeries. The importance of maintaining control and staying focused on the task at hand was highlighted,

...it is big biscuits once you start disconnecting a piece of tissue you only have a certain amount of time to get back blood flow, you can't afford not to be focused on the task at the expense of everything else. (Surgeon, Informant # 7)

Therefore at critical junctures in the procedure (i.e., a micro-vascular anastomosis), the surgeon was necessarily absorbed in the task, deliberately shutting out external stimuli or distractions—and continued gazing into the binocular eyepieces of the microscope. During this period, s/he was less accessible and relied on other team members to coordinate the

¹“Scout nurse”, also termed ‘circulating nurse’ ensures that the scrub team have the necessary instruments and equipment prior to, and during surgery. The “scrub” or ‘instrument’ nurse is responsible for anticipating case needs of the team and handing the surgeon(s) the appropriate sterile instruments in the order in which they are required.

performance of peripheral tasks. Thus the nature of the clinical task often precluded surgeons from noticing or recognising the work of anaesthetists (Castanelli & Kitto, 2011). Anaesthetists described the delicate juxtaposition between “doing things to feel safe” and “being in control”—and their actions were motivated by the need to maintain patient safety. Behaviours used by anaesthetists to “feel safe” included asking and confirming information and evaluating actions, whereas “being in control” included double-checking machines and ensuring that additional equipment was available.

The hierarchical structure of surgical teams, based on members’ level of seniority and experience was obvious:

This is my 4th year post fellowship so it may be that I am working with a surgeon that has 20 years’ post fellowship who I have ‘grown up’ with as a senior. It is very difficult to then have an equal relationship with someone who has always been more senior than you. Now in the role as consultant anaesthetist you want to take responsibility and you do have an equal role. (Anaesthetist, Informant # 5)

The dominant nature of the OR hierarchy was challenging to negotiate, even when members were at least nominally considered to be on equal professional footing with each other. Informants described the importance of speaking up to voice concerns, monitoring and providing timely feedback to one another. Senior medical informants believed that others must be “prepared to tell you when you’re wrong” but acknowledged that their decisions were rarely challenged by other members of the healthcare team because consultants in this organisation were “very important and senior”—and thus revered. Junior medical informants expressed reluctance in speaking up because they feared “being denigrated or belittled”, irrespective of whether they were right or wrong.

Intermittent membership influences team performance

The final theme incorporated the fluidity of team membership, teamwork behaviours of leadership, decision making, and tailoring communications to the needs of the situation. The shifting nature of team membership impacted on interpersonal relations when informants worked in specialties and surgeons with whom they were unfamiliar. Of the 160 procedures observed, 110 (69%) were performed by teams assembled ad hoc. Team relations became strained when members failed to declare a lack of expertise, and consequently stymied team performance. Several informants used dance as a metaphor to illustrate the mechanics of the team's social interactions and group dynamics. The dance performance was eloquently captured in this nurses' comment:

Harmony in a theatre is like watching a ballet, one thing just flows into the next. A theatre has got a pulse. A theatre has got a movement, it is like the soft wings of spring, everything runs smoothly, the surgeon is at ease, the anesthetist, the scrub nurse, the scout, everybody is in harmony, everybody knows exactly where he or she stands, knows exactly what is expected of them..... (RN, Informant # 17)

It appeared that when team members had worked together over a period of time they developed a clear understanding of each others' capabilities and coordinated their actions seamlessly, with few words or gestures required. For instance, in cardiac and ophthalmology teams, membership was relatively static and the procedures performed were well-rehearsed. In cardiac surgery, teams are reasonably stable because the nature of the work is highly routinised, technologically intense with clear divisions of labour (Hazelhurst, McMullen, & Gorman, 2007) as opposed to the breadth of procedures and fluidity of team composition in other surgical specialties.

Yet, the antithesis of "harmony" was portrayed as "chaos and fibrillation" and not knowing others frequently impeded the pace, flow and timeliness of team tasks and activities:

Not knowing the surgeon can be difficult, it makes things a little slower, you don't understand what their decision making process is. (Anesthetist, Informant # 3)

During fieldwork we witnessed occasions when a surgeon requested a particular item or piece of equipment. Clarification from the scrub nurse was not always sought, and delayed that part of the procedure—raising the ire of the surgeon, as illustrated in this field note;

During an open urology case, the surgeon requested a “pledget” [small swab] to mop up bleeding in the surgical field and increase operative visibility. The scrub nurse shrugged her shoulders, and looked to the scout nurse who also appeared not to know. The scrub did not verbally acknowledge the surgeon's request but searched her work trolley and passed the surgeon a larger gauze swab. The surgeon, in a stern tone of voice, stated, “No, I need a pledget.” Neither the scrub nor the scout nurse clarified with the surgeon his request. (Field note # 20, Case 8)

Surgeons in particular believed that they were largely responsible for taking the lead in decision making to coordinate activities:

...when there are multiple teams, vascular surgeons, orthopedic surgeons, neuro surgeons working on the patient, or with ruptured aneurysms where there is lots of people in the operating theatre people need to know there is one person who is making the decisions and the information needs to go through that person so the appropriate decisions can be made otherwise bits of information get passed to different people and you don't get the whole picture at any stage which means the whole thing falls over. (Surgeon, Informant # 20)

Clearly, having one designated person responsible for making decisions at the point of care mitigated the potential for fragmented communications between team members. The act of sharing information with others in a controlled, concise and deliberate manner enabled team members to build a common situation assessment—essential in life-threatening, time-pressured scenarios that have serious consequences.

DISCUSSION

Teamwork culture in surgery is embodied in the ways in which individuals share physical space, artefacts, communication strategies and teamwork processes. Earlier studies have examined patient safety issues through an ethnographic lens (Bleakley, et al., 2006; Lingard et al., 2004), however ours has extended those earlier understandings through illustrating the intricacies associated with team behaviours and their potential to enhance or compromise safety culture. Specifically, our research has demonstrated that open communication and active management of team instability supports a safety culture. Conversely, the effects of a hierarchical structure and a lack of stability in team membership may also compromise it.

In our study, informants identified that building shared understandings through open communication was critical to enhance performance. The findings herein suggest that rapport with others was established using social opportunities such as self-introductions, greeting the patient and pre-briefings guided by checklists, contribute to creating a safety culture. Yet, while some of these activities were observed, there were discrepancies between informants' statements and their behaviours. For instance, less than 15% of the teams we observed used pre-briefings—the lack of which potentially compromises the team's ability for reliable performance. The socialisation of the surgeon has been seen as an obstacle to checklist implementation, and influences the ways in which they are adopted (Bosk, 2009; Gillespie, Chaboyer, Wallis, & Fenwick, 2010; Kitto, 2010).

Our findings suggest that while informants valued open communication, they continued to operate in a hierarchical culture which appeared to resist abandoning professional status and autonomy. In our study, the effects of hierarchy threatened safety because less powerful members had limited input in decision making, and were reluctant to speak up.

Healthcare organisations tend to encourage medical dominance and professional stratification, allowing the most powerful to make decisions (Friedson, 1985)—irrespective of their level of expertise. The literature illustrates examples of the subtle hierarchical bias and status relationships that epitomise the culture of medicine (Friedson, 1985; Gillespie, Chaboyer, Longbottom, & Wallis, 2010), which still presents a significant barrier to creating a safety culture. Although the ability to ‘speak up’ about safety threats is a feature of a safety culture, it requires respectful understanding, which is the foundation of relational understanding (Kitto, 2010; Sutcliffe, 2011).

Almost 70% of the teams observed came together sporadically, reflecting the transient nature of the surgical teams. Nevertheless, team members used strategies that allowed them to adapt to the constant changes in membership through various communication practices (e.g., whiteboard, self introductions). In describing teamwork in surgery, some informants likened it to a “ballet” performance. Teamwork was epitomized by the flawless execution of codified verbal and non-verbal exchanges and carefully choreographed technical movements between team members. The metaphor of dance has previously been used to illustrate the dynamic responsive manner through which teams learn by sharing explicit information to enable the team collective to negotiate and build shared understandings (Rowe, 2008; Smith & Rawling, 2008). The tempo of the dance changes depending on the familiarity of team members—and while it is not always possible to choose a particular partner, the dance—manifest in the act of surgery—must start regardless (Freischlag, 2012). The absence of familiarity demands that more words need to be spoken about the steps of the dance, and the procedure may be slower initially. Thus, maintaining open dialogue is essential in constructing the dance (Rowe, 2008).

Strengths and Limitations

This ethnographic study has a number of strengths but we also acknowledge the limitations herein. First, in writing ethnography, the ethnographer must be cognisant of the underlying political and social agendas that may unwittingly influence the ethnographer's ability to render the stories of others (Richardson, 2000). There are inherent complexities in examining a context in which the observer has a high degree of familiarity. By using the *emic* and *etic* perspectives, subjective and objective views were addressed, and preconceived assumptions challenged through diarising field experiences and writing memos to enhance objectivity and professional judgment. Therefore, the effects of researcher bias during data collection, interpretation and description were lessened (Richardson, 2000). Second, despite the use of one hospital locale, there was interdisciplinary representation with informants who had different levels of experience, which permitted diverse professional perspectives and enhances the conceptual generalisability. Finally, the dissimilar methods used for interviews may have given rise to different dynamics. Yet, similar issues were explored and data saturation achieved. Furthermore, the variety of interview techniques responded to participants' preferences.

CONCLUSIONS

Surgical teams function on a high level of interdependence, and must necessarily exhibit the essential attributes required for building a safety culture in the OR. Undoubtedly, the surgical team's optimal performance relies on open dialogue and understanding expectations, and is significantly dependent on how the organizational culture promotes

such discussions. The consistent and sustained presence of senior and clinical leadership in embedding and reinforcing the tools and behaviours in daily clinical practice is critical to promoting a safety culture.

CONFLICT OF INTEREST

The authors report no conflict of interests. The authors alone are responsible for the content and the writing of this paper.

WORDS 5,942 (Including abstract and reference list)

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