# Top Ten Adult Nursing Situations

for

# High-Fidelity Simulation

CASN
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Canadian Association
of Schools of Nursing

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## Acknowledgements

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## Working Group

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# Inclusion

CASN is committed to developing inclusive policies and statements that challenge discrimination and cisnormative behaviour. A guiding objective, therefore in developing the scenarios is to ensure that they promote, sensitivity, inclusion, and respect for all people including but not limited to transgender, non-binary, intersex, and members of all marginalized communities.

## Purpose

The objective in developing the top 10 situations in adult nursing for high-fidelity simulation was to highlight the most important complex clinical events for baccalaureate nursing students to experience before entering practice, regardless of where they choose to work. The aim is to offer schools of nursing in Canada national, consensus-based recommendations, and associated teaching and learning resources, related to the use of high-fidelity simulation in the curriculum. The top ten situations selected are not intended to address all patient populations, all sectors of nursing care, and all types of simulation modalities. Rather they target adults, including the older adult, in complex acute care situations. The identification of key situations for simulation among other patient populations as well as other simulation modalities are being planned for the future.

## Background

Simulation in health professional education has been defined as the creation of a situation or environment in which a student or practitioner experiences a representation of a real event in order to practice a skill, learn new abilities, gain an understanding of systems or human actions, or for the purpose of performance evaluation (Loprieato et al., 2016). This approach to teaching and learning, initially developed in aviation to train pilots, has become increasingly important in health professional education.

Simulations are classified by fidelity which refers to the degree that the selected situation and its environment are replicated (Gaba, 2004). Three levels of patient simulation are commonly identified in health care: high, mid-range, and low fidelity. The use of all three has grown substantially in Canadian schools of nursing in recent years, including high-fidelity computerized manikins, interactive computer videos, standardized patients, three-dimensional virtual realities, non-computerized task trainers, and role play.

The selection of the fidelity of a simulation modality depends on the nature of the learning to be fostered and the complexity of the caregiving situation (CASN, 2015). With the current high acuity of patients and the increasing complexity of nursing care, there is growing emphasis on clinical reasoning, clinical judgement, and nursing interventions in the care of unstable, often deteriorating patients. Practice experiences are essential for nurses to develop these abilities (Goudreau et al., 2015) but securing quality clinical placements is challenging. Research has demonstrated, however, that high-fidelity simulation is an effective pedagogical approach to provide students with this practice (Lassiter, 2007).

Despite the growth in simulation-based learning in nursing education, there is considerable diversity in the situations being selected across schools of nursing. A key characteristic of simulation-based experiences, however, in contrast with clinical placements, is that they are planned, predictable, and/or controlled by the instructor (CASN, 2015). Moreover, they may be delivered consistently from one

student to another. As a result, simulation-based learning offers educators the opportunity to provide students with predetermined, complex, practice experiences identified as important for all students to have before graduating and entering the profession. Another important characteristic of simulation-based practice is that students may make errors and may learn from their errors without harming patients (INACSL, 2016).

The design of a simulation scenario, like the selection of a simulation modality, is determined by the learning outcomes to be achieved and the health situation/issue to be addressed (Canadian Association of Schools of Nursing, 2015). In 2017, CASN was approached by CAE, an aeronautics and health care simulations company, with the proposal of revising and updating a package of high-fidelity simulation scenarios for adults. CASN saw this as an opportunity to create national consensus-based recommendations identifying which complex clinical situations in adult care nursing are the most important to guarantee students have experienced prior to entering practice, as well as to support these consensus-based recommendations with scenarios adapted to the Canadian health care context and the Canadian entry-to-practice competencies.

In summary, the importance of practice learning experiences for nursing students is a long-accepted essential component of nursing education in Canada. Obtaining clinical placements for students, however, has become increasingly difficult. Moreover, as nursing practice has grown in complexity, it is also difficult to ensure that students will have a particular type of clinical experience deemed important in any given clinical placement. The widespread and growing use of simulation is currently addressing the need for nursing students to have hands on practice experiences. The increased fidelity of computerized manikins, along with the planned nature of simulation-based practice experiences, also offers a solution to the challenge of providing students with predetermined types of complex caregiving situation before entering the profession. As a first step in harnessing this potential, the top ten complex practice experiences baccalaureate nursing student should have in the care of the adult and older adult have been identified using a national consensus based approach.

## Methodology

A modified Delphi process was used to develop the top 10 list of situations for adult nursing. This process involved a national panel of experts in nursing education and simulation, the project's working group, as well as a series of consultations, and consensus-building activities.

The first step was to establish the working group, experts drawn from across Canada, to guide the process. The next step was for the working group to create an initial draft document of essential

situations for high-fidelity simulations for nursing students in adult nursing based on a literature review and on their experience. Feedback on the initial list was obtained from a world café format in which small groups of nurse educators were formed and reformed throughout the day to provide input and feedback. This format allowed for a cross-pollination of ideas, rich discussion, and in-depth input. The results were collated and then reviewed by the expert working group who made a series of revisions based on this. They reached a second consensus on the top 10 situations. A nation-wide survey of nursing educators was then conducted to validate the list. The results of this survey were reviewed by the working group, minor modifications were made, and the group came to a final consensus. The list of situations was adopted by the expert panel in July 2018.

The group then selected existing CAE scenarios to review, revise, update, and adapt to the Canadian context in order to create learning resources that would support the integration of the top ten situations. The expert working group and a wider group of stakeholders then reviewed and revised each simulation scenario. The International Nursing Association for Clinical Simulation and Learning Standards of Best Practice: Simulation (2016) helped inform the review and revisions carried out by the expert working group. These standards provide detailed guidance on the design, facilitation, and debriefing of simulation experiences in nursing education. In addition, when determining the list of key experiences for high-fidelity simulation, important elements of care to include in simulation scenarios emerged. These elements also helped guide the revision process. They include: a) communication, b) unfolding scenarios, c) adverse event reporting, and d) interprofessional collaboration.

Simulation can provide students with opportunities to enhance their communication skills and practice closed-loop communication. This can include communication with the patient, family members, or the health care team such as when giving handover reports. Communication skills that can be developed through a simulation experience include de-escalation skills when dealing with an angry patient or family member.

As noted earlier, high-fidelity simulation can allow students to garner experience with a patient whose condition is rapidly changing. Providing an unfolding simulation scenario can give the student a realistic and valuable learning experience. In addition, building in an adverse event that requires error identification and reporting provides students practice in an area that can be especially challenging, even for senior nurses.

As students do not enter practice as the sole care provider for their future patients, interprofessional simulation scenarios are of great benefit to them. Including this element in simulation, however, can be challenging as factors such as availability, timing, resources etc. are a barrier.

Following this in-depth review and revision to the scenarios, the final CAE simulated clinical experiences (SCEs) supporting the top 10 list was confirmed in January 2019.

# Top 10 Situations for High-Fidelity Simulation in Adult Nursing

## *Hypo and Hyper glycemia*

Diabetes mellitus (DM) is a disorder of insulin production and/or utilization resulting in abnormal blood glucose levels. This chronic illness affects approximately three million Canadians of all ages. Acute situations involving DM include hypoglycemia, diabetic ketoacidosis, and hyperglycemic state. Minor illness, acute illness, injury and surgery can result in fluctuations in serum glucose levels which can negatively impact patient outcomes and possibly lead to death. It is imperative for nurses to rapidly recognize and distinguish between the clinical manifestations of hyperglycemia and hypoglycemia, identify potential causes, initiate critical assessments and interventions, and provide related patient health teaching.
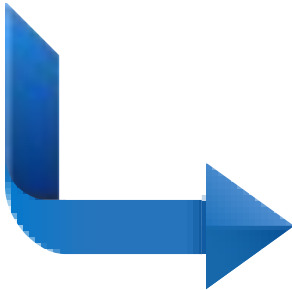
### CAE Simulation Scenario

## *Chronic Diabetic*

The learners are caring for a 63-year-old male who is being seen at the local homeless shelter clinic. He has lived on the streets for the last four years and visits the clinic where a community health nurse attempts to monitor and manage his Type 1 diabetes mellitus. His management of his diabetes regimen has been sporadic in the past. Recently he was found on the streets in a semi-conscious state with a blood glucose of 28.3 mmol/L. He was transported to the acute care medical facility via EMS and was treated in the ED, followed by admission to the Medical Unit for further stabilization and treatment. He was discharged and is now at his first follow-up appointment in the homeless shelter clinic and is being seen by the community health nurse (CHN).

# *Assessment – Deteriorating patient*

Recognizing and responding to a clinically deteriorating patient is a fundamental nursing skill. Through close monitoring, nurses must be able to quickly recognize and respond to early signs of physical and psychological decline, interpret assessment findings, communicate and collaborate within the healthcare team to manage the clinical condition and prevent further deterioration. The ability to quickly and accurately detect even subtle changes in a patient's condition can lead to improved outcomes.

## CAE Simulation Scenario

# *Postoperative Hemorrhage*

The learners are providing care for a 60-year-old male who is on the Medical-Surgical unit recovering from a left nephrectomy. The surgical course was uneventful, and his vital signs were stable for four hours postoperatively; however, he then begins hemorrhaging. The patient is a Jehovah's Witness. IV fluid resuscitation is instituted with deterioration noted requiring a return to the Operating Room (OR). This experience represents unstable hemodynamics as blood loss is simulated.

# Respiratory – distress, arrest, and pulmonary embolism

Acute respiratory distress is a common and often serious medical emergency.  A rapid and skilled assessment of airway, breathing, and oxygenation is critical for patients experiencing acute respiratory distress.   Understanding the clinical significance of respiratory distress, respiratory failure and respiratory arrest, clinical causes and manifestations, diagnostic tests, and nursing interventions for the patient can lead to improved patient outcomes.

## CAE Simulation Scenario

## Postoperative Pulmonary Embolism

The learners are providing care to a 22-year-old male who sustained bilateral compound femur fractures following a motor vehicle crash (MVC). The patient was treated in the Emergency Room (ER) and taken to surgery for an open-reduction and internal fixation (ORIF) of both femurs with an estimated blood loss (EBL) of 800 mL. Postoperatively, the patient is transferred to the Intensive Care Unit (ICU) for overnight observation. The SCE begins the following morning when the patient is transferred to the General Surgical Unit.

# End-of-Life (Dying patient)

Nurses in hospital and community settings may be involved in end-of-life care which is a challenging and emotional experience. End-of-life care simulations provide an effective and safe learning environment where students can develop their ability to effectively communicate with patients and families.

## CAE Simulation Scenario

## End-of-Life Care

The learners are providing care for an 85-year-old female with advanced breast cancer with extensive metastases to her bones, brain and liver. She was admitted from home to a hospice bed on the Medical-Surgical Unit earlier today because she is actively dying. Over the past five days, she has developed ascites, which has made her abdomen distended and tight, causing her to be dyspneic and uncomfortable. Her condition has deteriorated to where she is now minimally responsive and unable to swallow. The family felt that they were unable to adequately manage her symptoms at home. She was brought by ambulance and directly admitted to a hospice bed on the Medical-Surgical Unit. During this SCE, learners have the opportunity to provide end-of-life and post-mortem care for a patient in the final phases of a terminal illness.

## *Cardiovascular – Myocardial infarction & cardiac arrest*

In any setting, an important nursing skill is the assessment and management of a patient with chest pain. Nurses are often the first contact when a patient experiences chest pain and provide the initial critical assessment and intervention before the code team arrives. Knowledge of diagnostic testing, rhythm strip interpretation, and prompt initiation of appropriate treatment algorithms is essential to improve mortality and morbidity rates.

CAE Simulation Scenario

## *Cardiopulmonary Arrest; Acute Coronary Syndrome*

The learners are providing care to a 60-year-old male on an Orthopedic Unit who had a microscopic laminectomy and spinal decompression for lumbar stenosis and neurogenic claudication from L1 through S1. On his second postoperative day, he is ambulating to the bathroom unassisted when the nurse hears a loud crashing noise coming from his room. On arrival, the nurse finds the patient lying on the floor in cardiopulmonary arrest. Interventions based on current Advanced Cardiac Life Support (ACLS) guidelines for pulseless arrest should be undertaken.

# *Sepsis and multiple organ dysfunction syndrome*

Sepsis can quickly develop from a localized infection regardless of health status. Immediate recognition and treatment of a patient with sepsis helps prevent rapid deterioration into shock and progression to multiple organ dysfunction syndrome and death. Improved patient outcomes rely on prompt assessment and intervention by nurses to manage hemodynamic parameters and maximize perfusion to vital organs.

## *Sepsis and Multiple Organ Dysfunction Syndrome*

**CAE Simulation Scenario**

The learners are providing care to an elderly gentleman who is a long-term resident of an extended care facility. He was recently treated for a urinary tract infection (UTI). He was brought to the Emergency Department (ED) today due to increasing unresponsiveness over the past 24 hours. His history of mid-stage Alzheimer's disease complicates the clinical picture. The patient's initial presentation meets the criteria for sepsis. His clinical status improves after initial fluid management, allowing stable transfer to the Medical Unit. Once on the medical unit, the patient's condition dramatically deteriorates into septic shock and eventually multi-system organ dysfunction and preparation to transfer the patient to the Intensive Care Unit (ICU). The scenario can end here or the patient's status can progress to cardiac arrest and death prior to transfer.

# *Fluid volume deficit –*
# *electrolyte imbalance in the geriatric patient*

Multiple age-related changes and an increase in comorbidities prevalent in the aging population can result in expected and unexpected electrolyte abnormalities. Dehydration is the most common fluid and electrolyte disturbance in older adults which can manifest as neurological and/or cardiac symptoms. Dehydration along with other fluid and electrolyte disturbances must be prioritized in the nursing care of older adults due to declining compensatory mechanisms in this population which contribute to higher rates of mortality and morbidity.
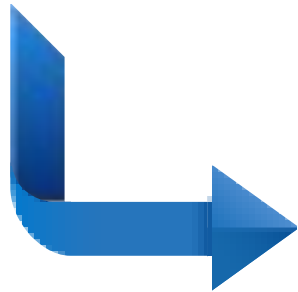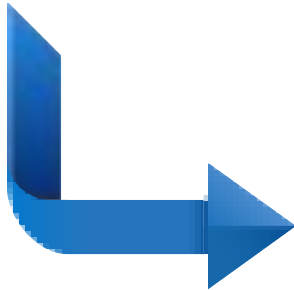
## CAE Simulation Scenario

## *Electrolyte Imbalance of the Geriatric Patient*

The learners will be caring for an 82-year-old male who was admitted to the Medical-Surgical Unit directly from his healthcare provider's office. The patient had fallen in his home and was found the next day by his daughter. He was incontinent of urine, confused and speaking gibberish. His daughter brought him to his healthcare provider's office and a diagnosis of rhabdomyolysis, precipitated by heat exhaustion, was made. The patient is being admitted to the Medical-Surgical Unit for treatment of hyperthermia, dehydration and hyperkalemia.

# *Heart failure exacerbation*

Nurses providing care for patients with heart failure have the potential to significantly improve patient outcomes through ongoing assessment and intervention. During a clinical exacerbation of heart failure, accurate assessment of fluid and electrolyte status, hemodynamic stability, diet, activity, medications, and patient education are fundamental to comprehensive care and stabilization of the patient's clinical condition.

## CAE Simulation Scenario

## *Congestive Heart Failure Exacerbation*

The learners are caring for a 67-year-old male with a six-year history of chronic heart failure. He called his healthcare provider this morning complaining of shortness of breath, fatigue and swelling in the ankles and feet. He is now being admitted directly to the Medical-Surgical Unit in moderate respiratory distress for chronic heart failure exacerbation. He is assessed, treated with diuretics, digoxin, angiotensin-converting enzyme (ACE) inhibitors and beta-blockers and receives a second dose of diuretic after which he improves.

# *Shock – Anaphylactic, Cardiogenic, Septic, Neurogenic*

Knowledge of the risk factors and different types and states of shock is vital for nurses as they play a key role in promoting early detection and treatment. Shock is not confined to a single patient population and can occur quickly, resulting in high mortality rates. It is critical that nurses are aware of early signs and symptoms to provide appropriate interventions before irreversible shock occurs.

## *Cardiogenic Shock Secondary to Acute MI*

The learners are providing care to a 50-year-old blind male who is being admitted to the Angioplasty Unit for overnight observation. He is now two hours status post percutaneous transluminal coronary angioplasty (PTCA) that was performed during a diagnostic cardiac catheterization. He was found to have significant coronary artery disease requiring the placement of two stents. Orders to admit the patient to the Coronary Care Unit for observation have been written.

This SCE was designed to expose the learners to a rapidly changing clinical situation in which the patient experiences hemodynamic changes caused by impaired cardiac function. The learners will need to call the healthcare provider to report hemodynamic instability and will need to make decisions about following the orders provided, which include transporting the patient back to the Cardiac Catheterization Lab.

# *Overdose – fentanyl, heroin, cocaine*

Substance use disorders are often a preventable and potentially fatal condition that has become a priority health concern in Canada. Nurses not only play a key role in the assessment and critical management of narcotic use but also provide patient support through counselling, prevention and education initiatives. Knowledge of pharmacokinetics, duration, and action is vital to determine priority treatment decisions and care as an overdose of fentanyl, heroin, or cocaine can have life-threatening toxic effects on multiple organ systems.

## CAE Simulation Scenario

## *Opioid Overdose*

The learners are providing care to a 28-year-old male who was transported by friends to the ED in acute respiratory depression and bradycardia. While removing the patient's clothing, a bag of pills is found.

Upon treatment with an antagonist, the patient improves. Once stabilized, the patient becomes agitated and is demanding to leave the hospital. If not treated, the patient deteriorates into asystole and advanced cardiac life support protocols can be implemented. If this state is reached it is suggested to repeat the scenario until a satisfactory performance is achieved.

## CASN Top 10 Adult Nursing Situations for High-Fidelity Simulation

Hypo and Hyper glycemia

Deteriorating patient

Respiratory: distress, arrest, and pulmonary embolism

End of Life: The dying patient

Cardiovascular: Myocardial infarction and cardiac arrest

Sepsis and multiple organ dysfunction syndrome

Fluid volume deficit: Electrolyte imbalance in the geriatric patient

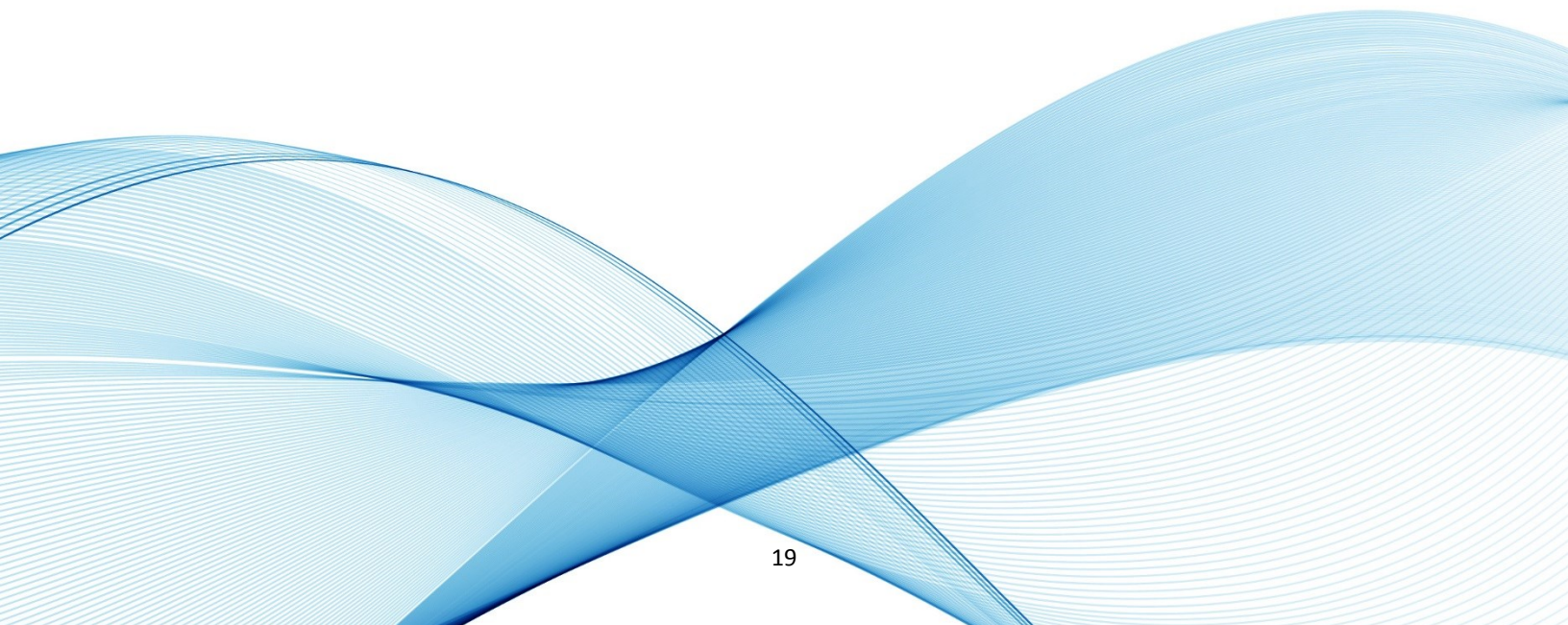Congestive heart failure exacerbation

Shock: Anaphylactic, Cardiogenic, Septic, Neurogenic

Overdose: Fentanyl, heroin, cocaine

| Top 10 Adult Nursing Situations for High-Fidelity Simulation | CAE Scenarios |
|---|---|
| Hypo and Hyper Glycemia | Chronic Diabetic |
| Deteriorating Patient | Postoperative Hemorrhage |
| Respiratory: Distress, Arrest, Pulmonary Embolism | Postoperative Pulmonary Embolism |
| The Dying Patient | End of Life Care |
| Cardiovascular: Myocardial Infarction, Cardiac Arrest | Cardiopulmonary Arrest; Acute Coronary Syndrome |
| Sepsis and Multiple Organ Dysfunction Syndrome | Sepsis and Multiple Organ Dysfunction Syndrome |
| Fluid Volume Deficit | Electrolyte Imbalance of the Geriatric Patient |
| Heart Failure Exacerbation | Congestive Heart Failure Exacerbation |
| Shock: Anaphylactic, Cardiogenic, Septic, Neurogenic | Cardiogenic Shock Secondary to Acute MI |
| Overdose: Fentanyl, heroin, cocaine | Opioid Overdose |

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