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COMMUNICATION, NOISE, AND DISTRACTIONS IN THE OPERATING ROOM: THE IMPACT ON PATIENTS AND STRATEGIES TO IMPROVE OUTCOMES.

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ABSTRACT:

The operating room is a complex environment where noise, distractions, and case relevant and irrelevant communication can adversely impact patient care by prolonging surgeries and increasing the risk for adverse outcomes. This article explores the evidence regarding how communication, noise, and distractions impact the multidisciplinary team and patient outcomes and proposes strategies to deal with these workplace variables.

INTRODUCTION

The operating room (OR) is one of the most complex healthcare work environments and is dynamic and very interactive. Physicians and nurses must be able to excel at teamwork and communicate effectively to ensure optimal patient outcomes. Staff interactions and communication include case-relevant, non-case-relevant, and teaching conversations. The OR has, in addition to communication, music playing, loud equipment, and unwarranted traffic. All of these impact staff and patients.[1] This article describes communication, noise, and distractions in the OR, the impact they have on staff and patients, and the interventions to improve patient outcomes.

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Communication

Communication among the various surgical team members is of the utmost importance in the OR. Case-relevant communication includes discussions about the patient, equipment, and projected outcomes of the case. Communication regarding the case allows the team to prepare for complications and anticipate events. Case-relevant communication starts when the room is being prepared for a patient and continues throughout the perioperative period.[2]

Ideally, case-relevant communication should promote positive outcomes for the patient and enhance cohesiveness for the surgical team.[1] Team members must stay engaged in the information that is being shared.[3] Communication breakdown frequently occurs regarding equipment issues. Halverson et al.[4] found that communication failures in the OR were significantly apparent in equipment and progress reports and led to inefficiencies and procedural delays.

Non-case-relevant communication, or small talk, in the OR can take place throughout the entire case. It can improve interpersonal relationships amongst the staff and improve the relationship of the team.[1] Small talk most often occurs when the workload is low, non-stressful, and fairly routine. Often small talk will occur during wound closure when the surgeon is more relaxed and able to visit with the staff at the end of a long case. The attending surgeon will, however, often leave the closure to the resident who may not be as experienced at suturing and could require additional concentration that can be disrupted by small talk. Lower concentration levels can result in less precise suturing, more damaged tissue, or too much tension in the sutures which can increase the risk of surgical site infections (SSI).[2] It is difficult to ignore interesting conversations but they, nonetheless, can impair the coordination and concentration of the staff. Non-case-relevant conversation typically occurs when the stress and workload are low and may possibly impair the team's performance.[1]

Noise

There are many sources of noise in the OR including loud equipment, music, the opening and closing of doors, suction, phones, alarms, and conversation among multiple team members. Hasfeldt et al[6] found noise levels exceeded the recommended levels (30dB(A) set by the International Noise Council) by more than100% and peaked at 400%. Noise can be very disruptive and have a negative impact on the performance of the surgical team members. When noise levels are high the staff need to raise their voices to be heard and understood which can further add to the noise level. Constant exposure to noise can hamper attention levels as well as intellectual, psychomotor, and memory functions specifically while attempting to multitask. Katz[6] reported that the detrimental effect of constant noise for anesthesia residents was a deterioration of short-term memory and mental efficiency.

Music is often played in the OR and can be very relaxing for both the staff and the patient. It can improve surgeon efficiency and prevent distraction. There have been a multitude of studies proving the positive effect of music in the OR on the staff and the patients.[7,8] There are, however, times when it can be detrimental depending on the volume of the music and the situation in the OR.[8] According to Weldon et al.,[8] 20-26% of OR staff stated that music, especially during critical times, hinders communication and provides a distraction.

Equipment, alarms, suction, cautery, and forced air units are used routinely during cases and result in very high noise levels. Noise disrupts OR communication, as the auditory processing function of the staff is diminished, and the negative impact of noise is greater when the OR staff is stressed which can adversely impact staff performance.[5,9] Critical conversations can be difficult to understand and communication can break down when the sound levels are high.[4] Communication breakdown can include the need for repeated requests leading to frustrated personnel and adding time to the procedure. Weldon et al.[8] reported that each repeated request adds between 4 and 68 seconds to the OR time.

Distractions

Distractions, resulting from interruptions, happen throughout operative cases. Some are preventable but others are not. Doors opening and closing, people entering and exiting the room, individuals answering pages/calls not pertaining to the case, are all routine distractions in the OR. Seelandt et al.[1] noted in their observational study that distractions occur every one to three minutes during most cases in the study. These interruptions have been shown to negatively affect the surgical team's performance. Interruptions, even minor, can affect complex tasks possibly resulting in major events that impact the patient.[1]

The use of cell phones and tablets in the OR is a controversial topic among staff members. Some anaesthesiologists,

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nurses, and surgeons use their phones or tablets during cases to receive calls and texts, read pertinent medical information, share pictures, and other personal uses if time permits. Devices can be beneficial when they are used appropriately. Conversely, device use can reduce focus, slow reaction time and decrease staff performance by negatively impacting on decision-making and mental concentration.[11] Most ORs have a policy restricting cellphones. But some surgeons, anaesthetists, and nurses persist in bringing them into the OR.

Calls or pages for the surgical team often happen during a case and they can take the surgeon's focus away from the surgery and the patient. The circulating nurse is often taken away from important tasks to answer calls which can result in inattentiveness and loss of focus on the case.

Side conversations that include the circulating nurses, anaesthestists, or visitors can be very distracting to the surgical team. Attention is frequently pulled away to participate in these conversations and this negatively affects the surgical performance. Healey et al.[12] observed interruptions in the OR and found them to be a distraction to the surgical team and discussed that further research should be done albeit it can be difficult to effectively study this without a risk to patient safety.

Teaching students, or bystanders, can also be distracting for the surgical team. Wheelock et al.[4] observed that, interestingly, when surgeons were teaching surgical residents the nurses appeared to delay or suppress interaction with the team and poor communication was noted.

Impact on the Patient

Case relevant information that is shared with team members typically improves patient outcomes and team member relationships. Distractions and interruptions can, however, negatively impact patient outcomes by prolonging cases and, thereby, increasing the risk of surgical site infections. Letts & Doemer[13] also concluded that conversation contributes to airborne contamination in the OR as well as the presence of increased bacteria in simulated wounds that possibly increases the incidence of SSIs. They sprayed human albumin on the face and nostrils of scrubbed personal and measured its presence in simulated wounds after increased conversation. Door openings during the case has also been shown to affect rates of SSIs. Lynch et al.[14] found that surgeries with increased number of door openings had higher risk of patients developing SSI. Bedard et al[15] found that there was a high rate of door openings and traffic during total joint arthroplasties at their facility in Quebec. Door openings increase the bacterial count and disrupt the laminar air flow and may increase the rate of prosthetic joint infections. Smith et al.[16] laid out sterile RODAC plates near the surgical site during orthopaedic surgeries and noted that frequent door openings increased the number of contaminated plates by 70% when compared with no door openings.

Strategies to improve patient outcomes

Strategies to improve patient outcomes could include educating all members of the team to encourage them to limit interruptions or participation in extraneous conversation during critical times.[17] Distractions and interruptions are not always preventable but if they can be controlled there is hope to decrease potential errors.[4] A team huddle each morning could include discussing strategies to decrease the noise level, limit the opening and closing of doors, minimize visitors, and reduce the necessity of answering phone calls and pagers during the case and, most specifically, during induction, incision, and emergence.[5] Posting "Do Not Enter" signs on the door may deter visits from other staff especially during critical times such as when instrumentation is used and the risk for SSI's is extremely high. Berard et al[15] even suggest locking the external

door once the patient has entered the room. Other signs such as "Shhhh' have proven helpful in some facilities when communication becomes very noisy.[9] Creating laminated hand off documents and equipment alerts for staff, when applicable, may also help improve communication related to these two variables.[10] Limiting the use of cell phones and tablets, and discussing protocols for their disinfection, would decrease the amount of bacteria and reduce the risk of infection.[5,18] Limiting non-case-relevant conversations should be an important goal of the surgical team in order to help all team members stay vigilant, especially during wound closure, to potentially decrease the risk of SSIs.[2]

CONCLUSION

This review of communication practices, sources of noise, and causes of distraction has outlined a series of issues that routinely occur in many OR settings. Communication is extremely important amongst the multi-disciplinary team but not all communication is necessary and some can be distracting, prolong cases, and possibly increase the incidence of SSIs. Many of these distractions and current practices can be addressed, and strategies implemented, to enhance the efficiency of the OR, increase the effectiveness of the staff, and improve patient outcomes.

Providing an environment in the OR with as few interruptions or distractions as possible, reducing noise levels and traffic, and improving teamwork should become part of the many routines already in place to improve patient outcomes and optimize patient care.[2,10,11]

ORNAC Standards pertaining to this article can be found in the *Operating Room Nurses Association of Canada (ORNAC) Standards for Perioperative Registered Nursing Practice* (12th edition, October 2015). Section 4, p. 256 Standard (s) 4.3. and Section 2, p.119 Standard 2.6.

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