

Information Statement

Surgeon and Surgical Team Concentration

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Maintaining concentration among all team members in high intensity/high risk work environments has been demonstrated to be critical for effective performance. Maintaining concentration among all surgical team members in operating rooms (ORs) and peri-operative areas is a critical component of surgical patient safety.¹ Loss of concentration and distraction among surgical team members has been identified as a frequent contributor to surgical errors. Anything that diverts attention from critical tasks (i.e. distraction) runs a significant risk to undermine safe task completion.² Effective surgical team concentration supports shared team focus and elevates team intelligence optimizing safety and improving surgical outcomes.

The AAOS believes that identification and removal of distractions that undermine concentration is a responsibility of all surgical team members.

Common specific identifiable impediments to surgical team concentration:

1. **Noise:** Many orthopaedic OR environments are filled with noise. The combined effect of noise created by surgical power instruments, patient monitoring devices, heating/cooling/ventilation fans, and surgical team conversation can create distraction, and impair surgical team communication.³ To minimize OR noise distractions and maximize effective surgical team communication, all surgical team members, including surgeons, nurses, and other operating team members, should minimize noises that are disruptive or noises that create distraction. Silence and focus is particularly important during critical portions of surgical cases, including timeouts, briefings, debriefings and implant selection/confirmation. Every OR team member is responsible for situational monitoring that effectively limits distractive noises and facilitates surgical team members attention on all the important elements of the surgical procedure itself.
2. **Fatigue:** Fatigue among surgeons and surgical team members can impair concentration. Limitations on resident work hours are the result of studies identifying fatigue as a cause of medical errors.⁴ Fatigue can result from lack of sleep, inadequate recovery from long distance travel, illness or cumulative overwork and/or cumulative sleep deprivation. Regardless of its cause, fatigue can limit effective focus on task and concentration.⁵ Self-regulation among team members is important to promote safety. If fatigued, surgeons or surgical team members must always ask themselves, 'In my current state of fatigue, can I concentrate effectively enough to perform this procedure in a safe manner?' If not, safe alternatives such as replacement of fatigued team members or re-scheduling of non-emergent procedures should be considered to optimize safety.

3. Task Saturation: According to Gordon⁶, there are two causes of task saturation; information overload and inadequate prioritization of inputs. Surgeons and team members must remain effectively focused on single tasks. Multi-tasking may, in a surgical setting, impair concentration and can contribute to surgical errors. Effective concentration among team members is focus upon single task completion in a standardized sequence. The ability to manage task saturation requires concentration to 'triage' information input in order of importance and develop techniques for analysis and action on those inputs. Increased task saturation is unavoidable and may be necessary in certain orthopaedic situations such as assessment and management of the poly trauma patient. In this setting, team organization and situational leadership can mitigate some of the negative effects of task saturation and thereby maintain safe processes.
4. Continuation Bias: Surgeons and surgical team members are task and goal oriented. Task completion focus, however, can impair team sensitivity for clues that may require deviation from normal protocols or techniques. Continuation bias is the complete and intense focus on finishing familiar tasks that limits awareness of evidence suggesting needed attention to evolving problems. Continuation bias can impair team performance and surgical decision making. This is most often seen in OR settings when unusual or unexpected events necessitate consideration of deviations from normal procedural steps. Effective surgical teams maintain concentration on the completion of standardized sequential steps of a procedure but allow measured adaptability for unexpected surgical events.⁷
5. Task Repetition: Consistency and standard procedures are recognized as important surgical safety principles to assure optimal surgical outcomes. However, the performance of tasks in a repetitive fashion has the potential to undermine concentration and create complacency. Repetitive tasks not directly related to clinical care, such as completion of the surgical record or EMR documentation have the potential to distract the OR team from more critical elements of the surgical procedure.⁸ It is important for surgeons and team members to maintain vigilance and the same degree of caution and focused concentration even during the more the repetitive components that exist in any surgical procedure. Active team member situation monitoring allows for concentration on details in familiar or common procedures, just as in less common procedures.
6. Communication Devices: Personal cell phones, computers, tablets and other communication devices have become indispensable and critical tools for timely communication and acquisition of important information. Effective use of these devices is important to fulfill clinical responsibilities. Removal of these devices is impractical and may be dangerous in some critical care environments. However, inappropriate and unnecessary use in OR settings may introduce distractions and prevent focus on the important clinical task at hand. It is important for OR policies and procedures to assure appropriate use of such devices in the OR setting to promote optimal surgical and emergency care.
7. Team Member Impairment: The side effects of medication or substance abuse impair surgeon and team performance. It is the responsibility of all surgical team members to be aware of and report behaviors that may indicate impairment or substance abuse.
8. Disruptive Behavior: Concentration of the surgical team is undermined by disruptive behavior of any surgical team member, including surgeons. Abusive personal conduct, whether verbal, emotional or physical, can have a serious impact on patient safety.⁹ These impacts include increased stress levels within a team, frustration, inhibition of team collaboration, inhibition of information transfer and impaired communication. All of these behaviors inhibit concentration and are not conducive to effective team function. It is the ongoing obligation of the surgeon to continually assess behaviors that he or she, or any member of the team may exhibit that inhibits effective team function.

The AAOS supports creating and maintaining OR environments that promote optimal concentration and minimize distraction among all surgical team members: surgeons, nurses, surgical team members and surgical facility administrators. The AAOS supports team centered strategies focused on a shared monitoring model to manage distraction and facilitate concentration, with the goal of improved surgical safety and team performance.

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Information Statement 1041

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