The coronavirus disease 2019 (COVID-19) pandemic has created new challenges for the perioperative setting and those who are integral to it. Although the full extent of the pandemic’s effects on the health care landscape cannot yet be fully appreciated, the challenges are ongoing, far-reaching, and impactful for all facets of patient care and the health care team. In their 2020 *AORN Journal* article, Mazzola and Grous describe the characteristics of OR nurses who successfully maintain perioperative safety and infection prevention; these characteristics include adaptability, critical thinking, resilience, a willingness to speak up, identification of barriers and opportunities, and actively participating in adaptive decision-making processes.

Maintaining continual safety in the perioperative work environment is an ongoing challenge because of the complex and dynamic setting. The situation has been magnified by the demands of the pandemic response. However, the targeted skills perioperative nurses have used during the pandemic to prevent COVID-19 transmission can be harnessed to prevent infections beyond COVID-19. This special issue focuses on infection prevention and includes three carefully chosen articles that highlight a range of opportunities for perioperative nurses to promote infection prevention in the perioperative setting beyond the pandemic response.

**A WORD ON SAFETY IN THE PERIOPERATIVE ENVIRONMENT**

Wakeman and Langham describe some of the many complexities found in the perioperative environment, including coordination among multiple individuals, facilitating safe transitions through phases of care, the many stakeholders contributing to care, and careful communication among personnel with various health care roles. These complexities create challenges for preventing transmission of infection in the OR and reducing the risk of surgical site infection (SSI) in patients. To minimize the risks in complex settings, prevention tactics include placing layers of defense between hazards and the patient. In the complex and highly technological perioperative environment, multiple defensive layers are needed.

Protections to address potential hazards include physically removing the hazard from the environment, replacing the hazard with a safer option, isolating people from the hazard, changing the way people work to a safer alternative, or using personal protective equipment (PPE). James T. Reason uses the famous analogy of layered slices of Swiss cheese to represent these layers of protection. The flaws inherent in each layer are symbolized by the holes in each cheese slice. There is protection from adverse outcomes if the hazard does not penetrate all the layers. The holes in each layer usually do not all align, so although an error might occur, another layer of defense is present and protects the patient from being harmed. However, in some circumstances the holes in each layer align and an error penetrates all defenses, causing potential harm—including infection.

The Swiss cheese analogy is useful for conceptualizing how the surgical team must pay constant attention to multiple details to maintain safety. It shows that to be effective, infection prevention methods must be applied to all facets of the perioperative environment and patient care.

**IN THIS ISSUE**

The three articles in this special issue discuss very different aspects of infection prevention. Each covers a...
different challenge that OR nurses must face to prevent infection.

**Preventing SSI**

According to the Agency for Healthcare Research and Quality, SSI is “among the most common preventable complication[s] after surgery,” and “a significant cause of morbidity and mortality” and readmission after surgery.\(^5\) Surgical site infection prevention involves multiple interventions during each phase of the patient’s perioperative journey, including reducing patient risk factors in the preoperative phase, paying meticulous attention to sterile technique and the OR environment in the perioperative phase, and providing excellent postoperative care. The article by Goldberg et al,\(^6\) “Perioperative interventions to reduce surgical site infections: a review,” focuses on preventing SSI and examines the evidence for five specific interventions aimed at reducing the incidence of surgical infections:

- preincision skin preparation with an antiseptic agent,
- adhesive skin barriers,
- antimicrobial suture material,
- intracavity and wound irrigation before wound closure, and
- specific types of wound dressing.

Knowing the research findings related to various SSI prevention tools equips the perioperative nurse to implement and support evidence-based strategies to prevent infection, enhances the effectiveness of critical thinking, and encourages active participation in the decision-making process and identification of barriers and opportunities.\(^1\)

**Preventing Transmission of Multidrug-Resistant Organisms**

During the COVID-19 pandemic, isolation and use of PPE to prevent the spread of infection among staff members and patients have become more familiar in the perioperative setting than ever before. Perioperative personnel routinely use these same infection prevention strategies to prevent the transmission of multidrug-resistant organisms (MDROs). In their article, “The role of the perioperative nurse in implementing contact precautions to prevent transmission of multidrug-resistant organisms,”\(^7\) Walits and Carpo detail the role of the perioperative nurse in preventing transmission of MDROs—specifically, the emerging pathogens *Candida auris* and carbapenem-resistant Enterobacterales (CRE).

The Centers for Disease Control and Prevention considers MDROs “one of the greatest global public health challenges of our time.”\(^6\) Patients undergoing surgery are increasingly at risk from the rising prevalence of antimicrobial resistance.\(^8\) Carbapenem-resistant Enterobacterales (ie, drug-resistant strains of a family of bacteria commonly found in the gastrointestinal tract) and *C. auris* (ie, an emerging fungus often resistant to antifungal medications and difficult to identify with standard laboratory methods) are both transmitted to patients from contaminated environments on the hands of health care personnel.\(^9,10\) Both CRE and *C. auris* are on the increase and are the cause of health care–associated infections and outbreaks in health care settings. Although SSIs can be prevented by excellent infection control practices, they remain common.\(^5\) Multidrug-resistant organisms negatively affect the efficacy of SSI prevention efforts and hamper treatment of surgical infections when they do occur.\(^8\) Walits and Carpo\(^7\) describe the transmission of MDROs in the perioperative environment and detail the actions needed by the perioperative nurse to prevent MDRO transmission throughout each phase of care. Perioperative nurses are needed to champion MDRO prevention and to maintain perioperative safety and infection prevention by applying their planning, preparation, and communication skills.

**Preventing Harm From Unintentional Environmental Temperature and Humidity Variations**

The engineering controls integral to modern health care infrastructure maintain temperature and humidity in the perioperative environment at levels designed and regulated to balance staff members’ comfort with patient safety, as well as to keep sensitive equipment and supplies at their optimum. Unintentional variation in temperature and humidity in the perioperative environment is a rare event, but it can occur when heating, ventilation, and air-conditioning systems fail or there is a water intrusion. Extreme or prolonged variations in temperature and humidity create a risk to the safety of the occupants, including the potential of infection being introduced into the carefully controlled perioperative environment.

The article by Curless et al\(^11\) details the potential risks related to temperature and humidity variances in the
perioperative environment. The authors highlight the integral role of the perioperative nurse as an infection prevention and safety advocate. The perioperative nurse who is knowledgeable about the risks associated with variances in the perioperative environment is well positioned to contribute to early identification and prevention of possible adverse outcomes, including disruptions to patient safety and business continuity. Perioperative nurses who display adaptability, critical thinking skills, and a willingness to speak up, as well as actively participate in decision-making processes, are valuable members of the multidisciplinary collaboration required to respond to a temperature or humidity variance.1

CONCLUSION

It is a credit to AORN and to the resilience of OR nurses that infection prevention remains at the forefront of the profession despite the distractions and challenges of the COVID-19 pandemic. Perioperative nurses who have successfully maintained safety and infection prevention while practicing during a pandemic can apply the experience gained to prevent infection beyond the response to COVID-19.

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