

# THE PERIOPERATIVE ENVIRONMENT

1941



**1941**  
**THE PERIOPERATIVE ENVIRONMENT**

AORN INDEPENDENT STUDY ACTIVITY  
 AORN VIDEO WITH STUDY GUIDE



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## GOAL

The goal of this activity is twofold - first, to provide an historical overview of the evolution of perioperative nursing, and second, to describe the current interdisciplinary environment that is defined by the coordinated activity of a well-prepared surgical team whose members work synchronously with one another to meet the needs of the surgical patient.

## OBJECTIVES

After viewing the video and completing the study guide, participants will be able to

1. relate key events in the evolution of perioperative nursing,
2. list the activities that are the responsibility of the perioperative nurse,
3. define the traffic patterns in the OR, and
4. identify other key personnel involved in providing a safe environment for the care of the surgical patient.

## GUIDE FOR STUDY

This study guide is intended to be used in conjunction with the accompanying video. We suggest that you take the following steps to complete this activity.

1. Read the overview and objectives for this educational activity, and compare them with your own learning objectives.
2. View the video.
3. Read the study guide, paying particular attention to those areas that reflect the objectives.
4. Consult a dictionary for definitions of unfamiliar words.

The perioperative environment is unique and foreign to most patients, as well as to many health care providers. This study guide examines the perioperative environment and will help the learner become familiar with it.

### THE HISTORY OF PERIOPERATIVE NURSING

The year was 1855. The place was the Crimean Peninsula of Russia jutting out into the Black Sea. The event was the Crimean War. During this time a nurse whose name now symbolizes all that is best in the nursing profession, Florence Nightingale, became known as “The Lady with the Lamp.”

Until she tended the wounded and dying at the field hospital in Scutari, there had been little or no recognition of formal nursing and certainly no presence of nursing by women in military settings. But Florence Nightingale was made of stern stuff. She and a small group of like-minded women virtually forced their way into the war. They were to be the first perioperative nurses.

Since there were no anesthetic agents available, one of the nurse’s most valuable services would be to give emotional support by holding the hands of soldiers who would undergo surgical procedures. If the patient survived the surgery and did not hemorrhage, the next hurdle would be to overcome the infections that were routinely acquired. In the Crimean War, more soldiers died of their wounds than were killed in enemy action. On these battlefields, perioperative nursing emerged, facing many obstacles that would have to be overcome.

Schools of nursing based upon the Nightingale model appeared in the United States by the year 1873. Each incorporated operating room (OR) nursing into the clinical instruction of its nursing students. Nurses became instrumental in implementing new standards of cleanliness, education, and organization in the hospital setting. By the turn of the century, experience in the OR was required for nursing licensure in some states. OR nursing became one of nursing’s first areas of specialization. From 1900 to 1920, significant changes occurred in the recognition and control of bacteria. The first temperature-controlled sterilizers were developed,

and surgical gowns, gloves, caps, and masks were now visible in every OR. By 1920, the National League for Nursing had developed a standard curriculum of OR technique, which served as a model for preparing surgical nurses. Two distinct and separate roles had emerged. One was the sterile instrument nurse, and the other was the circulating nurse. By the early 1940s, two other major medical advances had transpired: the discovery of antibiotics and the ability to give blood transfusions. These innovations would help save many lives during World War II as thousands of soldiers were rushed to the OR. Mounting numbers of wounded soldiers required many individuals to provide care. Corpsmen were trained to take over activities previously done by the OR nurse. The military nurse relinquished the role of scrub nurse and accepted new responsibilities for preparing the surgical patient, delivering anesthesia, assisting the surgeon, managing supplies, and teaching corpsmen.

In 1949 after the war, OR nurses joined together to organize their unique specialty to form the Association of Operating Room Nurses (AORN). The following years brought continued refinement of OR nursing and development of standards of practice. The field of surgery entered an era of technological advances, which fostered new surgical frontiers. These advances required nurses to acquire skills that were very different from their predecessors of 150 years ago.

Today’s nurses are highly specialized and well trained, despite the fact that most nursing programs do not include perioperative nursing in their curricula. Today, the professional organization is known as the Association of periOperative Registered Nurses to reflect the involvement of the nurse in all phases of the patient’s care - preoperative, intraoperative, and post-operative.

In recent years, the American standards for patient care have undergone close scrutiny, heightening awareness among medical professionals of the need to provide an optimum patient-centric safety culture in all types of medical care facilities. Since the Institute of Medicine (IOM) report, *To Err Is Human*, was released in 1999,

the vast majority of patient safety initiatives have focused on micro issues, such as medication errors and wrong-site surgery, with little emphasis on the macro issue of culture.<sup>1</sup> Culture is defined as shared values, attitudes, or beliefs within an organization or community.<sup>1</sup> In health care literature, a safety culture is defined as an environment that encourages the reporting of errors, ends blame,<sup>2</sup> involves senior leadership,<sup>3</sup> and focuses on how systems can be favorably altered to reduce error.<sup>4</sup> In the perioperative setting, a culture of safety promotes positive patient outcomes by removing barriers to communication and establishing roles and responsibilities that most effectively address patient care.

As a patient about to undergo surgery entrusts his or her immediate welfare to a surgical team of physicians, nurses, anesthesia care providers, and technologists (patient advocates), it is crucial that the policies and procedures that support a precise safety culture be thoroughly in place. It must be clear to the patient, his or her family, and every member of the surgical team that *the patient is at the center of all we do*.

### FIRST IMPRESSIONS

Staff members at modern hospitals or ambulatory surgery centers welcome patients into a calming atmosphere by providing a combination of pleasant surroundings, up-to-date technology and equipment, and friendly, well-trained medical personnel. However, it is important to keep in mind that each patient arrives with a set of perceptions unique to his or her experience. These are not often readily known to members of the medical team and may only be revealed in a perioperative nursing assessment. Assessment provides a basis for clinical judgments that ultimately result in the formation of nursing diagnoses, identification of expected outcomes, and development of an effective, individualized plan for preoperative, intraoperative, and postoperative care that meets the patient's physical and emotional needs.<sup>5</sup> However, an assessment may not have been done. Additionally, when the patient arrives on the day of surgery, it is quite possible that any elevated anxiety the patient might be experiencing will not be apparent during the initial pre-admission or admission interviews.

Anxiety is a state of apprehension, tension, concern, or uneasiness in response to a real or imagined danger.<sup>6</sup> Most surgical patients will experience some degree of anxiety. The amount will depend on current illnesses, experiences, expectations, and coping mechanisms.<sup>6</sup> With this in mind, careful consideration must be given to first impressions upon the patient's arrival for impending surgery. Not only will the patient be providing answers to the admitting nurse, he or she may ask for information as a way to calm anxiety and gain confidence. The patient may hold erroneous impressions that paint an overly daunting picture of the procedure, or may have forgotten information already given by the surgeon-information which, when repeated, might be reassuring. It is important, then, for the admitting nurse to appropriately answer questions in a calm, professional tone to ensure the patient feels informed and reassured as the admitting process and initial preparations go forward.

### PREPARING FOR SUCCESSFUL SURGICAL OUTCOMES

Successful surgery depends upon the coordinated activity of a well-prepared surgical team whose members work synchronously with one another to meet the needs of the patient. Beginning with the nurse who does the preoperative interview and going all the way through to the postanesthesia care unit (PACU) nurse, the patient is the focus for all team activity. In fact, long before the patient gets to the OR, the surgical team has been preparing for his or her procedure.

After surgery has been scheduled, personnel assignments for the team are made. All equipment required during the procedure is identified and ordered or reserved. In many hospitals and ambulatory surgery centers, a pre-admission nurse calls the patient before surgery and is often the first contact the patient has with the hospital or the ambulatory surgery center. At this early stage, the nurse's friendly tone while explaining the reason for the call can go a long way toward reassuring the patient that he or she is being cared for by competent professionals.

During this call, the pre-admission nurse must gather information specific to the proposed procedure and the patient's personal requirements. The call confirms

- the patient's identity,
- height and weight,
- allergies,
- current medications and dosages,
- previous surgical and medical history,
- special needs or limitation in movement,
- the name of the surgeon who will perform the procedure,
- the type of surgery being performed,
- the site of the surgery, and
- the time surgery is scheduled.

This information is kept strictly confidential. After recording the patient's answers, the nurse confirms

- the time the patient is to stop eating and drinking (NPO status),
- the time to arrive at hospital or ambulatory surgery center,
- the person who will be coming to the hospital or surgery center with the patient,
- the responsible adult driving the patient home following release from the facility,
- if the patient has signed the operative consent, and
- if all the patient's questions been answered.

Armed with the comprehensive information gathered and confirmed during this interview, the nurse then begins the plan of care based on the procedure that will be performed and the patient's medical history, drawing on the Perioperative Nursing Data Set (PNDS). The PNDS is a clinically relevant and empirically validated standardized nursing vocabulary describing perioperative nursing. It relates to the delivery of care in all perioperative settings.<sup>7</sup>

The patient's plan of care is then communicated to the surgical staff. Unstated, but understood at the time of the plan's configuration, is the matter of information that the patient may have forgotten to offer or may have given in error. It is important that the surgical team move forward from this point, but be aware that corrections

might have to be made or that new data may be added. Each team member's contact with the patient brings another opportunity to discover important information that must then be immediately communicated to all team members and factored into the plan of care for their patient.

Diligent sharing of essential details of the patient's medical history among members of the surgical team is not to be confused with the stated requirement for strict patient confidentiality. One intent of the Health Insurance Portability and Accountability Act of 1996 (HIPAA) is to protect patient information. In a University of Virginia Health Science Center's online publication, the observation is made that all health care providers "have a responsibility to uphold confidentiality for patients. In a busy hospital or ambulatory setting it can be difficult. Increasing workloads lead to elevator or cafeteria discussions of Mrs. Smith's metastases or Mr. Jones' pancreatitis. This is not acceptable behavior from healthcare and ancillary staff. The person next to you in line could be a patient's friend, relative, or media member who is not entitled to this privileged information. Permission must be received from the patient before ANY disclosure."<sup>8</sup> Within the perioperative environment, however, the surgical team must perform as a tightly knit, information-exchanging communication center whose sole purpose is to ensure the well-being of the patient and the success of the surgical outcome.

### THE PATIENT ARRIVES

Patient attitudes and emotions vary greatly when surgery is imminent, making the demeanor of the nurse or staff member who greets the arriving patient important because it reflects both professional competence and reassurance. A friendly, efficient person asking the required questions helps diminish the patient's stress levels. This first face-to-face encounter with facility personnel may well set the tone for the rest of the procedural experience. The more relaxed the patient, the more accurate and complete his or her answers are likely to be.

The patient and any accompanying friends or family-members should be invited to sit in a comfortable waiting area until taken into the preoperative holding room. This wait, no matter how short, can be a stress-heightening time for the patient because concerns may surface. Delays are sometimes unavoidable. The admitting nurse or assistant can help reduce anxiety or frustration with a reassuring word or an explanation that lets the patient know he or she has not been forgotten.

### **POST RECEPTION: THE PREOPERATIVE HOLDING ROOM**

Each team member who cares for the patient is responsible for communicating information to the other members of the team. This information should be constantly rechecked and verified with the patient as the process of preparing for the procedure progresses. The patient may feel that many questions are duplicated. Implicit in this method of data gathering, however, is the opportunity to catch errors and correct them so that necessary adjustments to the plan of care (possibly crucial to the patient's well-being) will be made. Again, all patient information is to be kept strictly confidential.

In the preoperative holding room, the perioperative nurse introduces her/himself to the patient and collects a health history. The interviewing nurse can conduct this interview most effectively by having previously reviewed all information entered on the patient's chart.<sup>9</sup> The nurse should take care that the patient doesn't feel rushed or uncomfortable. The nurse should draw the curtain or close the door to create an atmosphere of privacy more conducive to open communication. He or she also should explain the purpose and value of the interview to the patient before beginning, and address any distractions that may compromise the patient's attention and/or answers, such as

- a television or radio,
- nonessential persons in the room or cubicle, and
- friends or family members that the patient wishes to remain who may compromise obtaining complete information from the patient.<sup>10</sup>

Information asked for at this time includes the patient's name, allergies, and surgical procedure(s) to be performed - questions the patient has probably already been asked and answered. He or she may feel irritated or anxious over having to repeat the answers. If so, the interviewer should be clear that the objective here is to make sure the correct information is on the patient's chart.

Other relevant questions to ask at this time include queries as to whether the patient wears dentures or contacts or has other physical considerations not yet noted. An unhurried, open-ended style of interviewing allows the patient to respond in the most comfortable manner. This includes

- using direct questioning when brief yes-or-no answers are required;
- allowing a period of silence to permit thought-gathering on the part of the patient and time for you to process earlier answers;
- using gentle prompts with nods, facial expressions (nonverbal communication techniques), or verbal statements;
- quietly responding with interjections such as "Mmm-hmmm," "Really?" or "Tell me more about that," to elicit more elaborate answers;
- being aware of body language and other nonverbal signals;
- verbally acknowledging the patient's feelings of anger, depression, fear, or sadness; and
- summarizing or repeating the patient's statements.<sup>10</sup>

These moments in the preoperative holding room afford yet another opportunity to double-check the information on which the plan of care is based. When family members or significant others are with the patient, team members should introduce themselves to them and, if indicated, engage in conversation that might yield new information relevant to the patient's health. Intra-team communication of any and all altered, adjusted, or new information is required immediately following its receipt.

Everyone is concerned for the patient's comfort and safety and at all times respects his or her privacy. As preparation for surgery begins, the cubicle's curtain should be drawn or the door closed. While preparing the patient and explaining what is being done, the nurse's tone of voice, facial expressions, and level of competence should convey reassurance. Questions or concerns the patient may express at this or any other time should be addressed to reduce anxiety.

An IV may be started now, and the area around the surgical site may be clipper-shaved to minimize infection, but only if indicated by the physician. Clipper shaves are done only when hair will interfere with the procedure, and only immediately before the surgical procedure.<sup>11</sup> The paramount goal in the physical perioperative environment is to minimize the patient's exposure to infectious organisms during the surgical procedure. It is also appropriate at this time to describe what the patient will see and hear as he or she enters the OR and what to expect before the administration of anesthesia. This information can help to allay the patient's anxieties.

### **THE MYSTIQUE OF THE OR**

Perhaps no area of any hospital contains as much mystery or inspires as much apprehension as the OR. Unfortunately, patients have as a reference every hospital drama they have seen on television. These dramas show life and death decisions made spontaneously by surgeons whose every move is correctly anticipated by nurses working at break-neck speed surrounded by futuristic machinery. In real life, ORs are a little less drama and a lot more functional than that.

This OR mystique seems to pervade our culture. It can drive up already rising levels of stress when a medical condition must be addressed by surgery. The patient waits to be wheeled into the OR, wondering what is behind those doors and how he or she will fare once inside them. It is up to the surgical team members to allay the patient's fears as much as possible by portraying a confident demeanor and a caring willingness to answer questions.

### **TRAFFIC PATTERNS IN THE OR**

Traffic patterns divide the operating room into three specific areas - unrestricted, semirestricted, and restricted. These areas are individually defined by the level of protection from cross-contamination required and by the physical activities performed within these areas. The entrance to the surgical suite should be restricted to authorized personnel, based on organizational policies. Traffic patterns are designed to facilitate movement of patients and personnel into, through, and out of the surgical suite.

Unrestricted areas include a central control point from which to monitor entrance of patients, personnel, and materials. Street clothes are permitted, and traffic is not limited. Semirestricted areas include peripheral support areas for the surgical suite. Storage is provided for clean and sterile supplies. Work areas are provided for processing and storage of instruments. Traffic is limited to authorized personnel and patients only. Personnel are required to wear surgical attire and are required to cover all head and facial hair. Restricted areas include ORs, procedure rooms, and the clean-core area. Personnel in this area are required to wear surgical attire, head and facial hair coverings, and masks in areas where there are open sterile supplies and scrubbed persons.

When family members, law enforcement officers, biomedical personnel, or other cleared visitors briefly enter the semirestricted or restricted areas of the surgical suite, all head and facial hair should be covered and fresh surgical attire or a coverall should be worn over all outside clothing. Transition zones (including locker rooms) permit movement from unrestricted to semirestricted or restricted areas and should be monitored, with provisions made for dressing rooms for surgical attire to be donned.<sup>12</sup>

A patient entering the surgical suite does not wear a mask, unless airborne precautions are in place (eg, a patient with active pulmonary tuberculosis, other airborne respiratory disease),<sup>13</sup> because a mask might hinder access to the face and airway and increase the patient's anxiety.

The patient's attire may include undergarments, socks, and other outer garments as allowed by the type of surgery to be performed and its setting, or in consideration of the patient's comfort and dignity.

Positioning must always be of concern to the perioperative team. For example, outer garments worn to the OR can restrict movement or cause areas of pressure. When the decision is made to allow patients to wear articles of street clothing to the OR, staff members should carefully consider positioning issues, access to surgical sites, potential for injury, and the ability to provide basic and emergency care to the patient. If there is a question about the ability to provide this, hospital clothing should be provided.<sup>13</sup> If everyone else in the OR must wear specific clothing, why would or should it be any different for a patient? Patient clothing represents as much of an infection control issue as staff clothing, as well as a potential hazard to their health and safety.

### **THE SURGICAL TEAM: A COLLABORATION OF EXPERTS**

Few organizational units are tasked with as important a mission, prepared as expertly, or respected as universally as an OR surgical team. Laypersons and other health care workers may not know how interdependent the team members are. The intricate and purposeful duties and diligence of the OR team combine to accomplish everything from minimally invasive procedures to hours-long, life-saving operations.

The personnel who make up these teams are distinguished by their designation and area of training and generally consists of

- a surgeon,
- an anesthesia care provider (ACP),
- registered nurses (ie, a circulating nurse, first assistant, surgical resident, scrub nurse),
- surgical technician (ie, scrub person), and
- allied health care providers and support staff, (eg, anesthesia and equipment technicians, OR assistants/transport personnel, central service personnel, scheduling staff members, housekeeping personnel).

### **TEAM MEMBER ROLES**

**The Surgeon.** The surgeon is a physician specialist specifically trained and qualified to evaluate and treat patients with physical conditions that require surgery. The surgeon's role includes assessing the patient's presenting complaints, diagnosing the condition, determining the surgery required to correct or alter the condition, and coordinating the patient's surgical care with other team members to provide quality, cost-effective care.<sup>14</sup> In the OR, the surgeon visits the patient in the preoperative holding area, answers questions, gives reassurance as needed, and speaks to the family. The surgeon may need to go over the surgical plan with the patient at this time, explain possible risks or alternatives, and get the surgical consent signed, if this has not occurred before the patient's arrival in the preoperative holding area. Any additional, as-yet-uncharted information the surgeon may learn from either the patient or the family is noted and conveyed to the team. In the OR, the surgeon makes the incision and performs the procedure. Upon completion of the procedure, the surgeon will speak to family members about the outcome of the procedure and to the patient after the patient is fully awake. The patient's status is monitored in the PACU, followed by discharge or transfer to a patient care unit. The surgeon follows the patient postoperatively until completion of the recovery period and the patient is discharged from care.

**Anesthesia Care Provider (ACP).** The anesthesia care provider administers anesthesia in whatever form required to relieve pain and to manage the patient's breathing, heart rate and rhythm, blood pressure, and other vital functions during surgery.<sup>15</sup> The ACP can be a physician or nurse specifically educated to administer anesthesia. Before the procedure, the ACP visits the patient in the preoperative holding area. During this visit, the anesthesia care provider examines the patient, explains the type of anesthesia that will be used and how the anesthesia will work, obtains the patient's consent for anesthesia, and obtains and verifies the patient's surgical, anesthetic, and medical history.

The anesthesia care provider's visit to the patient offers yet another opportunity for receiving additional information. For instance, the provider may learn something about the patient's past awareness while under anesthesia. Anesthesia awareness is the postoperative recollection of noises, conversation, pain, feelings (such as those experienced during the intubation process), or other events that occurred during the time when the patient was under anesthesia.<sup>16, 17, 18, 19</sup> When interviewing patients preoperatively, the anesthesia care provider and/or circulating nurse should assess the patient for previous incidents of anesthesia awareness. If these have occurred, all other surgical team members should be informed immediately of the potential risk for an episode of anesthesia awareness.<sup>16</sup>

ACPs will screen every patient to undergo general anesthesia for malignant hyperthermia (MH). Those who are aware of a personal and family history making them susceptible to MH will need continued assurance that the team is aware of their risk and that an anesthesia treatment plan is in place.<sup>20</sup>

After surgery, the anesthesia care provider maintains the patient in a comfortable state during recovery and is involved in the provision of care in the intensive care unit, if required.

**Perioperative Registered Nurse.** The registered nurse is a fundamental member of the perioperative team in hospital surgical departments or ambulatory surgery units, and works in collaboration with other health care providers, including the surgeon, anesthesia care provider, surgical assistants, and assistive personnel. Perioperative RNs provide nursing care to surgical patients preoperatively, intraoperatively, and postoperatively.<sup>21</sup> In addition, the perioperative RN is responsible for supervision of nursing tasks delegated to other team members. Supervision of allied health care providers and support personnel is also a function of the perioperative nurse.<sup>22</sup>

Perioperative RNs function in the roles of scrub nurse, circulating nurse, or RN First Assistant (RNFA). The RNFA practices under the direction of the surgeon and does not concurrently function as a scrub nurse.<sup>23</sup> The circulating nurse (always an RN) performs a many-faceted role. The circulating nurse ensures the patient's safety by being alert and responsive to the needs of, or changes in, the patient's condition and acts as the patient's primary advocate during surgery. The circulating nurse's role in anesthesia management of the surgical patient begins with a preoperative patient assessment and ends when the patient recovers from the effects of anesthesia.<sup>24</sup> The circulating nurse also performs an initial assessment of the patient and then continually assesses the patient for ongoing needs. He or she organizes and monitors the OR sterile field, provides equipment and supplies to other team members, completes documentation of the surgical procedure, checks supplies and instruments with the scrub person, prepares the physician's preference card (pick list) with the scrub person, participates in count procedures, and communicates new or altered patient information to the team.

**Surgical Resident.** The surgical resident is a college and medical school graduate who is enrolled in a five-year residency program. Surgical residents work under the direction of the surgeon as an assistant.

**Scrub Person.** The scrub role can be filled by a registered nurse (RN), licensed vocational nurse (LVN) or licensed practical nurse (LPN), surgical technologist (ST), certified surgical technologist (CST), or those certified as first assistants (CST/CFA). The scrub person is not licensed to practice professional nursing, so the RN circulator should maintain an active presence to ensure appropriate delegation and supervision of scrub duties and to maintain the integral link between scrub person and circulating nurse responsibilities.<sup>25</sup> The scrub person should have an excellent knowledge of anatomy and physiology, understand procedure sequence, and be able to anticipate the surgeon's and other team member's requirements. The scrub person also

- checks supplies and equipment needed for surgical procedure (in collaboration with the circulating nurse);
- wears a surgical hat and mask, eye protection, and a sterile surgical gown and gloves;
- obtains needed supplies and opens sterile supplies;
- sets up the sterile table with instruments, sutures, blades, electrosurgical equipment, and suction needed for the procedure;
- passes instruments to the surgeon and assistant during the procedure;
- counts sponges, sharps, and instruments at appropriate times;
- prepares sterile dressings and other end of procedure sterile supplies; and
- helps with turnover of the room in readiness for the next patient.<sup>26</sup>

**Support Staff Members.** The surgical support staff members include allied health care providers determined by the patient's plan of care. Allied health care providers may be assigned to help with delegated patient care tasks as determined by the perioperative RN and according to individual state boards of nursing scope of practice regulations and other local, state, and federal laws.<sup>22</sup> The RN decides to whom and under what circumstances to delegate these tasks, depending on the unlicensed individual's level of education, training, and demonstrated competency in the required skill set. Allied health care providers are accountable to, and work under, the direct or indirect supervision of the perioperative RN when performing delegated patient care activities.<sup>27</sup> The RN also validates the competencies of the allied health care providers on an ongoing basis to ensure that role expectations delineated in institutional performance descriptions are being met.<sup>28</sup>

Perioperative support staff may consist of the following, as well as other titles<sup>22</sup>:

- **OR Assistants.** A certified nurse assistant (CNA) performs delegated nursing tasks and functions under the rules and state regulations governing nursing. All CNAs work under the supervision of a perioperative registered nurse.

- **Anesthesia Technicians.** Anesthesia technicians provide assistance to the licensed anesthesia care provider, preparing, maintaining, and cleaning patient equipment and delivery systems. They may be certified.
- **Equipment Technicians.** Biomedical technicians (BMETs) are knowledgeable in the operation and safe application of biomedical equipment, and are often certified.
- **Transport Personnel.** Transport personnel stock the OR with supplies and equipment, deliver specimens, transport patients, and retrieve ordered medications from the pharmacy and blood from the blood bank. Transport personnel ensure the vehicle used to transport the patient is appropriate, safe, in good repair, and clean.
- **Central Service Personnel.** The central service area is responsible for perioperative supply inventory and management of stock, nonstock, and specialty supplies. The sterile processing technician provides practical knowledge about sterile processing and the distribution of many of these supplies and equipment. The sterile processing technician can achieve certification.
- **Housekeeping (or Building Service) Personnel.** Housekeeping personnel ensure that the OR environment has been cleaned per policy and procedure, both before and after perioperative procedures. The housekeeping personnel are responsible for cleaning all preoperative and PACU areas, as well as for office and locker-room cleaning.<sup>27</sup>
- **Scheduling Staff.** These staff members are responsible for scheduling procedures and for data entry of required information. Schedulers ensure that appropriate times are scheduled and that special needs are communicated to the appropriate team members.

In some facilities, especially ambulatory settings, one person may assume more than one of these roles.

### THE STERILE FIELD: A CRUCIAL AREA

The fear of exposure to bloodborne pathogens and disease transmission is real for both patients and for health care providers.<sup>28</sup> The concepts of asepsis (ie, the absence of infectious organisms) and the sterile field (ie, the area where the surgical incision occurs and sterile supplies and equipment are used) are vital to reducing the risk of infection in the OR. In keeping with the mission of providing an environment that ensures optimum patient outcomes, the surgical team members all bear responsibility for practicing aseptic technique, maintaining the sterile field, and thus reducing the patient's risk of infection. The circulating nurse monitors the surgical team's aseptic practice and the sterile field, and controls traffic flow in and out of the OR to avoid contamination.

Hand antisepsis (ie, regular washing of the hands before and after patient contact or contact with contaminated items with an approved product) should be practiced by all health care professionals, because the skin is a major source of microbial contamination, and the hands are common vectors in infection transmission. In the OR, a surgical hand scrub is performed by members of the surgical team who will come into contact with the sterile field. All team members who require a surgical hand scrub must be wearing appropriate surgical attire and have removed any jewelry from the hands and arms. Masks and protective eye wear should be in place before beginning the scrub. Fingernails should be in good repair and unpolished. Any team members with cuts or abrasions on their hands or arms should refrain from scrubbing until these areas heal. The surgical hand scrub requires use of a US Food and Drug Administration (FDA)-approved, long-acting, antimicrobial soap on the hands and forearms. The Center for Disease Control and Prevention (CDC) recommends at least two to five minutes of scrubbing.

Waterless/brushless hand scrubs or alcohol-based scrubs also are appropriate, if identified as surgical hand antisepsis products by the FDA and used according to directions. Using either product, the team member should carefully clean under his or her nails and scrub

the hands and forearms in the approved manner. An important principle of aseptic technique is that fluid (a potential mode of pathogen transmission) flows in the direction of gravity. With this in mind, hands are held above elbows during and following the surgical scrub to prevent water and soap from running from dirty areas (ie, elbows, unscrubbed areas) to clean areas (ie, areas scrubbed to the fingertips). Thorough drying is essential and is done using a sterile towel to dry from the fingertips to the elbow on one side. The towel is then rotated to a clean area, and the other arm is dried in the same manner. The towel is then discarded. Contact with the faucet or other potential contaminants should be avoided. If this occurs, the surgical scrub must be re-done before gowning and gloving.

Despite this careful scrub, bare hands are always considered potential sources of infection.<sup>29</sup> Once the surgical scrub is performed, scrubbed persons must don sterile gowns and gloves from a sterile area other than the main instrument table.<sup>30</sup> Using aseptic technique, the scrub nurse dons his or her own sterile attire and then assists other members of the sterile team to gown and glove. After donning a sterile gown and gloves, scrubbed personnel should continue to keep their hands above their elbows when not resting on the sterile field, and should never allow them to drop below the level of the sterile field. Scrubbed persons should inspect their gloves for integrity after donning them. Intact gloves establish a barrier that minimizes the passage of microorganisms from the hands to the sterile field. Intact gloves also prevent the wearer from being contaminated with infectious material such as blood or body fluids. Wearing two pairs of gloves (ie, double-gloving) may be indicated for some procedures to reduce the potential for contact with blood and body fluids.<sup>31</sup>

Infection prevention and control strategies to reduce the risk of exposure and prevent transmission are paramount in protecting the patient during perioperative procedures and must never be ignored or circumvented. General aseptic technique should be practiced whenever contact with the patient occurs. Surgical aseptic technique should be practiced whenever perioperative team members

establish or are maintaining a sterile field. Practice settings include

- traditional ORs,
- ambulatory surgery units,
- physicians' offices,
- cardiac catheterization suites,
- endoscopy suites,
- interventional radiology departments, and
- all other areas where operative and other invasive procedures may be performed.<sup>32</sup>

All individuals involved in surgical interventions have a responsibility to provide and maintain a safe environment. Adherence to aseptic practices aids in fulfilling this responsibility.<sup>33</sup>

### CREATING THE STERILE FIELD

The circulating nurse and scrub person check the assembled supplies and instruments using the physician's preference card (pick list) that identifies what is needed for the procedure. Surgical attire (including a face mask) is required in the restricted area whenever sterile supplies are open. The potential for contamination of the sterile field increases with time, because dust and other particles stirred up by movement of personnel can settle on horizontal surfaces. Unattended sterile fields also can be contaminated by unobserved contact; therefore, after supplies are opened and the room is set up, someone must be in the room to monitor the sterile field at all times. Diligent and direct observation of the sterile area increases the likelihood of detecting a breach of sterility.<sup>32</sup>

In the OR, before the patient arrives, the back table is set up by opening a sterile pack on it and delivering the sterile supplies and instruments to the back table or other areas that are covered by sterile drapes (ie, ring stands, Mayo stands). The sterile field is prepared as close as possible to the time of use and maintained and monitored constantly. All items placed on the sterile field must be sterile. The circulating nurse and scrub person count the instruments, needles, sponges, and sharps before the incision is made and will continue to count them at specific times during the procedure and before wound closure to ensure patient safety.

Only the surface of the draped back table or any draped surface is considered sterile. The team must ensure that every item placed on the field is sterile. Everything below table level is considered contaminated, and any sterile item coming in contact with a non-sterile object or falling below table level is considered contaminated and must be discarded and replaced.

### SURGICAL DRAPES

In the OR, surgical drapes are used to cover the patient and pieces of furniture integral to the sterile field and to prevent sterile personnel and equipment from contact with nonsterile areas.<sup>30, 33</sup> This practice establishes an aseptic barrier that minimizes the passage of microorganisms between nonsterile and sterile areas.<sup>30, 33</sup> The drapes should be handled as little as possible. Rapid movement of draping materials creates air currents on which dust, lint, and other particles can migrate.<sup>30, 34</sup> Further, draping material should be maintained in a compact manner, held higher than the OR bed, and placed from the surgical site to the periphery. Some procedures may require modified draping techniques (eg, extremities). During draping, gloved hands should be protected by cuffing the drape material over the hands to reduce the potential for contamination.<sup>30, 34</sup>

### MEETING THE PATIENT IN THE PREOPERATIVE HOLDING ROOM

As the procedure time grows near, the circulating nurse leaves the preparation of the sterile field to the scrub person in order to interview the patient in the holding area, if she has not already done this.

The circulating nurse will reassure the patient and check the patient's chart for

- his or her history,
- physical information (eg, allergies, medications),
- anesthesia notes,
- nurse's notes,
- preparations for surgery, and
- informed consent.

By reviewing the information on the chart, the circulating nurse learns more about the patient's medical conditions and concerns. The nurse shares specific information with other members of the team and continues the patient's plan of care. Throughout the patient care process, the circulating nurse will set priorities and make decisions in a managing/coordinating capacity to ensure the best care for the patient.

The other members of the surgical team now meet with the patient. The anesthesia care provider examines the patient, discussing the type of anesthesia that will be used and addressing any concerns the patient may have. Similarly, upon visiting with the patient, the surgeon will be clear about what he or she may expect and will answer questions with information delivered in a reassuring and confident tone. The OR assistant/transport personnel may be called on to assist with transporting the patient to the OR. It is important to have enough personnel available to ensure the safe transfer of the patient.

### THE PATIENT ARRIVES IN THE OR

The OR is an environment with its own customs and language. As the patient enters, a special emphasis on infection control and asepsis begins. Doors to the OR or procedure room should be closed except during movement of personnel, supplies, and equipment. The air pressure within each OR or procedure room is greater than in the semirestricted area. Thus, leaving the doors open can disrupt pressurization and cause turbulent airflow that could increase contamination.<sup>12</sup>

Patients who require help are assisted in the OR by additional personnel. It is recommended that a minimum of four people be available if the patient cannot move on his or her own or is anesthetized. Because the OR bed is narrow, and it may be easy for the patient to fall, it is recommended that a safety strap be used whenever the patient is on the table, even with conscious patients. The perioperative nurse actively participates in safely positioning the patient. Safe and appropriate positioning requires teamwork. Communicating specific patient needs to surgical team members contributes to safe positioning, a priority of perioperative nurses. Outcomes of safe and appropriate positioning may include

- optimal exposure of the surgical site,
- adequate airway access for the anesthesia care provider to maintain the airway,
- physiologic safety for the patient, and
- maintenance of patient dignity by controlling unnecessary exposure.<sup>35</sup>

Conscious adults or those receiving only local anesthetics or light sedation have been known to become unexpectedly anxious, restless, and disoriented. It always is best to be cautious and use a safety strap whenever possible, as well as armbands.<sup>35</sup> The OR environment should be maintained at 68 to 72 degrees Fahrenheit and can seem cold to the patient. Stress also can contribute to a patient feeling cold. Regulation of patient temperature during surgery is key to preventing postoperative complications. The use of warming blankets and other means to regulate the patient's temperature are needed.<sup>36</sup>

As the preparation advances in the OR, team members communicate appropriate information to the patient. Not yet anesthetized, she or he will feel reassured by knowing what to expect. The anesthesia care provider might describe one step, for instance, by saying, “I am putting leads on your chest, and they might feel cold.” Or: “I am going to put an oxygen mask on your face so you’ll get a little more oxygen.” The anesthesia care provider uses a variety of monitors to assess the patient’s physiological responses and documents their use throughout the surgical procedure. When the provider begins the induction of anesthesia, the patient needs a relaxed and quiet environment. The circulating nurse remains at the patient’s side to assist the anesthesia care provider and to reassure the patient. By communicating in an encouraging tone to the patient, the circulating nurse helps reduce anxiety and helps the patient to relax. As the patient falls asleep, sensitivity to sound increases. The surgical team should avoid talking loudly or making unnecessary noise.

### **PROTECTING THE PATIENT: SAFETY FIRST**

After anesthesia induction and intubation, the team positions the patient so that the incision site is easily accessible. The circulating nurse pads any areas needing additional protection from injury, and prepares the skin surface in the area of the patient’s body where the incision will be made. The area of the patient’s body where the incision will be made may or may not be clipped, depending on the surgeon’s requirement. According to the CDC and others, hair is best left at the surgical site, because shaving or other mechanical means of removing hair often leaves microscopic cuts that allow the introduction of bacteria and can increase the incidence of infection.<sup>37</sup> The skin is the body’s major protection and once an incision is made, the patient will be at risk for an infection.

More than 70 million surgical procedures are currently performed each year in the United States. Surgical-site infections (SSI) are the most frequently reported health-care associated infections.<sup>38</sup> Most are caused by organisms present on the patient’s skin prior to surgery, but some may be caused by introduction of organisms in the OR due to contamination of the sterile field. This is why strict monitoring of the OR’s sterile field is essential even before the procedure begins, and why preparing the site as close to the time of the surgical procedure as possible is paramount in protecting the patient from infection. The circulating nurse uses sterile sponges and an antimicrobial solution to remove as many microorganisms from the incision site as possible. The prepared area of skin and the drape fenestration (opening) should be large enough to accommodate extension of the incision, the need for additional incisions, and all potential drain sites.<sup>39</sup> This procedure is called the **skin prep**.

At this point, the circulating nurse along with the scrub person, now assists the surgeon and the surgeon’s assistant to don sterile gowns and gloves. The surgeon’s assistant may be another physician, or he or she may be an individual specially trained to work with a surgeon, such as an RNFA, physician’s assistant (PA), certified first assistant (CFA), or surgical resident. After donning gowns and gloves, the surgeon takes sterile towels from the scrub nurse and places them around the incision site and covers the patient with sterile drapes to complete the sterile field. This is a careful and deliberate process that provides the patient with yet another safeguard against infection.

### **TIME OUT!**

Before beginning the procedure, the entire surgical team pauses. This is the all-important “time out” that can make the difference between a smooth, safe surgical procedure going forward with a successful outcome, or an opportunity for error or misinformation to impose needless complications or worse. The team takes advantage of this moment to confirm all data pertinent to the patient and the procedure. The entire surgical team (surgeons, nurses, surgical techs, and anesthesia care providers) participates and confirms the patient’s information, including

- nature of procedure,
- side of body involved,
- identity of the patient (name, sex, age),
- correct patient position, and
- availability of implants or special equipment.

Once the team confirms the information, the surgery can begin.

### **THE PROCEDURE**

The procedure begins when the surgeon makes the incision. As the surgical procedure continues, it is the circulating nurse who coordinates the nursing care required for the patient. He or she anticipates the needs of the surgical team and organizes the environment, including supplies and traffic, to ensure that the process moves efficiently. The circulating nurse pays close attention to any interruptions in, or contamination of, the sterile field, and continually evaluates the patient’s safety. Using peripheral vision and a broad perspective, she or he helps to manage the care of the patient while assessing the needs of the surgical team members.<sup>40</sup> In addition to these responsibilities, the circulating nurse must record on the operative record each intervention and resulting patient outcome throughout the procedure.

Monitoring personnel passage in and out of the room is key to keeping the sterile environment intact and the patient’s safety from infection assured. The circulating nurse provides this monitoring and helps the scrub nurse count surgical instruments, sponges, and sharps in the sterile field. The scrub person, meanwhile, watches the procedure closely, anticipating the surgeon’s needs for additional instruments, supplies, and equipment. A knowledge of anatomy and physiology on the part of the scrub person, as well as an in-depth understanding of the procedure’s sequence, means the surgeon can concentrate more fully on the procedure.

During some surgical procedures, other health care providers participate in the care of the patient. Technicians from radiology operate equipment when X-rays or fluoroscopy are needed intraoperatively. All members of the surgical team work together. Regardless of their role in the OR, each team member must use the skills and expertise expected of his or her profession to work toward a successful outcome for the patient.

Teamwork in the OR includes

- maintaining awareness of individual capabilities and responsibilities,
- using good communication skills,
- demonstrating respect for one another, and
- demonstrating the willingness to work together for the benefit of the patient.

## KEEPING THE FAMILY INFORMED

The circulating nurse may be able to allay the family's anxiety by contacting them with updates during long procedures. The nurse may be able to give a time frame for completion of the surgery, or let the family know that the patient seems to be doing well and inform them that the surgeon will be speaking to them at the conclusion of the procedure. As the sole contact between the patient and his or her loved ones, the circulating nurse represents an important link. All communication of information about the patient should therefore be conveyed in a tone of warmth and reassurance.

## THE POSTOPERATIVE PERIOD

After the procedure has been completed, the surgeon, the circulating nurse, and the anesthesia care provider accompany the patient to the PACU and report to the PACU nurse. The postoperative period is defined as beginning with admission to the PACU and ends with either discharge or transfer to a patient care unit.<sup>7</sup> As with each stage of the perioperative process, whenever a patient is transferred from one level of care to another, the perioperative RN should communicate all pertinent information to the next caregiver.<sup>41</sup> It is important for the patient to have a complete systems assessment during the first few minutes of PACU care. The assessment should include, but not be limited to

- vital signs,
- respiratory adequacy,
- postoperative cardiac status,
- peripheral circulation (ie, postoperative tissue perfusion),
- postoperative neurological status,
- level of consciousness,
- allergies and sensitivities,
- skin integrity,
- pain management,
- temperature regulation,
- condition of the surgical wound site, and
- patient's overall condition.<sup>7</sup>

Assessments in the PACU are ongoing as the patient's recovery is monitored. The surgeon, meanwhile, informs the family about the procedure and explains what to expect during the postoperative recovery.

Divided into phases, the postoperative period begins by providing the patient with a transition from the anesthetized state, and care continues until the patient meets discharge criteria.

In Phase I, patients emerge from anesthesia and regain physiological homeostasis, receiving appropriate nursing intervention as needed.<sup>7</sup>

In Phase II, the patient is more alert and functional and no longer in need of intensive nursing care. This phase focuses on preparing the patient for self-care, care by family members, or care in an extended-care environment.

Phase III focuses on providing ongoing care for patients who require extended observation or intervention after transfer from Phase II or I. These patients may need alternative care, such as home health care or a stay in an overnight, short-stay hospital unit or recovery center.<sup>7</sup> When indicated, a patient may be "fast tracked," defined as transferring a patient directly from the OR to PACU Phase II, bypassing Phase I of the postoperative process.<sup>7</sup> Fast tracking is becoming popular with anesthesiologists because of new advances in rapid-onset, fast-emergence general anesthetics. With fast-tracking, the use of prophylactic drugs for postoperative nausea and vomiting and preemptive pain control is increased. Patients can be completely awake and oriented with stable vital signs in the OR shortly after a brief surgical procedure with general anesthesia.<sup>42</sup> When administered correctly, patients spend less time under anesthesia and have fewer complications, with less postoperative pain, nausea, and vomiting.<sup>43</sup> Facilities designed with Phase I and Phase II PACU areas adjacent to each other have reported the greatest success in fast tracking.<sup>44</sup> Fast tracking can be a positive innovation for surgical patient care when it is carefully planned and thought out, when open communication between professionals is maintained, quality assurance programs are implemented, and when patient outcomes are carefully monitored.<sup>43</sup>

## COMPLETING THE PERIOPERATIVE PROCESS

From first contact with the hospital or the ambulatory surgery center to discharge from the PACU, the patient who undergoes a surgical procedure is in the hands of a team of skilled and dedicated medical personnel who make up a single perioperative team to create a safe environment. Surgery is an intricate, complex, and coordinated effort, with many people involved. The surgical team provides quality care while ensuring the confidentiality of all patient information. The patient's comfort, health, and well-being depend upon every member of this team doing his or her job well. Team members, committed to the premise that *the patient is at the center of all we do*, recognize that it is only through continued aseptic vigilance, communication of information, and coordination of expertise that optimal surgical outcomes can be achieved. These vital practices ultimately ensure attainment of the primary goal of every surgical intervention - a successful perioperative experience leading to a satisfied patient and family.

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## POSTTEST

**Multiple Choice:** Please choose the one answer that best completes the following statements.

1. **As defined in health care literature, a safety culture is an environment that**
  - a. focuses on issues such as medication errors and wrong-site surgery.
  - b. applies primarily to large surgical facilities like hospitals and urban medical centers.
  - c. encourages reporting, ends blame, involves senior leadership, and focuses on systems.
  - d. maintains strict asepsis in the areas classed as *restricted*.
2. **In the perioperative environment, the message must come across to patients arriving for surgery that**
  - a. the patient should dispense with any preconceptions about surgery.
  - b. the surgical team has all the patient's information it will need.
  - c. all equipment, staff and supplies are ready and waiting in the OR.
  - d. the patient is at the center of all we do.
3. **Upon arrival at a medical facility for surgery, considerable anxiety may be experienced by patients who**
  - a. do not have enough information about their surgical procedure.
  - b. have had prior surgeries.
  - c. do not have serious illnesses.
  - d. meet any or all of criteria the above.
4. **The circulating nurse's role is to**
  - a. conduct the instrument, sponge, and sharp counts with the scrub nurse.
  - b. remain at the patient's side to reassure the patient.
  - c. gather positioning equipment.
  - d. begin entering data on the perioperative record.
5. **Not appearing on the pre-admission nurse's questionnaire is the patient's**
  - a. history of allergies.
  - b. limitations in movement.
  - c. BP and heart rate.
  - d. surgeon's name.
6. **The person who develops the patient's plan of care is the**
  - a. surgeon, using the physicians' pick list.
  - b. circulating nurse, consulting HIPAA.
  - c. pre-admission nurse, using the PNDS.
  - d. preoperative nurse, using the PNDS.
7. **Patient confidentiality is not breeched when the**
  - a. preoperative nurse tells the family that the patient is overweight.
  - b. circulating nurse reminds the PACU nurse the patient has Alzheimer's.
  - c. pre-admission nurse asks the CNA over lunch if Mrs. Smith's extreme anxiety delayed her procedure.
  - d. surgeon interviews the pre-operative patient in the presence of strangers without consulting the patient.
8. **A technique not to use when interviewing the preoperative patient is to**
  - a. carefully avoid acknowledging the patient's feelings of anger or fear.
  - b. be aware of body language.
  - c. repeat the patient's statements.
  - d. introduce yourself to family members.
9. **In the semirestricted area of the OR**
  - a. traffic is limited to authorized personnel and patients.
  - b. there are areas where instruments may be stored or processed.
  - c. is where peripheral support areas are maintained.
  - d. all the above conditions apply.

10. **In the OR, the role of the scrub person may be filled by**
  - a. the circulating nurse.
  - b. the registered nurse first assistant.
  - c. a CNA.
  - d. an ST or CST.
11. **Perioperative nursing had its beginnings in**
  - a. World War I.
  - b. the Crimean War.
  - c. the Korean War.
  - d. the Spanish-American War.
12. **Perioperative support staff does not include**
  - a. building-service personnel.
  - b. scheduling staff.
  - c. BMETs.
  - d. CFAs.
13. **Maintaining the sterile field does not include**
  - a. scrubbing hands and forearms for at least two to five minutes.
  - b. donning a surgical gown selected from the sterile instrument table.
  - c. double-gloving and wearing masks.
  - d. holding the hands above the elbows after the scrub.
14. **In the OR, on the draped back table, only**
  - a. the table front and surface are sterile.
  - b. the area from two inches below the table surface and up is sterile.
  - c. the circulating nurse counts and positions instruments on the surface.
  - d. the surface is considered sterile.
15. **Sterile drapes should**
  - a. not be subjected to rapid movement.
  - b. be placed on the patient before entry into the OR.
  - c. be draped over the OR door to create a sterile barrier.
  - d. never be placed on OR equipment.
16. **Appropriate positioning of the patient for the procedure ensures**
  - a. the patient will be able to communicate with the team.
  - b. the patient will not be able to pull off the surgical drape.
  - c. optimal exposure to the surgical site.
  - d. opportunity for observation of the procedure.
17. **Calling a "time out" before beginning the procedure allows for opportunity to confirm**
  - a. the nature of the procedure.
  - b. the name of the patient.
  - c. the correct patient position.
  - d. all of the above.
18. **Teamwork in the OR includes**
  - a. understanding who is in charge.
  - b. maintaining an awareness of individual capabilities and responsibilities.
  - c. keeping track of who has made mistakes.
  - d. offering to take over another's duties.
19. **Fast-tracking a patient is possible because**
  - a. health insurance companies support quick discharge of patients.
  - b. patients are motivated to be out of the hospital.
  - c. available medicines and postoperative care directions make home care more effective than it has been in the past.
  - d. new advances in anesthetics allow patients to be awake and stabilized in less time.
20. **In the first few minutes of PACU care, assessment should be made of the patient's postoperative**
  - a. vital signs, cardiac status, and level of consciousness.
  - b. pain management, skin integrity, and experience of nausea.
  - c. allergies, sensitivities, and lucidity.
  - d. all of the above at the least.

The Perioperative Environment  
Answer Sheet

Question	Answer
1	C
2	D
3	D
4	D
5	C
6	C
7	B
8	A
9	D
10	D
11	B
12	D
13	B
14	D
15	A
16	C
17	D
18	B
19	D
20	D