

# ***Exam Blueprint and Specialty Competencies***

## **Introduction – Blueprint for the Perioperative Nursing Certification Exam**

The primary function of the blueprint for the CNA Perioperative Nursing Certification Exam is to describe how the exam is to be developed. Specifically, this blueprint provides explicit instructions and guidelines on how the competencies are to be expressed within the exam in order for accurate decisions to be made on the candidates' competence in perioperative nursing.

The blueprint has two major components: (1) the content area to be measured and (2) the explicit guidelines on how this content is to be measured. The content area consists of the list of competencies (i.e., the competencies expected of fully competent practising perioperative nurses with at least two years of experience), and the guidelines are expressed as structural and contextual variables. The blueprint also includes a summary chart that summarizes the exam guidelines.

### **Description of Domain**

The CNA Perioperative Nursing Certification Exam is a criterion-referenced exam.<sup>1</sup> A fundamental component of a criterion-referenced approach to testing is the comprehensive description of the content area being measured. In the case of the Perioperative Nursing Certification Exam, the content consists of the competencies of a fully competent practising perioperative nurse with at least two years of experience.

This section describes the competencies, how they have been grouped and how they are to be sampled for creating an exam.

### **Developing the List of Competencies**

A working group of five highly experienced perioperative nurses from various regions in Canada revised and updated the current list of competencies during a five-day meeting. The final list of competencies was approved by the Perioperative Nursing Certification Exam Committee.

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<sup>1</sup> Criterion-referenced exam: An exam that measures a candidate's command of a specified content or skills domain or list of instructional objectives. Scores are interpreted in comparison to a predetermined performance standard or as a mastery of defined domain (e.g., percentage correct and mastery scores), independently of the results obtained by other candidates (Brown, 1983).

## **Assumptions**

In developing the list of competencies for perioperative nurses, the following assumptions were made:

The Operating Room Nurses Association of Canada (ORNAC) standards, guidelines, and position statements apply to the perioperative environment. It is the responsibility of the users of this document to apply it in the context of their individual setting (ORNAC, Section 1, 2011).

## **The Environment**

- The perioperative nurse's practice occurs in, but is not limited to, operating rooms, ambulatory care settings, clinics and health practitioners' offices.
- The surgical suite is a controlled, consistently monitored and highly technical area including the operating rooms, post-anesthetic recovery room and support facilities.
- The surgical suite accommodates scheduled and unscheduled patient care.
- The surgical suite is designed to support the safety of the patient and the personnel working within the suite.
- The surgical suite and related areas are regularly maintained and cleaned according to standards.

## **The Perioperative Patient**

- The perioperative patient possesses his/her own value system which is influenced by, but is not limited to, age, culture, ethnicity, socio-economic level, family dynamics, health perceptions and spiritual beliefs.
- The perioperative patient and designated support person(s) may experience stress due to a variety of factors (e.g., anesthesia, unfamiliarity with the surgical suite, fear of the unknown, loss of control).
- The perioperative patient's ability to communicate and comprehend may be compromised by his/her health status or surgical intervention.
- The perioperative patient and designated support person(s) have the ability to acquire information about the surgical procedure from outside sources such as the Internet, videos and libraries; they may have higher expectations and arrive with specific questions about the procedure and outcomes.
- The perioperative patient (or legal substitute decision-maker) has provided informed consent.
- The perioperative patient (or legal substitute decision-maker) may have an advance directive.

## The Perioperative Nurse

- The perioperative nurse practises surgical conscience and promotes patient safety.
- The perioperative nurse maintains professional accountability through orientation and ongoing education, relevant evidence-based research findings and skill development.
- Perioperative nursing encompasses competent clinical practice and knowledge of both scrub nurse and circulating nurse roles and may participate in administration, education and research.
- The perioperative nurse is able to assume a leadership role in clinical decision-making.
- The perioperative nurse recognizes the importance of risk assessments and sentinel event reporting within the perioperative phases of care.
- The perioperative nurse respects and values the knowledge and perspectives of other health-care providers.
- The perioperative nurse actively collaborates with the interprofessional health-care team members in order to maximize outcomes for the patient.
- The perioperative nurse shares knowledge and provides preceptorship, mentorship and/or guidance to nursing students and other nurses.
- The perioperative nurse provides guidance to the interprofessional health-care team.
- The perioperative nurse contributes to the assessment, formulation, implementation, evaluation and periodic revision of quality improvement activities.
- The perioperative nurse respects each individual, acts as a patient advocate and provides the best possible care.
- The perioperative nurse practises care according to the *Canadian Nurses Association Code of Ethics for Registered Nurses*.
- The perioperative nurse promotes and maintains Operating Room Nurses Association of Canada (ORNAC) standards of perioperative nursing practice.
- The perioperative nurse practises within his/her own level of competence and scope of practice.
- The perioperative nurse protects the privacy and confidentiality of all information gained in the context of the professional relationship.
- The perioperative nurse promotes the professional nursing specialty to the community through education and communication.

**Health**

- Health is a personal concept and is viewed within the context of the patient’s environment and culture.
- Health is a resource for living and is not merely the absence of disease.
- Health encompasses the whole being and is influenced by the patient’s environment (e.g., biological, psychological, socio-economic, cultural and spiritual).
- Health is fluid and dynamic throughout the lifespan.

**Competency Categories**

The competencies are classified under a six-category scheme commonly used to organize perioperative nursing.

Some of the competencies lend themselves to one or more of the categories; therefore, these six categories should be viewed simply as an organizing framework. Also, it should be recognized that the competency statements vary in scope, with some representing global behaviours and others more discrete and specific nursing behaviours.

**Percentage of Competencies in Each Group**

The following table presents the number and the percentage of competencies in each category.

**Table 1: Percentage of Competencies in Each Group**

<b>Category</b>	<b>Number of competencies</b>	<b>Percentage of the total number of competencies</b>
Ethical and Professional Practices	21	13%
Safety (Patient, Staff and Others)	53	32%
Infection Control/Protection	25	15%
Physiological Stability of the Patient	36	22%
Responses to Urgent and Emergent Situations	21	13%
Managing Resources	8	5%

## Competency Sampling

Using the grouping and the guideline that the Perioperative Nursing Certification Exam will consist of approximately 165 questions, the categories have been given the following weights in the total examination.

**Table 2: Competency Sampling**

Categories	Approximate weights in the total examination
Ethical and Professional Practices	10-15%
Safety (Patient, Staff and Others)	20-30%
Infection Control/Protection	18-22%
Physiological Stability of the Patient	15-25%
Responses to Urgent and Emergent Situations	10-15%
Managing Resources	5-10%

## Technical Specifications

In addition to the specifications related to the competencies, other variables are considered during the development of the Perioperative Nursing Certification Exam. This section presents the guidelines for two types of variables: structural and contextual.

**Structural Variables:** Structural variables include those characteristics that determine the general appearance and design of the exam. They define the length of the exam, the format and presentation of the exam questions (e.g., multiple-choice format) and special functions of exam questions (e.g., case-based or independent questions).

**Contextual Variables:** Contextual variables specify the nursing contexts in which the exam questions will be set (e.g., patient culture, patient health situation and health-care environment).

### Structural Variables

**Exam Length:** The exam consists of approximately 165 multiple-choice questions.

**Question Presentation:** The multiple-choice questions are presented in one of two formats: case-based or independent. Case-based questions are a set of approximately four questions associated with a brief health-care scenario (i.e., a description of the patient's health-care situation). Independent questions stand alone. In the Perioperative Nursing Certification Exam, 75 to 85 per cent of the questions are presented as independent questions and 15 to 25 per cent are presented within cases.

**Taxonomy for Questions:** To ensure that competencies are measured at different levels of cognitive ability, each question on the Perioperative Nursing Certification Exam is aimed at one of three levels: knowledge/comprehension, application and critical thinking.<sup>2</sup>

**1. Knowledge/Comprehension**

This level combines the ability to recall previously learned material and to understand its meaning. It includes such mental abilities as knowing and understanding definitions, facts and principles and interpreting data (e.g., knowing the effects of certain drugs or interpreting data appearing on a patient’s record).

**2. Application**

This level refers to the ability to apply knowledge and learning to new or practical situation. It includes applying rules, methods, principles and theories in providing care to patients (e.g., applying nursing principles to the care of patients).

**3. Critical Thinking**

The third level of the taxonomy deals with higher-level thinking processes. It includes the abilities to judge the relevance of data, to deal with abstraction and to solve problems (e.g., identifying priorities of care or evaluating the effectiveness of interventions). The perioperative nurse with at least two years of experience should be able to identify cause-and-effect relationships, distinguish between relevant and irrelevant data, formulate valid conclusions and make judgments concerning the needs of patients.

The following table presents the distribution of questions for each level of cognitive ability.

**Table 3: Distribution of Questions for Each Level of Cognitive Ability**

Cognitive Ability Level	Percentage of questions on Perioperative Nursing Exam
Knowledge/Comprehension	10-20%
Application	45-55%
Critical Thinking	30-40%

<sup>2</sup> These levels are adapted from the taxonomy of cognitive abilities developed in Bloom (1956).

## Contextual Variables

**Patient Age and Gender:** Two of the contextual variables specified for the Perioperative Nursing Certification Exam are age and gender of the patient. Providing specifications for the use of these variables ensures that the patients described in the exam represent the demographics characteristics of the population encountered by perioperative nurses. These characteristics, listed in Table 4 as percentage ranges, serve as guidelines for test development.

**Table 4: Specification for Patient Age and Gender**

Age Group	Percentage of questions on the Perioperative Nursing Exam	
	Male	Female
0 to 18 years	3-5%	3-5%
19 to 64 years	26-37%	26-37%
65+ years	12-22%	12-22%

**Patient Culture:** Questions are included that measure awareness, sensitivity and respect for different cultural values, beliefs and practices, without introducing stereotypes.

**Patient Health Situation:** In the development of the Perioperative Nursing Exam, the patient is viewed holistically. The patient health situations presented reflect a cross-section of the most common health situations encountered by perioperative nurses.

**Health-Care Environment:** It is recognized that perioperative nursing is practised in a variety of settings. For the purpose of the Perioperative Nursing Certification Exam, the primary health-care environment will be the hospital setting unless otherwise specified.

## Conclusions

The blueprint for the Perioperative Nursing Certification Exam is the product of a collaborative effort between CNA, ASI and a number of perioperative nurses across Canada. Their work has resulted in a compilation of the competencies required of practising perioperative nurses and has helped determine how those competencies will be measured on the Perioperative Nursing Certification Exam. A summary of these guidelines can be found in the summary chart Perioperative Nursing Certification Development Guidelines.

Perioperative nursing practice will continue to evolve. As this occurs, the blueprint may require revision so that it accurately reflects current practices. CNA will ensure that such revision takes place in a timely manner and will communicate any changes in updated editions of this document.

# Summary Chart

## Perioperative Nursing Exam Development Guidelines

STRUCTURAL VARIABLES		
<b>Exam Length and Format</b>	Approximately 165 multiple-choice questions	
<b>Question Presentation</b>	Independent questions:	75-85% of questions
	Case-based questions:	15-25% of questions
<b>Cognitive Ability Levels of Questions</b>	Knowledge/Comprehension	10-20% of questions
	Application	45-55% of questions
	Critical Thinking	30-40% of questions
<b>Category</b>	Ethical and Professional Practices (21 competencies)	10-15% of questions
	Safety (Patient, Staff and Others) (50 competencies)	20-30% of questions
	Infection Control/Protection (25 competencies)	18-22% of questions
	Physiological Stability of the Patient (36 competencies)	15-25% of questions
	Responses to Urgent and Emergent Situations (21 competencies)	10-15% of questions
	Managing Resources (8 competencies)	5-10% of questions
CONTEXTUAL VARIABLES		
<b>Age and Gender</b>	<b>Male</b>	<b>Female</b>
	0-18 years old	3-5%
	19-64 years old	26-37%
	65+ years old	12-22%
<b>Patient Culture</b>	Questions measuring awareness, sensitivity, and respect for different cultural values, beliefs, and practices, without introducing stereotypes, are included on the exam.	
<b>Patient Health Situation</b>	In the development of the Perioperative Nursing Certification Exam, the patient is viewed holistically. The patient health situations presented reflect a cross section of the most common health situations encountered by perioperative nurses.	
<b>Health-Care Environment</b>	For the purpose of the Perioperative Nursing Certification Exam, the primary health-care environment will be the hospital setting unless otherwise specified.	

# ***The Perioperative Nursing Certification Exam List of Competencies***

## **1. Ethical and Professional Practices (21 competencies)**

The perioperative nurse:

- 1.1 Demonstrates and applies leadership skills by promoting evidence-based practice (e.g., perioperative standards).
- 1.2 Practises:
  - 1.2a patient/family advocacy for privacy, dignity and confidentiality (e.g., surgery of staff member/public figure, visibility of surgical schedules, care of the deceased);
  - 1.2b surgical conscience (e.g., moral courage to remedy contamination);
  - 1.2c collaboration with the interprofessional health-care team (e.g., continuity of care);
  - 1.2d ongoing education/teaching for the patient (e.g., perioperative environment); and
  - 1.2e ongoing education/teaching for the interprofessional health-care team (e.g., surgical asepsis).
- 1.3 Completes accurate documentation according to professional standards (e.g., event times, interventions, surgical count, medications, positioning, specimens, equipment).
- 1.4 Provides a hand-over report to transfer accountability to the receiving health-care provider (e.g., continuity care, current patient information).
- 1.5 Supports the psychosocial needs of the patient (e.g., altered body image, apprehension).
- 1.6 Addresses communication needs of the patient (e.g., language and sensory limitations, cognitive impairment).
- 1.7 Respects and responds to the individual belief systems of the patient (e.g., cultural and spiritual practices).
- 1.8 Recognizes situations that require disclosure (e.g., wrong site surgery, retained foreign bodies).
- 1.9 Participates and adheres to research protocols (e.g., consent for research, ethics approval).
- 1.10 Verifies that visitors have permission to enter the operating room (e.g., law enforcement, health-care industry representatives, family members).
- 1.11 Promotes a respectful workplace (e.g., background noise, social networking, horizontal violence, non-verbal behaviours).

- 1.12 Recognizes and applies conflict resolution strategies (e.g., time management, decision-making, competing equipment priorities).
- 1.13 Adapts to technological advances within the health-care system that impacts perioperative practice (e.g., hand-held devices, emerging informatics roles, interactive technology, robotics).
- 1.14 Complies with perioperative nurses' scope of practice and recognizes limitations (e.g., firing laser, suturing, cauterizing, dissecting).
- 1.15 Participates in quality management activities to improve patient outcomes (e.g., prevention of central line infection and surgical site infection).
- 1.16 Recognizes learning needs and seeks opportunities for improvement (e.g., new policies and procedures, in-services, conferences).
- 1.17 Identifies, documents and reports unprofessional conduct (e.g., substance use, verbal abuse).

## **2. Safety (Patient, Staff and Others) (50 competencies)**

The perioperative nurse:

- 2.1 Applies safety/risk prevention strategies in the perioperative environment (staff or patient):
  - 2.1a WHMIS (e.g., biohazardous and cytotoxic substances, bone cement);
  - 2.1b fire;
  - 2.1c personal protective equipment (e.g., fluoroscopy, radiation, surgical plume);
  - 2.1d ergonomics (e.g., safe patient handling, equipment handling);
  - 2.1e waste management (e.g., anesthetic gases, suction); and
  - 2.1f sharps safety (e.g., bloodborne pathogens).
- 2.2 Recognizes inefficiencies in the workplace and recommends changes in perioperative practice to support continuous quality improvement (CQI).
- 2.3 Participates in the surgical safety checklist with the interprofessional health-care team:
  - 2.3a briefing;
  - 2.3b timeout; and
  - 2.3c debriefing.
- 2.4 Identifies safe handling of surgical sponges (e.g., small sponges in body cavity).
- 2.5 Performs surgical count with appropriate personnel (e.g., no scrub nurse, student nurses).
- 2.6 Identifies the correct method of counting multi-package needles.

- 2.7 Performs surgical count at appropriate phases of the surgery (e.g., baseline count, before closure of cavity/incision, completion of procedure).
- 2.8 Performs a surgical count at time of changeover (e.g., permanent relief).
- 2.9 Determines the extent of the surgical count related to surgical procedures (e.g., partial, full, multiple procedures, cavity within a cavity).
- 2.10 Determines the sequence of the surgical count (e.g., sponges, sharps, miscellaneous items/instruments).
- 2.11 Responds to a lost item in a surgical count (e.g., X-ray, surgeon notification, recount).
- 2.12 Anticipates the needs of the patient to support the surgical team (e.g., equipment supply, airway, sutures, knowledge of surgical intervention).
- 2.13 Responds to emergency surgical cases where count is not performed (e.g., documentation, surgeon notification).
- 2.14 Facilitates safe transfers of patient (e.g., wheelchair, OR/ICU beds, stretcher, transfer device).
- 2.15 Implements the principles of positioning in relation to anatomy and physiology, potential complications and surgical site accessibility:
  - 2.15a supine;
  - 2.15b prone;
  - 2.15c lateral;
  - 2.15d lithotomy;
  - 2.15e reverse Trendelenburg; and
  - 2.15f Trendelenburg.
- 2.16 Applies positioning devices safely (e.g., padding, stirrups, backrest, prone/lateral supports).
- 2.17 Implements positioning measures that reduce the risk of injury for:
  - 2.17a infant/pediatric patients;
  - 2.17b elderly patients;
  - 2.17c bariatric patients; and
  - 2.17d patients with physical limitations (e.g., quadriplegic, multiple contractures).
- 2.18 Evaluates safe patient positioning (e.g., tissue integrity, falls, repositioning, duration of surgery).
- 2.19 Implements the safe use of equipment, including:
  - 2.19a operating room bed and accessories/attachments;

- 2.19b video systems;
- 2.19c alternate energy devices (e.g., ultrasonic systems);
- 2.19d laser (e.g., eye safety, fire, controlled area);
- 2.19e thermal device (e.g., ablation systems);
- 2.19f pneumatic tourniquet;
- 2.19g limb occlusion pressures;
- 2.19h duration of use;
- 2.19i powered equipment (e.g., electric, battery-powered);
- 2.19j compressed gas (e.g., pressure, cylinder);
- 2.19k Insufflation equipment (e.g., CO<sub>2</sub>); and
- 2.19l thermoregulation devices (e.g., warming/cooling).

2.20 Demonstrates the principles of electrosurgery such as:

- 2.20a dispersive electrode/capacitative pad placement;
- 2.20b monopolar/bipolar applications:
  - i) power settings, alarms;
  - ii) prep solutions, flammability, fumes;
  - iii) active electrode isolation (cautery holster);
  - iv) surgical plume evacuation;
- 2.20c compatibility with implantable electronic devices (e.g., pacemaker/implantable cardioverter device, neurostimulator, cochlear implant);
- 2.20d minimally invasive surgery:
  - i) capacitive/direct coupling;
  - ii) instrument insulation check.

2.21 Implements safe medication practices (e.g., irrigation, preparation, delivery, labelling, documentation, verification).

2.22 Demonstrates safe care and handling of surgical specimens:

- 2.22a verification, labelling, documentation, destination;
- 2.22b preservation (e.g., fresh, fixed); and
- 2.22c special considerations (e.g., forensic, research, biohazard).

### 3. Infection Control/Protection (25 competencies)

The perioperative nurse:

#### 3.1 Practises infection prevention and control strategies:

- 3.1a routine practices/hand hygiene;
- 3.1b transmission-based precautions:
  - i) airborne (e.g., tuberculosis);
  - ii) droplet (e.g., influenza);
  - iii) contact (e.g., multi-drug-resistant organisms); and
  - iv) classic Creutzfeldt-Jakob disease (CJD).

#### 3.2 Practises the principles of asepsis in regards to:

- 3.2a surgical attire;
- 3.2b traffic control;
- 3.2c scrubbing, gowning, gloving;
- 3.2d creating, maintaining and monitoring sterile field (continuous surveillance);
- 3.2e dispensing sterile supplies;
- 3.2f hair removal;
- 3.2g skin preparation (e.g., application/sequence, ostomy);
- 3.2h draping;
- 3.2i construction/renovation (e.g., dust, aspergillous);
- 3.2j properties of antimicrobial agents; and
- 3.2k storage of sterile supplies.

#### 3.3 Monitors and responds to environmental factors (e.g., temperature, humidity, air exchanges).

#### 3.4 Initiates corrective action for breaks in aseptic techniques (e.g., surgical attire, compromised surgical field, instrument bioburden).

#### 3.5 Verifies appropriate environmental cleaning/sanitation practices (e.g., bioburden).

#### 3.6 Demonstrates knowledge of quality controls for sterilization (e.g., biological/chemical indicators).

#### 3.7 Implements emergency sterilization according to standards (e.g., parameters, indicators/integrators, instrument preparation, containment device, documentation requirements).

#### 3.8 Demonstrates knowledge of different forms of sterilization (e.g., steam, chemical).

#### 3.9 Examines surgical supplies for sterility (e.g., outdating, integrity of packaging).

- 3.10 Demonstrates safe care and handling of contaminated equipment and instruments (e.g., isolation/bowel technique, transportation to reprocessing).
- 3.11 Verifies the surgical wound classification for a given procedure.
- 3.12 Identifies appropriate dressings for complex surgical procedures (e.g., wound requirements).
- 3.13 Verifies antibiotic prophylaxis is completed (e.g., timing).
- 3.14 Implements strategies to reduce surgical site infections (e.g., clipping, normothermia, glycemic control, antibiotic prophylaxis).

#### **4. Physiological Stability of the Patient (36 competencies)**

The perioperative nurse:

- 4.1 Verifies the preoperative preparation of the surgical patient:
  - 4.1a two unique patient identifiers;
  - 4.1b precautions (e.g., isolation);
  - 4.1c consent/surgical site verification;
  - 4.1d n.p.o. status;
  - 4.1e blood, blood products and plasma volume expanders;
  - 4.1f allergies;
  - 4.1g dental work, prostheses and implantable electronic devices (e.g., pacemaker/implantable cardioverter device, neurostimulator, cochlear implant);
  - 4.1h body adornments (e.g., piercings, tattoos, hair extensions);
  - 4.1i laboratory values;
  - 4.1j physiological status (e.g., comorbidities, anatomical limitations, medications/herbal supplements, recreational substances);
  - 4.1k psychosocial status (e.g., cognitive function, emotional needs, cultural/spiritual needs, language barrier); and
  - 4.1l venous thrombotic emboli (VTE).
- 4.2 Verifies, interprets and communicates significant findings to the interprofessional health-care team (e.g., laboratory values).
- 4.3 Demonstrates knowledge and understanding of commonly used medications, anesthetic agents and muscle relaxants (e.g., propofol, succinylcholine, lidocaine).
- 4.4 Assists the anesthesia provider with invasive and non-invasive monitoring devices (e.g., ECG, pulse oximetry, arterial/central line).

- 4.5 Maintains ongoing awareness of patient monitoring and communicates with the anesthesia provider.
- 4.6 Assists the anesthesia provider with the induction of general anesthesia:
  - 4.6a providing a supportive environment (e.g., warmth, quiet, reduced background noise, undue harm);
  - 4.6b preoxygenation and airway management (e.g., laryngeal mask airway/endotracheal tube);
  - 4.6c cricoid pressure and rapid sequence intubation, assistive devices (e.g., fibre-optic scope); and
  - 4.6d special considerations (e.g., pediatric, bariatric, older adults, prenatal).
- 4.7 Assists the anesthesia provider with the patient's emergence from general anesthesia (e.g., extubation, suctioning, patient monitoring).
- 4.8 Demonstrates knowledge and skills of regional anesthetic agents in assisting the anesthesia provider (e.g., epidurals, spinals, neuroleptics, Bier block).
- 4.9 Monitors the patient's physiological status during local anesthesia (e.g., continuous patient monitoring, documentation, vital sign and pain management).
- 4.10 Demonstrates the proper use of monitoring equipment during local anesthesia and communicates abnormal results to the surgeon.
- 4.11 Anticipates potential complications related to general anaesthesia:
  - 4.11a bronchospasm/laryngospasm;
  - 4.11b difficult airway;
  - 4.11c malignant hyperthermia; and
  - 4.11d epiglottitis.
- 4.12 Anticipates potential complications related to regional anesthesia/local anesthesia (e.g., toxicity, anaphylaxis).
- 4.13 Anticipates potential complications related to procedural sedation (e.g., respiratory arrest, pain management).
- 4.14 Anticipates potential complications related to insertion of invasive lines (e.g., pneumothorax).
- 4.15 Demonstrates knowledge and understanding of hemostasis (e.g., mechanical, chemical).
- 4.16 Implements and adapts an individualized plan of care for each surgical patient (e.g., positioning devices, special equipment needs, nursing interventions).

- 4.17 Assesses, documents and communicates the patient's physiological status and documents changes (e.g., respiratory, cardiovascular, skin condition).
- 4.18 Implements interventions to support the principles of normothermia (e.g., reliable sites for measurement of core temperature).
- 4.19 Provides ongoing monitoring of patient during the intraoperative period and communicates findings to interprofessional team (e.g., anatomical alignment, intake/output, supplies, blood loss, psychosocial needs).

## **5. Responses to Urgent and Emergent Situations (21 competencies)**

The perioperative nurse:

- 5.1 Prepares and prioritizes for the management of urgent and emergent patient situations, including:
  - 5.1a anaphylaxis (e.g., latex, medication);
  - 5.1b airway management (e.g., obstruction, laryngospasm/bronchospasm, aspiration, difficult airway, respiratory arrest);
  - 5.1c malignant hyperthermia;
  - 5.1d cardiac event (e.g., ventricular fibrillation, cardiac arrest, heart block, hypothermia);
  - 5.1e toxicity (e.g., seizure);
  - 5.1f shock (e.g., hypovolemic, septic, cardiogenic);
  - 5.1g emboli (e.g., pulmonary, fat); and
  - 5.1h hemorrhage (e.g., disseminated intravascular coagulation, lacerated artery).
- 5.2 Recognizes and responds to urgent and emergent patient situations in the surgical suite, including:
  - 5.2a anaphylaxis (e.g., preparing medication, defibrillator);
  - 5.2b airway management (e.g., emergency tracheostomy);
  - 5.2c malignant hyperthermia (e.g., administering skeletal muscle relaxant, invasive lines);
  - 5.2d cardiac event (e.g., cardiopulmonary resuscitation, defibrillation);
  - 5.2e toxicity/seizure (e.g., preparing medications, protecting the patient from injury);
  - 5.2f shock (e.g., retrieval of blood/blood products and plasma volume expanders, preparing medications);
  - 5.2g emboli (e.g., repositioning, oxygen administration, retrieval of blood gases);
  - 5.2h hemorrhage (e.g., additional surgical supplies);
  - 5.2i pneumothorax (e.g., insertion of chest tube);
  - 5.2j multiple trauma (e.g., prioritizing nursing care/supplies); and
  - 5.2k minimally invasive surgery that converts to open procedure (e.g., additional instrumentation and supplies).
- 5.3 Directs, assists and supervises other members of the interprofessional health-care team to respond effectively to urgent and emergent environmental situations (e.g., intraoperative fire, technological failure, flood, hurricane).

5.4 Responds to intraoperative death (e.g., expected, unexpected).

## **6. Managing Resources (8 competencies)**

The perioperative nurse:

- 6.1 Plans, organizes and prioritizes care and resources to meet patient needs:
  - 6.1a staffing (e.g., call-back, delegation, coordination);
  - 6.1b instrument assembly, integrity (e.g., minimally invasive instrumentation);
  - 6.1c equipment and instrument availability (e.g., video systems, integrated suites, image intensifier);
  - 6.1d implant availability and validation; and
  - 6.1e supplies (e.g., cost-consciousness).
- 6.2 Incorporates health-care technology into perioperative nursing practices (e.g., robotics/hybrid suite, electronic health record, hand-held devices).
- 6.3 Uses environmental and sustainable materials to reduce waste and protect the environment.
- 6.4 Participates in clinical evaluation of products and equipment (e.g., preventative maintenance, audits, trials).