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

POSITION STATEMENT

AORN believes:

- An interdisciplinary team approach is required to reduce **distractions** and **noise** in perioperative settings and create a safer environment for patients and perioperative team members.
- Distractions and noise that do not serve a clinical function should be minimized. For example, music, if played during a procedure, should be limited to a contextually reasonable volume and agreed upon by the entire procedure team beforehand.
- During critical phases of the surgical procedure, surgical team members should create a no-**interruption** zone during which nonessential conversation, music, and activities are prohibited.
- Interventions to reduce distractions and noise are adaptable to all areas where operative and other invasive procedures are performed (eg, traditional ORs, ambulatory surgery centers, interventional radiology laboratories, cardiac catheterization laboratories, endoscopy suites), and the actions included should be applicable to the specific practice and team members.
- The use of personal electronic devices should be limited to activities involving direct patient care or access to resources relevant to the procedure being performed.

RATIONALE

The perioperative setting is one of the most complex work environments in health care and is an information-intensive environment in which performance and safety are heavily reliant on accurate and efficient transfer of information. Distractions and noise contribute to the complexity of the care environment and can affect perioperative team communication.[1] The Joint Commission continues to identify failures in communication and teamwork as leading causes for reported sentinel events (eg, wrong site surgery, unintended retained surgical items, delays in treatment, fire or burns).[2] Distractions in the OR have been associated with prolonged procedure duration, increases in mental workload, added stress, impaired team performance, and poor patient outcomes.[1]

The use of personal electronic devices (eg, mobile phones, tablets, laptop computers) has greatly increased and can distract caregivers from focusing on the patient.[3,4] Ring tones and alarms from these devices contribute to distraction.[5] Undisciplined use of personal electronic devices in the OR by any member of the perioperative team may be distracting and may affect patient care.[4,6] Distractions increase the possibility of adverse patient outcomes (eg, incorrect counts[7,8]; wrong procedure, side, or site)[9] by diverting a team member's attention from the current task, which could lead to workflow **disruptions**,[10] prolonged procedure duration,[11,12] or mental lapses.[13]

Excessive noise in the health care environment can interfere with effective communication among members of the perioperative team and contribute to miscommunication[14,15] that leads to an error.[16]

Recommended limits for noise in hospitals vary. The Environmental Protection Agency (EPA) recommends that the average level of continuous background noise inside hospitals not exceed 45 **decibels** (dB) during a 24-hour day, allowing for periods of exposure to higher levels of noise and others of relative quiet.[17] The World Health Organization (WHO) recommends that sound levels remain as low as possible and not exceed 35 dB in areas where patients are treated or observed, including the OR.[18] The Occupational Safety and Health Administration's legally enforceable permissible exposure limit (PEL) for noise is 90 dBA for all workers for an 8-hour day, and because repeated exposure to excessive noise contributes to hearing loss, a hearing conservation program is required when workers are exposed to a noise level of 85 dBA or higher during an 8-hour day.[19] Studies measuring noise levels during surgery demonstrate high noise levels, with many exceeding the EPA and WHO recommendations.[20-23] Specialties in which powered surgical tools and impact-producing equipment are used (eg, orthopedics,[24] otolaryngology[25,26]) demonstrated higher noise levels than other specialties.

Noise can also distract from and interrupt patient care and potentially increase the risk for error.[27] Noise has been linked to poor task performance[28-30] and poor concentration,[28,31,32] and therefore probably interferes with the ability to perform complex, problem-solving tasks. Working in a noisy environment has been associated with physical and psychological symptoms, including tachycardia,[33] anxiety,[23] and stress[28,34] and can contribute to increased workload levels.[23] Studies have found that increases in noise (eg, conversation during wound closure) are associated with increases in surgical site infection.[35,36] Moreover, a reduction in procedural noise levels has been associated with decreased postoperative complications.[28]

Playing music in procedure rooms can serve as a relaxing and stress-relieving element, but it has the potential to impede communication, negatively affect team performance, and contribute to distractions when inappropriately selected and applied.[37] Research suggests that playing music at a low to medium volume in these settings can enhance both individual and team performance, reduce stress, and minimally impact communication.[28,31,37,38] However, more research is needed to confirm general positive perceptions of music and stress gleaned from survey responses from real-life experiences.[39,40] When considering the use of music during surgical procedures, it is essential to evaluate factors such as the type, genre, and volume of the music; the length of the procedure; the duration of critical phases; and the preferences of the team.[37,38,41] Ongoing assessment of these variables and the music's impact on the procedure and the team is crucial to avoid any potential negative effects.[28,37,38]

Factors contributing to distractions and noise in the perioperative practice setting may include

- patient care activities involving
  - medical records (eg, charting),[42]
  - clinical alarms,[33,43,44]
  - monitors,[15,33] and
  - the use or troubleshooting of medical equipment and devices (eg, instruments or powered surgical devices, radiology equipment, waste management systems, suction devices, smoke evacuators, forced-air warming units)[10,12,15,20,21,33,42,45-49];
- behavioral activities involving
  - conversations (eg, teaching, case-relevant, case-irrelevant),[8,15,21,39,42,44,47,50-52]
  - multitasking,[8,15,42,48] and
  - movement of personnel in and out of the room,[8,10,42,46,48,51]
- the mechanical (physical) environment, including
  - heating, ventilation, and air conditioning systems,[53]
  - acoustic surfaces on floors, walls, and ceilings,[34,54] and
  - pneumatic tube systems[43];
- the use or troubleshooting of technology, including
  - communication devices (eg, mobile phones, telephones),[8,15,39,42,44,51]

    - personal electronic devices (eg, laptops, tablets, gaming devices, smartwatches),[15,44]
    - paging systems (eg, personal pagers, intercoms, overhead paging systems),[13,15,39,47] and
    - computers[44];
- background music[8,42,52]; and
- administrative responsibilities (eg, managing OR schedules, resource allocation, staffing, providing direct patient care while performing administrative duties).[44]

Identifying critical phases of a surgical procedure may assist surgical team members in minimizing nonessential conversation, noise, and activities.[13,55] Critical phases of the surgical procedure are described as events in an operative or other invasive procedure during which there is a high risk for an adverse occurrence.[55] Examples of critical phases found in the literature include the preoperative briefing,[55] the time out,[55] induction and emergence from anesthesia,[52,55] procedure-specific critical moments (eg, delicate dissection, implant opening),[55] surgical counts,[8,11,55] medication preparation and administration,[56] and specimen management.[55] Perioperative teams can identify critical phases that are specific to their practice, such as patient positioning and hand-off communication. The reduction in activity and noise during critical phases has been referred to as a no-interruption or distraction-free zone,[52,57] sterile cockpit,[58,59] zone of silence,[43] and red zone.[13] Although complete elimination of noise and activity in the OR or procedure room might not be practical or desirable, perioperative team members should prioritize performing their responsibilities during critical phases. Critical phases can occur at different times for different team members.

Because the issue of distractions and noise is one of significance for patient safety, it is also addressed in AORN Guidelines. Recommendations directed at reducing distractions and noise in procedural areas can be found in the AORN Guideline for Team Communication.[5] Recommendations related to clinical and alert alarms can be found in the AORN Guideline for a Safe Environment of Care.[60]

Additional actions that can be taken to minimize disruptions and noise in the procedure room include the following:

- Equipment
    - Keeping music volume level at a minimum and turning it off during critical phases of care[22,38,50,52]
    - Using audio/visual aids to display the environmental noise levels in decibels[22]
- Communication
    - Reducing or eliminating procedure-irrelevant conversations[21,47,50,52]
    - Establishing practices in support of no-interruption zones during critical phases of the procedure[44,52]
- Teaching/education
    - Educating perioperative team members on the effects of disruptions, distractions, and noise[21,22,50,52]
    - Implementing a “safe phrase” (ie, common language that the team agrees to use for course correction without judgment or conflict) to modify distracting noise levels[50]
- Process/procedural
    - Implementing a preoperative briefing or a time-out process that addresses noise[10,21,50]
    - Leveraging point-of-use storage systems to reduce procedure room traffic[10]
    - Limiting movement of personnel and procedure room traffic[50]
    - Developing policies that limit the use of personal communication devices to clinically relevant use only[10,44]
    - Implementing a clinical and alert alarm management plan that includes policies and protocols for alarm safety[44,60]

Operative and invasive procedures are high-risk activities that require vigilance, concentration, and situational awareness. Disruptions, distractions, and noise can contribute to ineffective communication and teamwork that lead to errors that compromise patient safety.[55] Disruptions, distractions, and noise cannot be eliminated completely from the perioperative environment; therefore, AORN is committed to advocating for a controlled environment in which disruptions, distractions, and noise are minimized to the greatest extent possible.

GLOSSARY

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

Disruption: That which interrupts the normal course of a process.

Distraction: That which diverts attention from or prevents concentration on a task.

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

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

REFERENCES

1. McMullan RD, Urwin R, Gates P, Sunderland N, Westbrook JI. Are operating room distractions, interruptions and disruptions associated with performance and patient safety? A systematic review and meta-analysis. *Int J Qual Health Care.* 2021;33(2):mzab068.
2. Sentinel Event Data 2023 Annual Review. The Joint Commission. 2024. Accessed November 25, 2024. https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/sentinel-event/2024/2024_sentinel-event-_annual-review_published-2024.pdf
3. Snoots LR, Wands BA. Use of personal electronic devices by nurse anesthetists and the effects on patient safety. *AANA J.* 2016;84(2):114-119.
4. American College of Surgeons (ACS) Committee on Perioperative Care. Statement on distractions in the operating room. *Bull Am Coll Surg.* 2016;101(10):42-44.
5. Avidan A, Yacobi G, Weissman C, Levin PD. Cell phone calls in the operating theater and staff distractions: an observational study. *J Patient Saf.* 2019;15(4):e52-e55.
6. Mobile Information Technology Position Statement. American Association of Nurse Anesthesiology. February 2015. Accessed November 25, 2024. https://issuu.com/aanapublishing/docs/12_-_mobile_information_technology?fr=sMTUyZjU2NDAxMjU
7. Guideline for prevention of retained surgical items. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2025:839-902.
8. Bubric KA, Biesbroek SL, Laberge JC, Martel JA, Litvinchuk SD. Prevalence and characteristics of interruptions and distractions during surgical counts. *Jt Comm J Qual Patient Saf.* 2021;47(9):556-562.
9. Feil M. Distractions in the operating room. *Penn Patient Saf Advis.* 2014;11(2):45-52.
10. Cohen TN, Boquet AJ. The effects of flow disruptions on RN circulators. *AORN J.* 2021;113(4):351-358.
11. Willett M, Gillman O, Shin E, et al. The impact of distractions and interruptions during cesarean sections: a prospective study in a London teaching hospital. *Arch Gynecol Obstet.* 2018;298(2):313-318.

12. Yoong W, Khin A, Ramlal N, Loabile B, Forman S. Interruptions and distractions in the gynaecological operating theatre: irritating or dangerous? *Ergonomics.* 2015;58(8):1314-1319.
13. Grissinger M. Sidetracks on the safety express: interruptions lead to errors and . . . wait, what was I doing? *P T.* 2015;40(3):145-190.
14. Padmakumar AD, Cohen O, Churton A, Groves JB, Mitchell DA, Brennan PA. Effect of noise on tasks in operating theatres: a survey of the perceptions of healthcare staff. *Br J Oral Maxillofac Surg.* 2017;55(2):164-167.
15. Gui JL, Nemergut EC, Forkin KT. Distraction in the operating room: a narrative review of environmental and self-initiated distractions and their effect on anesthesia providers. *J Clin Anesth.* 2021;68:110110.
16. Enser M, Moriceau J, Abily J, et al. Background noise lowers the performance of anaesthesiology residents' clinical reasoning when measured by script concordance: a randomised crossover volunteer study. *Eur J Anaesthesiol.* 2017;34(7):464-470.
17. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* EPA-550/9-74-004. Washington, DC: US Environmental Protection Agency; 1974.
18. Berglund B, Lindvall T, Schwela DH, eds. *Guidelines for Community Noise.* Geneva, Switzerland: World Health Organization; 1999.
19. 1910.95 - Occupational noise exposure. Occupational Safety and Health Administration. Accessed November 25, 2024. https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.95
20. Au J, Hamilton S, Webb A. Decibels in the operating theatre: a study of noise levels during surgical procedures. *ANZ J Surg.* 2024;94(10):1841-1845.
21. Brommelsiek M, Krishnan T, Rudy P, Viswanathan N, Sutkin G. Human-caused sound distractors and their impact on operating room team function. *World J Surg.* 2022;46(6):1376-1382.
22. Crockett CJ, Nylander VE, Wooten EJ, Menser CC. The emergence noise reduction quality improvement initiative to enhance patient safety and quality of care. *Paediatr Anaesth.* 2022;32(11):1262-1269.
23. Arabacı A, Önler E. the effect of noise levels in the operating room on the stress levels and workload of the operating room team. *J Perianesth Nurs.* 2021;36(1):54-58.
24. Siegel MG. The risk of noise-induced hearing loss performing knee replacement surgery. *Noise Health.* 2019;21(102):183-188.
25. Sampieri G, Namavarian A, Levin M, et al. Noise in otolaryngology – head and neck surgery operating rooms: a systematic review. *J Otolaryngol Head Neck Surg.* 2021;50(1):8.
26. Yu CV, Foglia J, Yen P, Montemurro T, Schwarz SKW, MacDonell S. Noise in the operating room during induction of anesthesia: impact of a quality improvement initiative. *Can J Anaesth.* 2022;69(4):494-503.
27. van Pelt M, Weinger MB. Distractions in the anesthesia work environment: impact on patient safety? Report of a meeting sponsored by the Anesthesia Patient Safety Foundation. *Anesth Analg.* 2017;125(1):347-350.
28. Fu VX, Oomens P, Merkus N, Jeekel J. The perception and attitude toward noise and music in the operating room: a systematic review. *J Surg Res.* 2021;263:193-206.
29. Suh IH, LaGrange CA, Oleynikov D, Siu KC. Evaluating robotic surgical skills performance under distractive environment using objective and subjective measures. *Surg Innov.* 2016;23(1):78-89.
30. Speir R, Brand T, Greene R. PD19-11: Surgeon performance and distractions in the operating room: a randomized, controlled, crossover trial. *J Urol.* 2015;193(4 Suppl):e396.
31. Rogers CM, Palmerton H, Saway B, Tomlinson D, Simonds G. Effect of various or noise on fine motor skills, cognition, and mood. *Surg Res Pract.* 2019;2019:5372174.
32. Keller S, Tschan F, Semmer NK, et al. Noise in the operating room distracts members of the surgical team. An observational study. *World J Surg.* 2018;42(12):3880-3887.

33. Katz JD. Noise in the operating room. *Anesthesiology.* 2014;121(4):894-898.
34. McNeer RR, Bennett CL, Horn DB, Dudaryk R. Factors affecting acoustics and speech intelligibility in the operating room: size matters. *Anesth Analg.* 2017;124(6):1978-1985.
35. Dholakia S, Jeans JP, Khalid U, Dholakia S, D'Souza C, Nemeth K. The association of noise and surgical-site infection in day-case hernia repairs. *Surgery.* 2015;157(6):1153-1156.
36. Tschan F, Seelandt JC, Keller S, et al. Impact of case-relevant and case-irrelevant communication within the surgical team on surgical-site infection. *Br J Surg.* 2015;102(13):1718-1725.
37. El Boghdady M, Ewalds-Kvist BM. The influence of music on the surgical task performance: a systematic review. *Int J Surg.* 2020;73:101-112.
38. Hamad F, Moacdieh NM, Banat R, et al. Perceptions on music and noise in the operating room: a cross-sectional study. *Int J Occup Saf Ergon.* 2022;28(4):2168-2172.
39. Nasri BN, Mitchell JD, Jackson C, Nakamoto K, Guglielmi C, Jones DB. Distractions in the operating room: a survey of the healthcare team. *Surg Endosc.* 2023;37(3):2316-2325.
40. Narayanan A, Pearson L, Fisher JP, Khashram M. The effect of background music on stress in the operating surgeon: scoping review. *BJS Open.* 2022;6(5):zrac112.
41. Froschauer SM, Holzbauer M, Kwasny O, et al. Effect of music on the efficiency of performing a microsurgical arterial anastomosis: a prospective randomized study. *J Hand Microsurg.* 2020;15(1):13-17.
42. Bachar A, Brommelsiek M, Simonson RJ, et al. Speech communication interference in the operating room. *J Surg Res.* 2024;295:723-731.
43. Quick Safety Issue 35: Minimizing noise and distractions in the OR and procedural units. The Joint Commission. April 14, 2017. Accessed November 25, 2024. https://www.jointcommission.org/resources/news-and-multimedia/newsletters/newsletters/quick-safety/quick-safety-issue-35-minimizing-noise-and-distractions--in-the-or-and-procedural-units/
44. Statement on Distractions. American Society of Anesthesiologists. December 13, 2020. Accessed November 25, 2024. https://www.asahq.org/standards-and-practice-parameters/statement-on-distractions
45. Goffin J, MacRae E, Farrow L, et al. Study on impact of robotic-assisted orthopaedic industrial noise (SIREN). *Arch Orthop Trauma Surg.* 2024;144(5):2413-2420.
46. Keogh S, Laski D. A concern for intraoperative distractions and interference: an observational study identifying, measuring, and quantifying both within the operating theatre. *Surg Res Pract.* 2021;2021:9910290.
47. Roberts ER, Hider PN, Wells JM, Beasley SW. The frequency and effects of distractions in operating theatres. *ANZ J Surg.* 2021;91(5):841-846.
48. Göras C, Olin K, Unbeck M, et al. Tasks, multitasking and interruptions among the surgical team in an operating room: a prospective observational study. *BMJ Open.* 2019;9(5):e026410.
49. Prabhakar M, Abdallah Y, Hanseman D, Krishnan D. Is noise from suctioning harmful to surgeons' hearing? *J Oral Maxillofac Surg.* 2019;77(7):1346-1350.
50. Bodin J. Excessive noise in the operating room: can it be improved? *J Perioper Nurs.* 2022;35(2):6.
51. van Harten A, Gooszen HG, Koksma JJ, Niessen TJH, Abma TA. An observational study of distractions in the operating theatre. *Anaesthesia.* 2021;76(3):346-356.
52. Crockett CJ, Donahue BS, Vandivier DC. Distraction-free induction zone: a quality improvement initiative at a large academic children's hospital to improve the quality and safety of anesthetic care for our patients. *Anesth Analg.* 2019;129(3):794-803.
53. A1.2-6.1.4.1 Room noise levels in operating rooms. In: *Guidelines for Design and Construction of Hospitals.* Facilities Guidelines Institute; 2022.
54. 1.2-6.1.3 Design criteria for acoustic surfaces. In: *Guidelines for Design and Construction of Hospitals.* Facilities Guidelines Institute; 2022.

55. Guideline for team communication. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2025: 1143-1178.
56. Guideline for medication safety. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2025:487-540.
57. Saxton R, Cahill R. Impact of no-interruption intervention on safety and efficiency. *J Nurs Care Qual.* 2017;32(4):281-284.
58. Mesa AK, Wiseman SM. The sterile cockpit: reducing distractions in the operating room. *Am J Surg.* 2024;230:103-104.
59. Hardie JA, Oeppen RS, Shaw G, Holden C, Tayler N, Brennan PA. You have control: aviation communication application for safety-critical times in surgery. *Br J Oral Maxillofac Surg*. 2020;58(9):1073-1077.
60. Guideline for a safe environment of care. In: *Guidelines for Perioperative Practice.* Denver, CO: AORN, Inc; 2025:165-196.

ORGANIZATIONAL RESOURCES

American Academy of Audiology
Noise-induced hearing loss. Accessed January 7, 2025. https://www.audiology.org/consumers-and-patients/hearing-and-balance/noise-induced-hearing-loss/

American Association of Nurse Anesthesiology
Mobile Information Technology Position Statement. Revised February 2015. Accessed November 25, 2024. https://issuu.com/aanapublishing/docs/12_-_mobile_information_technology?fr=sMTUyZjU2NDAxMjU

American College of Physicians
Farnan JM, Sulmasy LS, Worster BK, Chaudhry HJ, Rhyne JA, Arora VM. Online medical professionalism: patient and public relationships: policy statement from the American College of Physicians and the Federation of State Medical Boards. *Ann Intern Med.* 2013;158(8):620-627. Accessed November 25, 2024. http://annals.org/article.aspx?articleid=1675927&cm_mid=2431409&cm_crmid=%7b388a30e3-915e-de11-91d2-0015600f6010%7d&cm_medium=email#r35-2111

American College of Surgeons
American College of Surgeons Committee on Perioperative Care. Statement on Distractions in the Operating Room. Published September 1, 2016. Accessed November 25, 2024. https://www.facs.org/about-acs/statements/89-distractions

American Nurses Association
Principles for Social Networking and the Nurse. Silver Spring, MD: American Nurses Association; 2011. https://www.nursingworld.org/nurses-books/ebook---anas-principles-for-social-networking-and-the-nurse/

American Society of Anesthesiologists
Statement on Distractions. December 13, 2020. Accessed November 25, 2024. https://www.asahq.org/standards-and-practice-parameters/statement-on-distractions

American Society of PeriAnesthesia Nurses
A Position Statement on Digital Professionalism in Perianesthesia Practice. October 2021. Accessed November 25, 2024. https://www.aspan.org/Portals/88/Clinical%20Practice/Position%20Statements/Current/A_Position_State

ment_on_Digital_Professionalism_in_Perianesthesia_Practice.pdf?ver=NWny-OsHZuG9D1ycbkfDSg%3d%3d

Council on Surgical and Perioperative Safety
Safe Surgery Resources #21. Noise and distraction. Accessed November 25, 2024. https://www.cspsteam.org/21-noise-and-distraction

Federation of State Medical Boards of the United States
Social Media and Electronic Communication. April 2019. Accessed November 25, 2024. https://www.fsmb.org/siteassets/advocacy/policies/social-media-and-electronic-communications.pdf

National Council of State Boards of Nursing
A Nurse's Guide to the Use of Social Media. June 2018. Accessed November 25, 2024. https://www.ncsbn.org/public-files/NCSBN_SocialMedia.pdf

National Institute for Occupational Safety and Health
Preventing occupational noise-induced hearing loss. February 16, 2024. Accessed November 25, 2024. https://www.cdc.gov/niosh/noise/prevent/index.html

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