Canadian Geriatrics Society

CARE OF THE PERIOPERATIVE GERIATRIC PATIENT

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Abstract

The average patient undergoing surgery has become older and frailer over time. Older patients are at increased risk of adverse postoperative complications and mortality compared with younger patients. Perioperative interdisciplinary care for older adults has been shown to improve outcomes, including shorter hospital stays, lower costs per person, lower mortality, and reduced perioperative delirium. Multiple components of patient care within the preoperative, intraoperative, and postoperative period must be considered to provide comprehensive and effective care for the older surgical patient.

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Key messages

- The importance of perioperative geriatric care is becoming increasingly recognized as the number of older patients undergoing surgery increases
- Preoperative management of the older surgical patient should involve discussions surrounding patient goals, advance care planning, and optimizing modifiable preoperative risk factors
- Due to age-related physiologic changes, opioid use should be minimized, and high-risk anti-emetics should be avoided. 5-HT3 receptor antagonists are the anti-emetic class of choice in older adults.
- The postoperative period is a crucial time to prevent complications. Strategies to prevent postoperative delirium, pulmonary complications, falls, and pressure ulcer development should be implemented. Indications for indwelling catheter should be reassessed on a daily basis to reduce the risk of urinary tract infections (UTI).
- Assessing patients' social supports and need for home care are important elements for discharge planning

Introduction

The rate of aging worldwide is much greater than it has been in the past.[1] The average patient undergoing elective and emergency surgery has become older and frailer over time.[2] Older patients undergoing surgery continue to experience more adverse postoperative outcomes compared with younger patients.[3]

The importance of perioperative geriatric care has become increasingly recognized over recent years. For instance, a meta-analysis on orthogeriatric care models for co-management of hip fractures in older patients found that orthogeriatric collaboration was associated with a reduction of in-hospital mortality (RR 0.60, 95% CI 0.43 to 0.84), a reduction of long-term mortality (RR 0.83, 95% CI 0.74 to 0.94), and shorter hospital stays (standardized mean difference -0.25, 95% CI -0.44 to -0.05).[4]

In another meta-analysis of older patients with hip fractures, it was found that comprehensive geriatric care, defined as treatment by a medical team specialized in geriatric orthopedic patients, reduced the incidence of perioperative delirium (OR 0.71; 95% CI 0.57 to 0.89).[5]

A systematic review of eight randomized controlled trials of patients after hip fracture and elective surgical oncology procedures demonstrated that the Comprehensive Geriatric Assessment (CGA) reduces mortality in older people with hip fracture (RR 0.85, 95% CI 0.68 to 1.05) and reduces discharge to an increased level of care (RR 0.71, 95% CI 0.55 to 0.92).[6]

In this review, we describe an approach to caring for an older patient undergoing surgery from when the patient sees the family doctor to being discharged from the hospital. We will use a case-based approach to expand on the best practices guideline from the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) and the American Geriatrics Society (AGS), as well as provide practical resources.[7] See https://www.facs.org/~/media/files/quality%20programs/geriatric/acs%20nsqip%20geriatric%202016%20guidelines.ashx to access these guidelines.

Case

Ms. L is an 81-year-old female you have followed in your clinic for many years. Ms. L was widowed three years ago but has two adult children who live in town. She lives alone in a two-storey house. She takes the bus to the grocery store and prepares her own meals. She does not drive. Ms. L has someone come to clean her apartment. Her medical history is significant for hypertension, insulin-dependent type 2 diabetes, and osteoarthritis. Her medications include Lantus 25 units at bedtime, metformin 1 g twice daily, ramipril 5 mg daily, lorazepam 0.5 mg at bedtime for sleep, and Tylenol 1 g three times per day. She has had progressively worsening pain in her right knee for the past few years. She notes she is having difficulty walking more than 30 minutes and occasionally feels as if her right knee "gives out." She has tried physiotherapy and knee

bracing with minimal improvement. As the family doctor, you have referred her to an orthopedic surgeon for consideration of a right knee replacement. Her surgery is scheduled for 3 months from now.

Preoperative Management

Case question #1:

As the family doctor, you have scheduled a 3-month preoperative appointment with Ms. L in preparation for her upcoming knee surgery. What will you discuss with her during this appointment? What should the surgical and anesthesia teams discuss with Ms. L preoperatively?

Decision-Making Capacity

Decision-making capacity varies widely among the older patient population. The treatment team should determine whether or not a particular patient has decision-making capacity before obtaining consent for treatment.[8] If patients are found to lack the capacity to make a treatment decision, efforts should be made to identify and rectify causes of impairment. If no rectifiable causes can be identified, a substitute decision maker should be sought to obtain informed consent.

Patient Goals and Advance Care Planning

The treatment team should discuss the patient's goals of care and treatment preferences. A consideration of conservative management or palliative care may be appropriate for patients with a high risk of postoperative mortality (see http://canadiangeriatrics.ca/wp-content/uploads/2017/02/Facilitating-Effective-End-of-Life-Communication-–-Helping-People-Decide.pdf). Risk factors that put older patients at risk for non-beneficial treatments include severe frailty (Clinical Frailty Scale 7–9), NYHA Class III/IV (see http://canadiangeriatrics.ca/wp-content/uploads/2017/02/An-Approach-to-Management-of-Advanced-Heart-Failure-in-the-Older-Person.pdf), advanced disease (respiratory, hepatic, or renal), progressive decline in physical or cognitive function, long-term nursing home residence, and complete functional dependence.[9] Potential postoperative outcomes such as functional limitations, loss of independence, and potential lengthy recovery should also be discussed.[10] Feasible treatment recommendations should be aligned accordingly based on conversations with the patient and family/care partner(s). Advance directives should be clarified, and a substitute decision maker should be designated in the preoperative period.[11] Online tools such as ePrognosis (https://eprognosis.ucsf.edu/communication/video-goals.php) can assist clinicians in conducting these goals of care conversations.

Preoperative Assessment and Optimization

Functional impairment, frailty, and cognitive impairment are associated with mortality in older surgical patients.[12] Guidelines recommend that patients be screened for these domains prior to surgery.[8] Preoperative CGA has been shown to have a positive impact on postoperative outcomes in older patients undergoing elective surgery.[13] A study of vascular surgery patients over the age of 65 found that patients who received preoperative CGA and optimization had a 40% shorter hospital stay, 13% lower incidence of postoperative delirium, and 19% lower incidence of cardiac complications compared to patients who underwent standard preoperative assessment.[14] A preoperative CGA for older surgical patients should be considered.

Some studies have suggested that prehabilitation programs may improve postoperative outcomes.[12] For example, in a study of colorectal surgery patients, 81% of those who underwent multimodal prehabilitation consisting of nutritional counselling, protein supplementation, anxiety reduction, and an exercise program returned to baseline walking capacity 8 weeks postop compared to only 40% in the control group.[15] The treatment team may consider a prehabilitation program to optimize a patient's functional capacity before surgery.

Preoperative optimization strategies for older surgical patients may include providing a referral to physiotherapy for formal assessment, preoperative strength training, planning for in-hospital and post-discharge rehabilitation therapy, limiting the use of sedating psychotropic medications, nutritional supplementation, and reminding patients to bring all assistive devices to hospital (e.g., glasses, hearing aids, dentures, continuous positive airway pressure [CPAP] machines, gait aids).[12]

Medication and Substance Use Management

The patient's complete medication list along with non-prescription products should be reviewed prior to surgery. Non-essential medications should be held in the days leading up to surgery and may be restarted, if needed, when the patient has recovered from surgery. Considerations for stopping may include the potential for withdrawal, progression of disease with interruption of the drug, or potential for interactions with anesthetic medications.[11] In addition, a preoperative assessment should also include a history of alcohol and illicit drugs to anticipate withdrawal and to advise against the acute use of illicit drugs perioperatively.[16]

Preoperative Fasting

Preoperative fasting deprives patients of hydration and nutrition and may cause discomfort.[17] Geriatricians can work with surgeons and anesthetists to consider patients who would benefit from shortened fasting periods to prevent these complications.[10] Preoperative rehydration strategies may need to be considered for patients undergoing bowel preparation for gastrointestinal procedures, as bowel preparation can lead to fluid losses and metabolic disturbances.[18] In adults undergoing non-emergent surgical procedures requiring general anesthesia, regional anesthesia, or sedation/analgesia, it is recommended to fast from intake of clear liquids at least 2 hours beforehand and intake of light meal (e.g., toast, cereal, soup, applesauce) at least 6 hours beforehand, as there is increasing evidence for the benefit of limiting extended fasting periods of greater than 4 to 6 hours.[11]

Case answer #1:

Family MD or Geriatrician: You conduct a preoperative CGA with Ms. L. Based on this assessment, you advise her to bring her glasses, hearing aids, and four-wheeled walker to the hospital. She has been doing home physiotherapy once a week, and you ask her to continue this up until the date of surgery. She scores 25/30 on the Montreal Cognitive Assessment (MoCA), losing 4 points from delayed recall and 1 point from orientation (date), which places her in the mild cognitive impairment (MCI) category. You discuss the findings with her and counsel her and her family members/care partners on the risk of postoperative delirium while in hospital given her benzodiazepine use and new diagnosis of MCI. This information is shared with the surgeon and anesthesiologist.

Surgeon: You see Ms. L for a preoperative appointment. You realize that you have not yet had a conversation with her addressing goals of care. Ms. L appreciates that you were able to have this conversation and would like to make it clear in her chart that she would not like to be resuscitated or intubated but would like to be admitted to ICU for non-invasive ventilation or pressor support if needed. She prepares a legal document indicating that her husband is her power of attorney. This information is shared with the family MD and anesthesiologist.

Anesthesiologist: As her fasting sugars range from 5 to 7 mmol/L in the morning, you ask her to take 20 units of Lantus the night before surgery, two-thirds of her regular dose. You also ask her to hold metformin and ramipril on the day of surgery. She has been hesitant to consider tapering the lorazepam that she takes for sleep; therefore, you ask her to continue taking this medication while in hospital so as to avoid withdrawal. She is agreeable to considering tapering this medication after she recovers from the knee surgery. Ms. L's family MD will also be updated on the plan to taper her lorazepam.

Preoperative Checklist

- ❑ Determine the patient's decision-making capacity prior to obtaining surgical consent
- ❑ Determine patient goals of care, treatment preferences, and advance directives
- ❑ Identify and optimize modifiable preoperative risk factors (e.g., functional status, frailty, cognition, and comorbidities)
- ❑ Review the patient's complete medication list, including non-prescription drugs and herbal products
- ❑ Stop non-essential medications and consider switching medications that should be avoided in the perioperative period to safer alternatives. Ask about alcohol and illicit drug use, counsel regarding signs and symptoms of withdrawal, and advise against acute use of illicit drugs perioperatively.
- ❑ Continue medications that are medically indicated or those with withdrawal potential
- ❑ Consider shortened preoperative fasting periods or preoperative rehydration strategies if indicated

Intraoperative Management

Case question #2:

Three months later, Ms. L is admitted to the hospital for her elective knee surgery. She is concerned about "going under" with general anesthesia and would prefer being awake during the surgery. She is also worried about nausea and vomiting, as she has a history of severe motion sickness. What recommendations can be made for her intraoperatively?

Aging is associated with a decreased ability to adapt to physiologic stressors and changes that affect pharmacokinetics.[11] As a result, it is important to consider what can be done to minimize the physiologic effects that occur during the intraoperative period.

Anesthesia

Regional anesthesia is defined as nerve blockade with local anesthetic medications either via the central nervous system (e.g., epidural or subarachnoid space) or peripheral nervous system (e.g., femoral nerve or brachial plexus).[11] There is currently no definitive evidence that demonstrates that regional anesthesia is superior to general anesthesia as a primary modality for older adults.[11] A systematic review of 104 studies comparing regional versus general anesthesia on postoperative delirium in older patients undergoing hip fracture surgery demonstrated no difference.[19] However, as detailed in the subsequent sections, regional anesthesia may benefit patients by minimizing opioid use and decreasing the risk of postoperative nausea and vomiting.

Electroencephalographic (EEG) monitors of anesthetic depth have been shown to reduce postoperative delirium. A systematic review of six randomized controlled trials demonstrated that processed EEG, defined as signal analysis to produce a number that represents the depth of anesthesia to guide anesthesia administration, could reduce the risk of postoperative delirium in patients aged 60 years or over undergoing non-cardiac surgical and non-neurosurgical procedures.[20]

Opioid-Sparing Pain Management

Opioids should be avoided or at least minimized to the lowest necessary dose, as they have numerous adverse effects in older adults, including delirium, respiratory depression, nausea, constipation, and urinary retention, which are further worsened due to age-related changes in pharmacokinetics and pharmacodynamics.[21] Opioid-sparing techniques should be used instead. This includes scheduled acetaminophen before, during, or after surgery. The Acute Pain Service, if properly trained in pain management in frail seniors to avoid over-medication, can also be consulted in order to provide recommendations regarding regional nerve blocks.[11]

Postoperative Nausea and Vomiting

Postoperative nausea and vomiting (PONV) is the most common complication immediately after surgery.[11] According to the consensus guidelines published by the Society for Ambulatory Anesthesiology, risk factors for PONV include female sex, history of PONV or motion sickness, non-smoker, younger age, general anesthesia, use of volatile anesthetics and nitrous oxide, postoperative opioids, duration of anesthesia, and type of surgery (e.g., cholecystectomy, laparoscopic, gynecologic).[22] Strategies to reduce baseline risk include avoiding general anesthesia by using regional anesthesia, using propofol for induction and maintenance of anesthesia, avoiding volatile anesthetics, minimization of opioids intraoperatively and postoperatively, and adequate hydration.[22]

The primary anti-emetic class recommended for older adults is the 5-HT3 receptor antagonists (e.g., ondansetron), though caution should be used given its association with serotonin syndrome and QT prolongation.[7] Based on the AGS Beers Criteria, the following perioperative anti-emetics should be avoided: dimenhydrinate; transdermal scopolamine; prochlorperazine and low-dose promethazine due to anticholinergic properties; corticosteroids due to risk of delirium; and metoclopramide due to its risk of extrapyramidal effects.[23]

Positioning

Due to decreased skin integrity and increased skin atrophy, the risk of peripheral nerve damage and pressure injuries from improper positioning of the older patient during surgery is increased. As a result, proper positioning and ensuring padding of bony prominences are recommended.[11] Risk factors for pressure ulcers should be identified and minimized, including hypothermia, longer duration of surgery, longer periods of intraoperative hypotension, and vasopressor use.[11]

Fluid Management

Due to decreased physiologic reserve in older adults, more restrictive or goal-directed strategies are preferred over fixed volume strategies to avoid fluid overload. However, there is currently insufficient evidence for specific fluid management strategies.[11]

Intraoperative Checklist

- ❑ Plan anesthetic approach
  - ❑ Consider regional approach if appropriate
  - ❑ Use EEG to measure depth of general anesthesia
- ❑ Minimize opioid use
  - ❑ Standing Tylenol
  - ❑ Consult Acute Pain Service as appropriate for regional nerve block
  - ❑ Avoid analgesics and anxiolytics listed on AGS Beers Criteria
- ❑ Postoperative nausea
  - ❑ Assess and reduce baseline risk
  - ❑ Avoid high-risk anti-emetics listed on AGS Beers Criteria
- ❑ Avoid pressure ulcers and nerve damage
  - ❑ Proper positioning with padding of bony prominences
  - ❑ Minimize risk factors (e.g., hypothermia, longer duration of surgery, longer periods of intraoperative hypotension, and vasopressor use)
- ❑ Fluid management
  - ❑ Consider more restrictive or goal-directed strategies over fixed volume strategies

Case answer #2:

After consulting with the anesthesiologist, Ms. L undergoes regional anesthesia for her knee replacement, with a plan for a femoral nerve block postoperatively to minimize opioid use. Standing Tylenol 1 g PO TID is ordered. Ondansetron is prescribed as needed for nausea.

Postoperative Management

Case question #3:

It is postoperative day 4, and Ms. L has unfortunately developed delirium. She is having visual and auditory hallucinations and is disoriented to time and place. Her husband, who is visiting her, says that she is still able to recognize him, but at times she thinks that she is at home and does not recall having had knee surgery. The physiotherapist is concerned, as he is unable to encourage her to mobilize due to her ongoing delirium and complaints of feeling "dizzy" upon standing, which caused her to lose balance and nearly fall. What do you do to manage her delirium?

Older adults are at a much higher risk of mortality and morbidity after surgery. An observational study of 1,102 patients aged 70 years or older undergoing non-cardiac surgery demonstrated that 19% developed a serious complication, including myocardial infarction, stroke, sepsis, acute renal impairment, and wound infection within 5 days of surgery, and 6% died within 30 days of surgery.[24] Of those with a complication, 12% died within 30 days. The risk of death doubled every 10 years to age 90. Therefore, the postoperative period is a crucial time to minimize these complications.

Postoperative Delirium

Delirium is defined as an "acute confusional state that is multifactorial, due to an interaction between the vulnerability of the patient based on predisposing conditions including cognitive impairment and severe illness, and hospital-related insults including procedures and medications."[25] The prevalence of postoperative delirium ranges from 9%–44%, most commonly from high-risk procedures, such as cardiac, vascular, and hip fracture surgeries.[11]

The first step is to screen and assess for delirium risk factors. Delirium can be screened using validated tools such as the Confusion Assessment Method which can be accessed here. The underlying causes of a patient's delirium should be identified and treated appropriately. Please see Table 1 for common causes of delirium in the postoperative period.

Table 1. Causes of Delirium using "**DIMES**" Mnemonic in the Postoperative Period

Drugs	• Anticholinergics (e.g., tricyclic antidepressants, antihistamines, antimuscarinics, antispasmodics, first-generation antipsychotics, H2-receptor antagonists, muscle relaxants) • Benzodiazepines • Non-benzodiazepine hypnotics (e.g., eszopiclone, zolpidem, zaleplon) • Corticosteroids • Opioids • Skeletal muscle relaxants (e.g., carisoprodol, chlorzoxazone, metaxalone, methocarbamol, orphenadrine, baclofen, cyclobenzaprine)

Drugs	• Beta-blockers
Infection	• Pneumonia • Urinary tract • Wound • Indwelling catheter • Bloodstream
Metabolic	• Fluid/electrolyte abnormalities • Hypoglycemia • Hypoxia/hypercarbia if on oxygen • Hepatic encephalopathy • Withdrawal: Alcohol, sedative hypnotics
Environmental	• Vision or hearing impairment • Urinary retention • Fecal impaction • Uncontrolled pain • Sleep deprivation (e.g., insomnia, untreated OSA)
Structural	• Stroke • Intracranial hemorrhage • Meningitis • Seizures • Hypertensive encephalopathy

Medications that may induce postoperative delirium should be minimized. Analgesics and anxiolytics listed on the AGS Beers Criteria should be avoided.[23] There is insufficient evidence for antipsychotic medications to be used as prophylactic treatment for delirium; they have not been shown to shorten the duration of delirium or reduce its severity.[26] However, antipsychotics may be used at the lowest effective dose for the shortest duration to treat patients who are severely agitated in order to prevent harm to self and/or others.[11] Starting doses of antipsychotics are detailed in Table 2.

Table 2. Starting Doses of Antipsychotics for Agitated Delirium in Older Adults[27]

Medication	Initial dose	Max daily dose	Notes
Haloperidol	0.25–1 mg po/sc BID to q6H (regularly or PRN)	1.5–3.0 mg po/sc per 24 hours	1 mg po = 0.5 mg sc (approximate) Avoid use >1 week
Risperidone	0.25–0.5 mg po q12H (regularly or PRN)	1.5–2 mg po per 24 hours	Extrapyramidal adverse effects are dose-related
Quetiapine	12.5–25 mg po q12H (regularly or PRN)	150–200 mg po per 24 hours	Available as immediate release tablets (25 mg, 100 mg, 200 mg) and once-daily extended release tablets (50 mg, 150 mg, 200 mg); best option for patients with diffuse Lewy Body dementia or Parkinson's disease due to lower risk of extrapyramidal side effects
For more information regarding the management of agitation in hospital settings, see https://canadiangeriatrics.ca/wp-content/uploads/2019/12/Rabheru-Full-Article.pdf			

Preventing Pulmonary Complications

The prevention of postoperative pulmonary complications such as atelectasis, hospital-acquired pneumonia, and acute respiratory failure are important as they can increase the risk of long-term mortality after surgery.[28] Bedside evaluation by a speech-language pathologist to observe the patient eating and drinking can be done if there are concerns about dysphagia, followed by instrumental swallow evaluation (e.g., videofluoroscopic swallowing study) in select patients. Postoperative strategies to prevent pulmonary complications include head of bed elevation, getting out of bed for all meals when possible, sitting upright while eating and 1 hour after completion of meal, use of incentive spirometry and chest physiotherapy, deep breathing exercises, and epidural analgesia.[11,29]

Fall Prevention

According to a retrospective study, 1.5% of surgical inpatients experience falls postoperatively, and the average age of these patients is 64 years of age.[32] As falls are often multifactorial, all postoperative adult patients should undergo a risk assessment. A validated scale such as the Morse Fall Scale can be used, found here.

Strategies to minimize postoperative risk are summarized below.[11,31,32]

1) Hospital environment

- Familiarize patient with environment

- Demonstrate call light use
- Maintain call light within reach
- Keep personal possessions within reach
- Sturdy handrails in bathrooms, room, and hallway
- Hospital bed in low position when patient resting; raised to comfortable height when patient transferring
- Hospital bed brakes locked
- Wheelchair wheels locked when stationary
- Nonslip, comfortable, well-fitting footwear
- Night light or supplemental lighting use
- Keep floor surfaces clean and dry; clean spills promptly
- Keep patient care areas uncluttered
- Follow safe patient-handling practices

2) Altered mental status

- Daily and frequent assessments for delirium
- Review medications

3) Dehydration

- Adequate hydration
- Check for orthostatic hypotension (see http://canadiangeriatrics.ca/wp-content/uploads/2016/11/4D-AID-A-Practical-Approach-to-the-Assessment-of-Orthostatic.pdf and http://canadiangeriatrics.ca/wp-content/uploads/2017/07/TREATMENT-OF-ORTHOSTATIC-HYPOTENSION-IN-OLDER-PATIENTS.pdf)

4) Frequent toileting

- Scheduled toileting
- Assess and manage underlying causes of incontinence

5) History of falls

- Assess for osteoporosis or fragility fractures and treat (e.g., bisphosphonates, vitamin D supplementation)
- Ask about anticoagulant medications
- Assistive walking devices at bedside

6) Impaired gait or mobility

- Early physical therapy or occupational therapy
- Participation in falls mobility program

7) Medications

- Review medications daily (see medications that cause falls in http://canadiangeriatrics.ca/wp-content/uploads/2016/11/Interventions-to-Reduce-Medication-Related-Falls.pdf)

8) Visual impairment

- Eyeglasses readily available

UTI Prevention

UTIs are one of the most common postoperative complications, with older adults most at risk.[33] Strategies for UTI prevention should be implemented. An indwelling catheter insertion checklist from the Agency for Healthcare Research and Quality (AHRQ) can be found here. Daily review and reassessment of a patient's indications for indwelling catheter should also be done. Indwelling catheters should not be used solely for the purposes of facilitating nursing care of patients who are incontinent, obtaining a urine culture, or those receiving thoracic epidural analgesia.[11]

Indications for an indwelling catheter include acute urinary retention or bladder outlet obstruction, need for accurate measurements of urine output in critically ill patients, genitourinary surgeries, assisting in healing of open sacral or perineal wounds in incontinent patients, prolonged immobilization, and improving comfort for end-of-life care.[34]

Pressure Ulcer Prevention and Treatment

Older adults in hospital are at high risk of developing pressure ulcers. Approximately 70% of pressure sores in the hospital setting develop in those older than age 65.[35] Risk factors for pressure ulcers include advanced age, abnormal positioning due to spasticity or contracture, chronic moisture, edema, high comorbidity burden, immune incompetence, incontinence, infection, limited mobility, loss of sensation, shearing forces, skin fragility, unrelieved pressure, and insufficient dietary intake.[7,35] A validated scale should be used to assess for risk of pressure ulcers, such as the Braden Scale (accessible here). Strategies to prevent ulcers include reduction of pressure, friction, humidity, and shear forces; restoration of nutrition with help from a dietician; treatment of chronic illnesses such as anemia, diabetes, heart failure, HIV, kidney and liver disease; and adequate wound care.[11,37] For more information, see http://canadiangeriatrics.ca/wp-content/uploads/2016/12/Wound-Care-Management-Where-do-You-Begin.pdf.

Postoperative Rounding Checklist

A practical checklist for rounding on older surgical patients postoperatively can be found on page 20 of the best practices ACS NSQIP and AGS guideline, which can be accessed here.

Case answer #3:

Upon further investigation, you realize that there are a few important contributors to Ms. L's delirium. She was noted to have a fever of T38.5. She still has a urinary catheter with no clear indication and complains of suprapubic tenderness. You send her urine for urinalysis and culture, remove the catheter, and treat her empirically for urinary tract infection with oral ciprofloxacin 500 mg BID for 7 days (pending culture and sensitivity results). She also appears quite dry on the clinical exam with orthostatic hypotension and so you give her an IV Ringer's lactate 1 L over 4 hours.
Her delirium improves with treatment, enabling her to mobilize safely with the physiotherapist.

Discharge Planning

Case question #4:

After a total of 8 days in hospital, Ms. L has improved significantly. Her delirium has cleared, and she is mobilizing well. What factors should you consider for a safe discharge home?

Lack of an effective transition of care from one health care setting to another can lead to increased rates of adverse events and subsequent re-hospitalization.[38] Below is a checklist of important elements for discharge planning:

Postoperative discharge planning for older adults[39]

- ❑ Assess patient's social support and need for home care
- ❑ Assess the following with a follow-up plan as appropriate:
  - ○ Nutrition (Mini Nutritional Assessment, accessible here)
  - ○ Cognition (e.g., Mini-Cog or other validated screening tools; please see Table 2 here)
  - ○ Mobility (Timed Up and Go test, accessible here)
  - ○ Functional status (activities of daily living)
  - ○ Presence of delirium
- ❑ Give patient/care partner complete list of all medications and dosages with prescriptions as needed, describing the purpose of each drug, how it is taken, and side effects of new medications
- ❑ Provide written and verbal discharge instructions, including summary of hospital stay, pending investigations, and follow-up appointments for patient/care partner and primary care doctor
- ❑ Ask patient/care partner to repeat back the discharge instructions

Case answer #4:

After speaking with Ms. L and her husband, given that her husband is quite frail, home supports are organized to assist Ms. L with bathing while she is recovering from her knee surgery. A follow-up with a geriatrician is set up for further management of her new diagnosis of MCI and plan for benzodiazepine taper (see http://canadiangeriatrics.ca/wp-content/uploads/2017/07/DE-PRESCRIBING-BENZODIAZEPINES-IN-THE-ELDERLY-A-REVIEW.pdf). Clear written and verbal discharge instructions are provided to Ms. L, and she is able to repeat them back to the team.

Conclusion

Given that the surgical population is aging and older adults are at increased risk of adverse postoperative outcomes, it is essential to develop a systematic approach for perioperative care in older adults across the preoperative, intraoperative, and postoperative stages. Despite the increasing evidence for the positive effects of specialized perioperative care on the outcomes of older adults, there is currently little to no published data regarding what models of perioperative geriatric care are delivered in Canada. Increased awareness, sharing of approaches, education, and research within this field will be important to developing a national strategy to improve the outcomes of geriatric surgical patients in Canada.

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