



AORN Position Statement on Managing Distractions and Noise During Perioperative Patient Care

POSITION STATEMENT

Operative and invasive procedures are high-risk activities that require vigilance,¹ concentration, and situational awareness. Distractions and noise are impossible to remove completely from the perioperative environment; therefore, AORN is committed to advocating for a controlled environment in which distractions, noise, and interruptions are minimized.^{2,3}

AORN believes that a multidisciplinary team approach is required to reduce distractions and the level of noise to create a safer environment for patients and perioperative team members. Distractions and noise that do not serve a clinical function should be minimized. During critical phases of the surgical procedure, surgical team members should create a no-interruption zone where nonessential conversation and activities are prohibited.^{4,5} Critical phases may include time-out periods, critical dissections, surgical counts, confirming and opening of implants, induction and emergence from anesthesia, and care and handling of specimens. The no-interruption zone is also referred to as the sterile cockpit,^{3,5} the zone of silence,⁶ and the red zone.⁶

Human factors contribute to potential errors that can compromise patient safety. Human factors include teamwork and communication disruptions, and extraneous interruptions that can lead to errors.⁷ Interventions to limit distractions and to reduce noise in the administrative, behavioral, engineering, and biomedical domains should be considered during development of an action plan adaptable to various practice setting (eg, traditional ORs, ambulatory surgery centers, office-based surgery centers, cardiac catheterization suites, endoscopy suites, obstetric ORs).

RATIONALE

The perioperative setting is one of the most complex work environments in health care.⁸ Similar to other complex systems, the perioperative setting is an information-intensive environment in which performance and safety are heavily reliant on the smooth flow of information.⁸ Noise and various types of distractions, including electronic sources, contribute to the complexity and are unavoidable in the technology-rich perioperative practice setting.⁹ Noise is a distraction that interrupts patient care and potentially increases the risk for error.¹⁰ Noise may minimize the ability to communicate effectively, make it difficult to understand content, and contribute to miscommunication.^{1,11} Distractions and noise must be managed to maintain the focus on patient and workplace safety.

The levels for continuous background noise in hospitals suggested by the Environmental Protection Agency are 45 decibels (dB) during the day.¹² Researchers at a

large, metropolitan hospital monitored sound pressure levels before, during, and after surgical procedures to determine background sound levels, equivalent sound levels, and peak sound levels during various types of surgeries.¹³ Orthopedic surgery had the highest equivalent sound pressure levels at 66 dB. Sound pressure levels during neurosurgery, urology, cardiology, and gastrointestinal procedures ranged from 62 to 65 dB. Orthopedic surgery and neurosurgery have sustained high levels of sound and have peak levels of sound that exceed 100 dB more than 40% of the time. The highest peak levels observed during surgery exceeded 120 dB.¹³

Excessive noise in the health care environment may negatively affect patient and worker safety.^{14,15} A prospective study that evaluated the level of noise in the operating theatre and subsequent surgical site infections showed that increased noise volume in the OR was associated with the development of surgical site infection.¹⁶ Communication is difficult during periods of high noise levels, potentially leading to errors.^{14,17,18} Noise has been linked to poor task performance and poor concentration. For example, noise affects one's ability to perform complex, problem-solving tasks.¹⁸ Noise also is associated with job dissatisfaction, irritability, tachycardia, anxiety, fatigue, illnesses, stress,^{14,17} emotional exhaustion,¹⁴ burnout,¹⁴ and injury.^{15,18,19}

Distractions increase the possibility of adverse patient outcomes in the perioperative setting by diverting attention from the current task of a team member, which could lead to omissions and mental lapses.^{1,4,9,20-23} In a prospective study that measured noise and distraction in the OR during 50 trauma procedures, the average noise level was 85 dB, with a range of 40 to 130 dB. The average number of interruptions and distractions was 60.8 for each surgery, with a range of five to 192. The main causes of distractions and interruptions were team members entering and leaving the room, equipment alarms, parallel conversations, and telephones or pagers.³

The use of personal electronic devices (eg, mobile telephones, tablets, laptop computers) has greatly increased and may distract caregivers from focusing on the patient and providing safe patient care.²⁴ The ring tones and alarms of personal electronic devices contribute to distraction.²⁴ Undisciplined use of cellular devices in the OR by any member of the perioperative team may be distracting and affect patient care.^{25,26} In a survey of perfusionists, 55.6% reported they had used a cellphone while performing cardiopulmonary bypass, and 49.2% reported sending text messages during procedures.²⁷

Factors that contribute to distractions and the level of noise generated in the perioperative practice setting include the following:

- technology:
 - telephones (eg, smartphones, cellphones, land lines),³
 - wireless devices (eg, tablet computers, personal digital assistants, personal gaming devices),⁴
 - wireless communication systems (eg, Spectralink®, Vocera®),⁴
 - paging systems (eg, personal pagers, intercoms, overhead paging systems),^{3,4,10}
 - computers,
 - music devices (eg, radios, digital audio players, CD players),^{28,29} and
 - handheld two-way radio transceivers (ie, walkie-talkies);
- electronic activities:

- e-mail,
- texting,
- social media (eg, YouTube®, Facebook®, Twitter®, LinkedIn®),
- Internet, and
- games;
- patient care activities:
 - medical records (eg, charting, viewing test results),
 - clinical alarms,^{3,10,30}
 - monitors,¹⁷ and
 - medical equipment and devices (eg, radiology equipment, waste management, smoke evacuators, drills)^{10,28,29};
- behavioral activities:
 - conversations (essential and extraneous),^{3,8-10,17,23} and
 - personnel movement in and out of the room^{3,5,31};
- mechanical (physical) environment:
 - heating, ventilation, and air conditioning systems,¹⁷
 - metal equipment (eg, instruments, basins, rigid containers),¹⁷
 - powered surgical instruments,^{28,29}
 - moveable equipment,
 - equipment problems,^{23,31}
 - reflective surfaces on floors, walls, and ceilings,^{10,32} and
 - pneumatic tube systems.³⁰

GLOSSARY

Critical phase: Times during the patient’s surgical experience when any activity could distract surgical team members or interfere with the safe conduct of their duties. Surgical team members should give their full attention to carrying out duties performed during critical phases. Examples include, but are not limited to, time-out periods, critical dissections, surgical counts, confirming and opening of implants, induction and emergence from anesthesia, preparation of allografts, urgent or emergent situations, and care and handling of specimens.

Decibel (dB): A logarithmic unit that measures the intensity of sound.

Distraction: That which diverts the attention from or prevents concentration on a task. Realistic distractions and interruptions that impair simulated surgical performance by novice surgeons.

Equivalent sound level: A measurement that quantifies the noise environment as a single value of sound level for any desired duration.

Interruption: An unplanned or unexpected event causing a discontinuation of a task or performance.

Noise: Any sound that is undesired or interferes with the ability to hear.

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Organizational Resources

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