

**Vanderbilt University Medical Center**  
**Emergency General Surgery Service**  
Surgical Residency Rotation and Curriculum

**UNIT 15      INTERNAL MEDICINE**

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**UNIT OBJECTIVES:**

1. Summarize the principles of effective surgical consultation on medical patients.
2. Explain the risks of surgery in geriatric patients with respect to age and age-related changes in cardiovascular and pulmonary physiology, response to pharmacologic therapy, and response to surgical stress.
3. Describe methods for preoperative assessment of perioperative cardiac risk in noncardiac surgery.
4. Discuss the perioperative management of common medical disorders such as pulmonary disease, diabetes mellitus, hypertension, and hypothyroidism.
5. Summarize an approach to common postoperative medical problems such as hypertension, hyperglycemia, jaundice, heart failure, pneumonia, deep venous thrombosis, and pulmonary embolus.

**COMPETENCY-BASED KNOWLEDGE OBJECTIVES:**

1. Describe effective communication with the patient's primary care provider when the patient is diagnosed with a surgical problem, to include:
  - a. Maintaining a collaborative approach to management
  - b. Enlisting the primary care provider in preoperative and postoperative care
  - c. Obtaining medical and psychosocial information about the patient, including other illnesses, social stressors and supports, patient preferences regarding end-of-life care
2. Discuss key components of a general surgical consultation performed on a medical patient with emphasis on:
  - a. Clarifying reasons for the consultation request and urgency
  - b. Assessing need for further laboratory or radiologic studies
  - c. Importance of clearly stating: "Surgery Recommended" or "Surgery Not Recommended"
  - d. Need for timely follow-up when definitive action is delayed
  - e. Importance of prompt communication with the primary care provider after performing a surgical procedure
3. Recognize unique features of the geriatric surgical patient:
  - a. Impact of age on operative morbidity and mortality
  - b. Age-related changes in cardiovascular and pulmonary physiology
  - c. Pharmacologic alterations with aging and polypharmacy
  - d. Risk factors for postoperative delirium and its management
  - e. Cardiovascular risk assessment and use of beta blockers to reduce risk of perioperative ischemic events
  - f. Skin care

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- g. Nutritional assessment and correction of nutritional deficiencies
  - h. Diminished special senses such as hearing and eyesight
  - i. Ethical issues such as informed consent in the demented patient, advanced directives, do-not-resuscitate (DNR), end-of-life care, communicating with families
  - j. Assessment for post-surgical care, including home nursing and nursing home placement
  - k. Importance of the care team in managing elderly patients
4. Explain preoperative assessment of cardiovascular risk in noncardiac surgery:
- a. Review rationale for preoperative risk stratification and commonly used clinical risk assessment scales (Goldman criteria, Detsky criteria)
  - b. Clinical risk factors for perioperative cardiovascular events
  - c. Indications for preoperative stress ECG, exercise or pharmacologic stress test with nuclear perfusion imaging, stress echocardiography, ambulatory ECG monitoring, or coronary angiography
  - d. Methods to reduce risk of perioperative cardiovascular events such as beta blockers in elderly patients
  - e. Common presentations of perioperative cardiovascular events such as angina, myocardial infarction (MI), arrhythmias, and congestive heart failure (CHF)
5. Explain preoperative assessment of pulmonary risk factors for perioperative morbidity and mortality:
- a. History of cigarette smoking, exercise capacity, COPD, asthma
  - b. Clinical evaluation using physical examination and observation of the patient walking
  - c. Indications for preoperative pulmonary function tests and their interpretation
  - d. Predictors of difficulty weaning after general anesthesia
  - e. Pre- and post- operative measures that can reduce risk of pulmonary complications
  - f. Perioperative management of bronchospasm
6. Discuss measures to reduce risk for perioperative deep venous thrombosis and pulmonary emboli:
- a. Stratification of risk for perioperative venous thrombosis based on patient characteristics and type of surgery (high, medium, low)
  - b. Choice of deep venous thrombosis (DVT) prophylaxis based on risk stratification
  - c. Indications for coumadin, subQ low dose heparin, subQ low molecular weight heparin, pneumatic compression devices, early mobilization
  - d. Clinical and laboratory methods for diagnosing DVT and pulmonary embolus (PE) based on pretest likelihood

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7. Discuss principles for continuing medications in the perioperative period when the patient is NPO.
8. Describe assessment and management of hypertension in the perioperative period:
  - a. Definitions of hypertensive urgency, emergency, and malignant hypertension.
  - b. Impact of hypertension on operative risk, including assessment of end-organ damage
  - c. Perioperative management of hypertension, including pharmacologic management in patients who are NPO
  - d. Management of hypertension in geriatric patients
  - e. Indications for seeking medical consultation in the hypertensive patient
9. Describe how to manage surgical patients who are withdrawing from alcohol and other drugs:
  - a. Recognize alcohol withdrawal in surgical patients, especially the emergent patient
  - b. Understand that the signs of alcohol withdrawal may be masked or altered by anesthesia and analgesic medications
  - c. Describe assessment of severity of alcohol withdrawal
  - d. Discuss pharmacologic management of alcohol withdrawal
  - e. Appreciate indications for medical consultation and referral for substance abuse treatment
  - f. Recognize the signs of opiate and sedative/hypnotic withdrawal in surgical patients
  - g. Discuss pharmacologic management of opiate and sedative/hypnotic withdrawal and indications for medical or psychiatric consultation and substance abuse treatment
10. Describe the perioperative assessment and management of the diabetic patient:
  - a. Determination of glycemic control by glycosylated hemoglobin level
  - b. Assessment for ketoacidosis and/or hyperosmolar state
  - c. Appreciate presentation of diabetes in the elderly
  - d. Describe methods for intraoperative and perioperative management in Type I and II diabetes
  - e. Describe formulas for determining insulin dosage during and after surgery in insulin-requiring patients
  - f. Discuss indications for sliding scale insulin treatment
  - g. Appreciate common side effects of oral hypoglycemic agents
  - h. Describe emergent management of hypoglycemia
  - i. Discuss indications for medical consultation in the diabetic patient

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11. Discuss the perioperative assessment and management of other common endocrinologic problems, including:
  - a. Hypothyroidism and hyperthyroidism
  - b. Adrenal insufficiency (primary and secondary)
  
12. Describe assessment and management of common electrolyte disturbances:
  - a. Hypo- and hyper- natremia
  - b. Hypo- and hyper- calcemia
  - c. Hypo- and hyper- magnesemia
  - d. Hypo- and hyper- kalemia
  
13. Discuss approach to the patient with jaundice:
  - a. Interpretation of liver function tests and imaging studies to separate hepatocellular disease from biliary obstruction (intrahepatic and extrahepatic)
  - b. Causes of postoperative jaundice
  - c. Presentation of viral hepatitis (acute and chronic)
  - d. Impact of liver disease on drug excretion
  
14. Discuss approach to the surgical patient with renal failure
  - a. Describe clinical and laboratory assessment of renal function
  - b. Define acute renal failure and separate from chronic renal failure
  - c. Separate causes of acute renal failure into prerenal, intrarenal, and postrenal (obstructive)
  - d. Describe clinical signs and symptoms of uremia
  - e. Discuss differential diagnosis of postoperative acute renal failure
  - f. List indications for acute hemodialysis
  - g. Describe medical management of acute renal failure
  - h. Appreciate impact of renal failure on drug excretion
  - i. List medications that can cause acute renal failure
  
15. Describe preoperative assessment and management of a patient with a coagulopathy.
  
16. Describe how to assess and manage postoperative fever.
  
17. Describe surgical risks in the obese patient.

**COMPETENCY-BASED PERFORMANCE OBJECTIVES:**

1. Diagnose and manage surgical patients with concomitant acute and/or chronic medical illnesses.
2. Properly perform perioperative evaluation of the surgical patient with:
  - a. Moderate to high cardiovascular and respiratory risk
  - b. Immunosuppressed state

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- c. Significant psychiatric problem
3. Perform a general surgery consultation to a medical service patient.