

## Resource 2: PeriAnesthesia Care of the Geriatric Patient

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By the year 2031, all baby boomers in Canada will have reached the age of 65 years. It is therefore important for the PeriAnesthesia nurse to be aware of the special needs and issues surrounding the care of the older adult.

Census Canada indicates that in 2016 there were 5,935,630 men and women over 65 years of age (Statistics Canada, 2016). This represents approximately 16.9% of the current population, with 2.2% being 85 years and older (Statistics Canada, 2016). A patient over 65 years of age may be identified as 'geriatric'. However, factors other than age are important considerations for this patient population.

The geriatric population has an increased prevalence of psychotropic drug use, depression, dementia, functional impairment, falls, postoperative delirium, and a greater number of co-morbidities (Dasgupta, & Dumbrell, 2006; Payot, 2007). Majority of patients over the age of 65 years will have at least one or more chronic diseases and these factors impact patient assessment, interventions and recovery in all phases of perianesthesia care. Age related changes to health systems and the potential implications are outlined in Appendix N (Odom-Forren, 2017). Perioperative mortality is 25% higher in patients over the age of 70, and any surgery that lasts longer than 3 hours has a 33% increased rate of complications (Dasgupta, & Dumbrell, 2006).

In addition, degeneration of organ systems associated with normal aging processes causes anesthesia agents to have a more profound impact on the geriatric population. Geriatric patients are more sensitive to general, neuraxial and regional anesthesia, as well as most centrally acting opioids and sedatives. The patient's preoperative/admission and preanesthesia assessments, invasiveness, urgency and length of surgery and American Society of Anesthesiologists (ASA) *Physical Status Classification* (American Society of Anesthesiologists, 1941) (See Appendix A) are utilized to plan the best care for the individual. Mortality rates are higher for emergent versus elective surgery (24.9% compared to 5.2% for elective surgery) (Pergolizzi, 2008). During provision of anesthesia to the geriatric patient, vigilance in monitoring will help optimize patient outcomes.

The PeriAnesthesia nurse must be knowledgeable of the complexities that can follow the geriatric surgical population. By being aware of the physiological and psychological alterations caused by aging (See Appendix N), the nurse's vigilance in assessment and care will help ensure optimal patient outcomes.

### **1. PreOperative/PreAdmission Phase**

The PeriAnesthesia nurse reviews preoperative and preanesthesia testing, ensuring all assessments are completed, including but not limited to:

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### a. A current medical history and physical including:

- Allergies and sensitivities
- Pre-existing co-morbidities identifies, documents and communicates to other interprofessional team members, information regarding the patient's comorbidities and potential implications as appropriate which will include, but is not limited to:
  - Any major health system disease (e.g., respiratory, cardiac, renal, hepatic)
  - Potential for difficult intubation, providing anesthesia or maintaining airway patency e.g., cervical spine degeneration, decreased spine/neck mobility, presence of loose teeth or absence of dentition
  - Screens patients for suspected obstructive sleep apnea (OSA) by using the most current and validated obstructive sleep apnea screening questionnaire e.g., STOP-Bang (See Appendix X)
  - Assess patient for use of home use of non-invasive ventilation devices (NIV) e.g., BiPAP, CPAP or apnea monitors.
  - Instructs patient to bring personal non-invasive ventilation (CPAP) machine to the institution from home
- Assesses the patient's neurological status
  - Identifies presence of, or risk for, dementia, delirium, confusion or behavioural concerns
  - Identifies presence of seizure disorder, stroke, transient ischemic attack (TIA) or other neuropathology
  - Identifies patient's ability to provide informed consent and discusses with the substitute decision maker
- Identifies cognitive impairments and their potential implications, confirming information as required with the patient, family or substitute decision maker (SDM) by:
  - Identifying the patient's ability to understand directions, including language and psychosocial needs
  - Identifying resources/supports to assist the patient before and following surgery
  - Identifying the responsible escort who will drive the patient home following ambulatory surgery and remain with the patient to assist as recommended for the first 24 hours as a minimum (Yun, Ip, & Chung, 2009; Ekstein, 2008).
- Physical limitations identifies and addresses the patient's physiological impairments and their potential implications and attends to them by consulting with other interprofessional team (IPT) members e.g., occupational or physical therapists,

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social workers, physicians, or dietitians

- Identifies and assesses the patient's:
    - Ability to perform activities of daily living and instrumental activities of daily living
    - Ability to perform postoperative care e.g., dressing changes, medication self-administration e.g., insulin, assessing for signs of infection
    - Ability to ambulate safely and avoid falls, use of appropriate mobility aids e.g., cane, walker, crutches, wheelchairs, safety belts and transfer aids
    - Dependence on prosthetic devices
    - Skin integrity
  - Cigarette smoking: cessation of smoking (ideally a minimum of 8 weeks prior to date of surgery) is recommended in order to reduce postoperative complications (Gore, 2007)
  - History of urinary retention or incontinence, fecal incontinence.
  - Previous surgery
  - Obtains the patient's baseline vital signs
    - Baseline temperature will facilitate the assessment of the presence and/or severity of unintended perianesthesia hypothermia (UPH) (See Standard 13: Thermoregulation: Maintenance of PeriAnesthesia Normothermia)
    - Heart rate, blood pressure
    - Oxygen saturation, respiratory effort
- b. **Laboratory and diagnostic testing**, as per Canadian Anesthesiologists' Society (Canadian Anesthesiologists' Society, 2018), Choosing Wisely (2017), and institutional guidelines. The following are CAS recommendations:
- Complete blood count (CBC) for patients having:
    - major surgery requiring a group and screen, or group and match
    - Chronic cardiovascular, pulmonary, renal, or hepatic disease
    - Malignancy
    - Known or suspected anemia, bleeding diathesis, or myelosuppression
  - Sickle cell screen for genetically predisposed patient (hemoglobin electrophoresis if screen is positive)
  - International normalized ratio (INR), activated partial thromboplastin time for patients having:
    - Anticoagulant therapy
    - Bleeding diathesis
    - Liver disease
  - Electrolytes and creatinine levels for patients with:
    - Hypertension

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- Renal disease
  - Diabetes
  - Pituitary or adrenal disease
  - Digoxin or diuretic therapy or other drug therapies affecting electrolytes
  - Fasting glucose level for patients with diabetes (should be repeated on day of surgery)
  - Electrocardiography for patients with known or suspected coronary heart disease, significant arrhythmia, peripheral vascular disease, other significant structural heart disease, or undergoing a high-risk procedure.
  - Chest radiographs:
    - not recommended for asymptomatic patients in the routine preoperative assessment unless part of a surgical or oncological workup unrelated to perioperative risk assessment
    - May be considered for patients with acute or chronic cardiopulmonary disease based on history and physical exam if it will change management
- c. Medications:** According to Statistics Canada, in 2011, 53% of all individuals in an institutional situation and thirteen percent (13%) of all households of individuals over 65 years of age take five (5) or more different medications per week (Statistics Canada, 2011) and 12% take ten (10) or more medications weekly (Pergolizzi, 2008; White, White, Monk, Jakobsson, Raeder, Mulroy, Bertini et al, 2012). Medication reconciliation is of increasing importance in the geriatric patient and should be initiated in the PreOperative/PreAdmission phase and reviewed in the Day of Surgery phase.
- Polypharmacy/polymedication is a factor for many geriatric patients and it is important that best possible medication history (BPMH) of each patient is complete and documented in the patient record (Accreditation Canada, 2017). This includes:
    - Identification of allergies to drugs, food and/or environmental agents
    - Reconciliation of all medications, complementary and alternative medicines taken at home
    - Emergent situations may limit completion of a detailed medication reconciliation which can be completed postoperatively as appropriate
    - The patient must be given directions for which medications to hold prior to surgery
    - The individual patient's medical history, surgery and risks are considered
    - The institution's guidelines and/or medical directives are followed
    - Identification of medications that may interact with anesthesia agents, other medications or procedures such as spinal anesthesia e.g., MAO inhibitors, anticoagulants, herbal medications
    - Reviews the use of concomitant analgesics and/or sedatives
  - Alcohol/substance/ medication/drug abuse or dependence: Addresses identified

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risks by consulting with physician or other member of the interprofessional team as appropriate e.g., regarding alcohol /substance intake/abuse

- Sudden withdrawal in the postanesthesia period may result in acute delirium
  - Assesses the patient's pain management requirements and discusses the potential treatment alternatives, with consideration to the implications of polypharmacy
    - Identifies any contraindications to medications or analgesia/anesthesia techniques e.g., anticoagulant use if considering epidural anesthesia
    - Identifies a multimodal and pre-emptive approach to reduce opioid requirements
    - Discusses non-opioid analgesics such as non-steroidal anti-inflammatory drugs and other adjuncts (acetaminophen, gabapentin)
    - Reviews with patient the importance of effective pain management to avoid postoperative complications e.g., over-sedation, atelectasis or delays in ambulation
    - Reviews previous experiences with responses to analgesia including side effects e.g., confusion, constipation
- d. **Accesses and implements patient/patient safety initiatives** as determined by Accreditation Canada that are Required Organizational Practices (ROP) (See Appendix B)(See Standard 8: Quality Management, Risk Management and Quality Improvement). Some Important ROP's to be addressed include the following:
- Medication reconciliation
  - Patient identification
  - Falls assessment strategy
  - Surgical site verification as part of the Safe Surgery Checklist
  - Pressure ulcer prevention
  - Home safety risk assessment
  - Venous thromboembolism prophylaxis
  - Surgical site infection prevention
  - Skin and wound care (Accreditation Canada, 2017)
- e. **Consent:** Ensures that the most responsible physician has obtained the patient's or substitute decision maker's informed consent and the documentation is completed as per institution's policies
- f. **Education:** Provides education to the patient, family or substitute decision maker regarding:
- perioperative routines, requirements and expectations on the day of surgery and postoperatively
  - Assesses understanding of the planned surgery, and clarifies/reinforces as appropriate
  - Reviews preoperative fasting/thirsting regime requirements including NPO status

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(See Appendix O, Preoperative fasting/thirsting as per accepted guidelines including recognition of Enhanced Recovery after Surgery (ERAS®) recommendations (Enhanced Recovery after Surgery Society, 2013; Varadhan, Neal, Dejong, Fearon, Ljungqvist, & Lobo, 2010; Ljungqvist, O., & Søreide, E., 2003)

- General fasting guidelines for healthy patients include:
  - Clear liquids (with carbohydrate loading) should be encouraged the night before surgery and again 2 hours prior to anesthesia
  - "Carbohydrate-rich beverage given before anesthesia and surgery alters metabolism from the overnight fasted to the fed state. This reduces the catabolic response (insulin resistance) after operation, which may have implications for postoperative recovery" (Ljungqvist, & Søreide, 2003).
- Reviews patient's understanding of prior instructions regarding medications to withhold (and timeframe) or to administer prior to and following surgery (e.g., anticoagulants, hypoglycemics)
  - Reviews what to bring to health care institution e.g., home medications, prosthetic devices, mobility aids, non-invasive ventilation (CPAP) machine
  - Reviews expected length of stay
  - Reviews expected postoperative routine including diet, activity, medications, follow-up visits and any specific restrictions

### 2. Day of Surgery Phase

The PeriAnesthesia nurse: Confirms that all preoperative/admission assessments are completed and continue to identify and address any missing information:

#### a. A current medical history and physical including:

- Review of allergies and sensitivities
- Pre-existing co-morbidities: Identifies, documents and communicates to other interprofessional team members, information regarding the patient's comorbidities and potential implications as appropriate (see previous section).
  - Ensures patient has brought personal non-invasive ventilation (CPAP) machine to the institution from home
- Assesses the patient's neurological status
  - Identifies new presence of, or risk for, dementia, delirium, confusion or behavioural concerns
  - Ensures patient understands and confirms consent for the procedure and/or discusses with the substitute decision maker (SDM)
- Identifies new cognitive impairments and their potential implications, confirming information as required with the patient, family or SDM by:
  - Identifying the patient's ability to understand directions, including language and psychosocial needs

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- Identifying resources/supports to assist the patient before and following surgery
  - Physical limitations: Identifies and addresses changes in the patient's physiological impairments, their potential implications and attends to them by consulting with other interprofessional team (IPT) members (anesthesiologist, surgeon).
    - Identifies and assesses changes in the patient's:
      - Ability to perform activities of daily living and instrumental activities of daily living
      - Ability to perform postoperative care e.g., dressing changes, medication self-administration e.g., insulin, assessing for signs of infection
      - Ability to ambulate safely and avoid falls, use of appropriate mobility aids e.g., cane, walker, crutches, wheelchairs, safety belts and transfer aids
      - Dependence on prosthetic devices
      - Skin integrity
  - Obtains the patient's baseline vital signs
    - Baseline temperature will facilitate the assessment of the presence and/or severity of unintended perianesthesia hypothermia (UPH) (See Standard 13: Thermoregulation: Maintenance of PeriAnesthesia Normothermia)
    - Heart rate, blood pressure
    - Oxygen saturation, respiratory effort
- b. Laboratory and diagnostic testing:** as per previous section
- Capillary blood sugar testing for all diabetic patients
- c. Medications**
- Reviews the medication reconciliation and the best possible medication history for comprehensiveness, which is vital to the care of the geriatric patient (as per previous section)
  - Medication reconciliation includes:
    - Confirmation of allergy status to drugs, food or environmental agents
    - Reviews all medications taken/omitted prior to surgery e.g., anticoagulants, hypoglycemic, as well as complementary and alternative medicines taken at home
    - Documentation of the time and the dosage that each medication was last taken prior to surgery
    - Identification of any potential interactions or concerns with preoperative medications e.g., patient inadvertently took all hypoglycemic medications on morning of surgery
    - Documentation of concomitant use of analgesics or sedatives
    - Documentation of alcohol/substance/medication/drug dependence or

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abuse.

- Administers pre-emptive analgesia and/or sedation as per physician directives; shorter acting agents are recommended e.g., midazolam, remifentanyl (Ban, Wagner, & Finucane, 2004)
- Reviews previous experiences with responses to analgesia including side effects e.g., confusion, constipation.

**d. Accesses and implements patient/patient safety initiatives** (see previous section).

- Reviews items brought to institution and labels as appropriate e.g., eye glasses, mobility aids, clothing, medication, non-invasive ventilation device

**e. Consent:** Ensures that the most responsible physician has obtained the patient's informed consent, or authorized by the substitute decision maker if the patient is unable to do so and the documentation is completed as per institutional guidelines

**f. Education:** Provides education to the patient and/or family regarding perioperative and perianesthesia routines, requirements and what to expect on the day of surgery and postoperatively:

- Confirms understanding of planned surgery and clarifies/reinforces as appropriate
- Reviews expected length of stay, location for planned admission or planned discharge
- Identify the responsible escort who will drive the patient home following ambulatory surgery and remain with the patient to assist as recommended for the first 24 hours as a minimum (Yun, Ip, & Chung, 2009; Ekstein, 2008).

### 3. Anesthesia Phase

Anesthesia is a continuum ranging from minimal sedation to general anesthesia (See Appendix P) and should be administered to the geriatric patient in incremental dosages and with precautionary care (Odom-Forren, & Watson, 2009) to obtain maximum benefit with minimal adverse effects. Elderly patients have a two-fold increase in sensitivity to the effects of opioids, and benzodiazepines have a more potent and prolonged effect (White et al, 2012; Bettelli, 2010). The elderly experience varied peak drug concentrations and duration of action. Geriatric patients are more sensitive to the hemodynamic response occurring at induction of anesthesia and are more prone to episodes of hypo/hypertension, tachycardia, bradycardia and cardiac arrhythmias. Age-related cardiovascular alterations, sympathetic block and decreased peripheral vascular resistance may produce intense hypotension and bradycardia (Bettelli, 2010).

Geriatric patients also have less compensatory reserve to respond to cardiac and respiratory stressors that occur with surgery and anesthesia (Bettelli, 2010), and where possible, a general anesthesia is avoided or used with another type/technique e.g., regional block, to lower anesthesia/analgesia requirements. Epidural, spinal and regional anesthesia decrease



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postoperative mortality and pulmonary complications (Gore, 2007). Additional caution is important as drug toxicity is much less predictable in the geriatric patient population (Ban et al, 2004). During provision of any level of anesthesia, the patient is monitored according to the institution's protocols and resources.

### 4. PostAnesthesia Phases

- a. **PostAnesthesia Phase I:** Geriatric patients often present with one or more chronic diseases and may have more complex care requirements. The nurse demonstrates vigilance in the nursing assessment and monitors for any adverse outcomes for which this population is at increased risk (See Appendix N).

The PeriAnesthesia nurse:

- Assesses for airway patency and is aware that geriatric patients have weaker airway protective reflexes and are more prone to airway obstructions following laryngoscopy and tracheal intubation.
- Promptly identifies loss of airway patency and responds appropriately
  - Applies a jaw thrust maneuver or head tilt-chin lift-jaw thrust as appropriate, cognizant of age related decreased range of motion
  - Suctions increased oral secretions
  - Assists the patient with measures to improve airway patency e.g., calling the patient's name, shaking the shoulder gently, by elevating the head of the bed /stretcher as permitted, or by encouraging deep breathing and coughing
  - Seeks assistance of anesthesiologist/anesthesia provider/interprofessional team member as appropriate
  - Assesses the patient's respiratory effort and efficacy of ventilations which are related to increased risk for postoperative respiratory complications in the geriatric patient group
  - Assesses the patient's oxygenation due to lower resting arterial oxygen pressures in the elderly
  - Monitors for signs of ineffective oxygenation e.g., presence of confusion, cyanosis, oxygen desaturation, cardiac arrhythmias
  - Ensures oxygen mask/nasal prongs are well fitted to the patient when there is a potential lack of dentition which can affect the seal of a mask to skin.
- Assesses the patient's hemodynamic response to the surgery since geriatric patients have less compensatory reserve to respond to stressors
  - Obtains vital signs on arrival, with constant observation and documentation of vital signs at a minimum of every 15 minutes

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- including heart rate, cardiac rhythm if required (Canadian Anesthesiologists' Society, 2014; Potter, & Perry, 2014), respiratory rate, blood pressure and oximetry
- Obtains a 12-lead ECG, as required
- Core temperature should be taken on admission and if hypothermic, a minimum of every 15 minutes until normothermic (Safer Healthcare Now! 2010).
- Monitors for signs of hypothermia, and institutes active warming measures such as a convective warming system as required.
- Is aware that geriatric patients are at higher risk of unintended perianesthesia hypothermia (UPH) (Associated Health Systems, 2010) (See also Standard 13: Thermoregulation: Maintenance of PeriAnesthesia Normothermia)
- Monitors for confusion, agitation and occurrence of postoperative cognitive delirium (POCD) which is more common in the geriatric patient
- Assesses the patient's sensory and motor control since anesthesia may have longer lasting effects in the geriatric patient
- Assesses the patient's pain/comfort level since geriatric patients can be more sensitive to anesthesia and analgesic agents
  - Assesses for signs of discomfort aware that impaired cognition can make assessment of the patient's comfort more challenging
  - Applies a pre-emptive and multimodal pain management approach
  - Titrates and administers analgesia and sedating medications at reduced doses
- Ensures postoperative nausea and vomiting is managed since the geriatric patient is at increased risk for dehydration, a common cause of postoperative nausea or vomiting.
  - Assesses and manages the geriatric patient's intake and output since aging is related to decreased renal adaptive mechanisms to electrolyte and fluid alterations
  - Recognizes increased risk of urinary retention following spinal anesthesia in older men (Bettelli, 2010)
- Promotes skin integrity, by continuation of monitoring for friction and shearing of the skin and pressure on bony prominences (Accreditation Canada, 2014; Braden et al, 1988)
  - The patient is repositioned to optimize comfort level with consideration to the surgical procedure.

### **b. PostAnesthesia Phase II**

Although geriatric patients are often complex and present with one or more chronic diseases, it remains an expectation that patients in Phase II are stable and that their care is focused on preparing for discharge. The PeriAnesthesia nurse is vigilant in the nursing

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assessment, monitoring for changes to the patient condition. (See Appendix N).

The PeriAnesthesia nurse:

- Reassesses the patient's airway patency, breathing and circulation, comparing to preoperative and preanesthesia baseline data
- Assesses the patient's sensory and motor control given that anesthesia may have longer lasting effects in the geriatric patient
  - Assists the patient to ambulate with appropriate mobility aids, and continuously monitors for unsteady gait or dizziness related to orthostatic hypotension
  - Assesses risk for falls
- Reassesses the patient's pain/ comfort level in relation to an increased sensitivity to anesthesia and analgesia in the geriatric patient:
  - Assesses for signs of discomfort in the presence of possible impaired cognition which can make assessment more challenging
  - Applies a pre-emptive and multimodal pain management approach
  - Administers analgesia and sedating medications at reduced dosages
  - Assesses the patient's pain management requirements and discusses potential treatments with the patient and/or family
  - Identifies any contraindications to medications
  - Plans to reduce opioid requirements through a multimodal and pre-emptive approach
  - Administers in accordance with physician's directives, non-opioid analgesics such as non-steroidal anti-inflammatory drugs, and other adjuncts (acetaminophen, gabapentin) to provide opioid sparing effects (Ead, 2008)
- Reinforces with the patient and family the importance of effective pain management to avoid postoperative complications e.g., over-sedation, atelectasis or delay in mobilization. Considers the patient's preoperative and preanesthesia history and monitors for complications common in geriatric patients. (See Appendix N)
- Ensures surgical dressing is intact with minimal discharge
- Education:
  - Reviews expected postoperative routines, including diet, activity, medication and any other specific restrictions or treatments related to surgery
    - Reviews potential complications to monitor and when to seek medical help or return to institution.
    - Ensures that discharge instructions and health teaching are provided to the patient, family or escort with appropriate arrangements for home transportation and continued support thereafter
  - A responsible adult is to remain with the patient for a minimum period of 24 hours for patient/patient safety (Yun et al, 2009; Ekstein, 2008, CAS 2018 guidelines).

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### c. Extended Observation

The PeriAnesthesia nurse:

- Continues to assess the patient in the Extended Observation Phase monitoring for complications (See Appendix N)
- Is cognizant that patients with co-morbidities are at increased risk of unplanned admission to the institution or readmission following discharge (Dasgupta, & Dumbrell, 2006)
- Assesses and manages the patient's intake and output in relation to decreased renal adaptive mechanisms to electrolyte and fluid alterations in the elderly

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