

## ***Surgery Rotation Objectives***

### **General Surgery Objectives**

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### ***PREFACE***

These surgical clerkship objectives are intended to be used by students, teachers and surgical clerkship directors in Canadian medical schools.

These objectives do not represent all surgical knowledge and skills requirements for students as they finish medical school. Rather, these represent a subset of surgical knowledge and skills which will be reviewed and reinforced during the clinical clerkship rotations in surgery. Orthopedic and ophthalmologic objectives have not yet been included in this set. Ultimately these too will be included in the common Canadian CUSEC surgical clerkship objectives document.

It is presumed that Surgery evaluation of students during clerkship will be based on these objectives. Students will thus be encouraged to use the objectives to study and guide skill refinement during their surgical clerkship rotations.

## ***ABDOMINAL MASSES***

### **Assumptions**

Student is familiar with the normal location, size and consistency of the abdominal viscera.

### **Objectives**

1. Describe the causes of hepatomegaly.
  - Discuss the role of liver function testing, radionucleotide imaging, ultrasound and CT scanning in the evaluation.
  - Discuss the most frequently encountered benign hepatic tumors and their management.
  - Discuss the most frequently encountered malignant hepatic tumors and their management.
2. Describe the causes of splenomegaly.
  - Discuss the most common signs and symptoms associated with hypersplenism..
  - Discuss the short and long term complications associated with surgical removal of the spleen.
3. Describe the differential diagnosis of a pancreatic mass.
  - Discuss the most useful diagnostic studies.
  - Discuss the relationship of the pancreatic duct to the common bile duct and how this may impact diagnosis and treatment of pancreatic lesions.
  - How do you differentiate a pseudocyst from a cystadenoma or true cyst?
  - What are the major complications of pancreatic necrosis and pseudocyst formation?
4. Describe the evaluation and management of abdominal aortic aneurysms.
  - Discuss appropriate imaging studies for aneurysms.
  - Discuss how to determine which patients need surgical repair of the aneurysm.
  - Discuss the risks of surgical treatment and the risks of the aneurysm left untreated.

### **Skills**

1. Perform a complete abdominal, rectal and pelvic exam.
2. Interpretation of abdominal and pelvic CT scans and ultrasound.

## **Prevention**

1. Understand the importance of hepatitis C and B prevention in relation to hepatoma.
2. Appropriate screening for aneurysm disease prior to age 60 in patients with a family history of aortic aneurysm.
3. Discuss the short and long term complications associated with surgical removal of the spleen.

## ***ABDOMINAL PAIN***

### **Assumptions**

Students understand: the anatomy and relationships of various abdominal viscera; the normal structure and function of various abdominal viscera and their associated organ systems; the physiology of pain perception and how to apply this to differentiating visceral, somatic and referred pain patterns involved in abdominal pathology. Students have a basic understanding of the pathophysiology of inflammation, neoplasia, ischemia and obstruction.

### **Objectives**

1. Gather a complete or problem focused history for various patients presenting with abdominal pain. Emphasis will be placed on:
  - characterization of pain (location, severity, character, pattern)
  - temporal sequence (onset, frequency, duration, progression)
  - alleviating/ exacerbating factors (position, food, activity, medications)
  - associated signs / symptoms (nausea vomiting, fever, chills, anorexia, wt. loss, cough, dysphagia, dysuria/frequency altered bowel function (diarrhea, constipation, obstipation, hematochezia, melena, etc.)
  - pertinent medical history: prior surgery or illness, associated conditions (pregnancy, menstrual cycle, diabetes, atrial fibrillation or cardiovascular disease, immunosuppression). Medications: anticoagulation, steroids etc.
2. Demonstrate the components of a complete abdominal examination including rectal, genital & pelvic examinations.
  - Relate the significance of the various component examinations: observation, auscultation, percussion, palpation as they apply to common abdominal pathologic processes. Examples: distention, visible peristalsis, high pitched or absent bowel sounds, tympany, mass, localized vs. generalized guarding and/or rebound tenderness.
3. Demonstrate and relate the significance of various maneuvers utilized in evaluating acute abdominal pain. Examples: iliopsoas sign, Rovsing's sign, obturator sign, Murphy's sign, cough tenderness, heel tap, cervical motion tenderness.

4. Describe the keys to successful examination of infants and children with abdominal pain. Characterize examination skills that may be utilized in pregnancy, or patients with altered neurologic status.
5. Develop a differential diagnosis for various patients presenting with acute abdominal pain. Differentiate based on:
  - location: RUQ, epigastric, LUQ, RLQ, LLQ
  - symptom complex: examples: periumbilical pain localizing to RLQ, acute onset left flank pain with radiation to the testicle etc.
  - age: pediatric, adult, geriatric
  - associated conditions: pregnancy, immunosuppression (AIDS, transplant, chemotherapy / radiation therapy)
6. Explain the rationale for utilizing various diagnostic modalities in the evaluation of abdominal pain.
  - Laboratory: CBC, amylase, electrolytes, BUN, creatinine, glucose, urinalysis, beta-HCG, liver profile.
  - Diagnostic imaging: flat and upright abdominal radiographs, upright chest X-ray, abdominal ultrasonography, CT scan of abdomen and pelvis, GI contrast radiography, angiography, IVP.
  - Special diagnostic / interventional techniques: upper endoscopy, procto-sigmoidoscopy, colonoscopy, laparoscopy.
7. Discuss the presentation, diagnostic strategy, and initial treatment of patients presenting with common or catastrophic painful abdominal conditions.
  - acute appendicitis
  - cholecystitis / biliary colic / choledocholithiasis / cholangitis
  - pancreatitis
  - peptic ulcer disease with & without perforation
  - gastroesophageal reflux
  - gastritis / duodenitis
  - diverticulitis
  - inflammatory bowel disease
  - enterocolitis
  - small bowel obstruction: incarcerated hernia, adhesions, tumor
  - colon obstruction: volvulus, tumor, stricture
  - splenomegaly / splenic rupture
  - mesenteric ischemia
  - leaking abdominal aortic aneurysm
  - gynecologic etiologies: ectopic pregnancy, ovarian cysts (torsion, hemorrhage, rupture) tuboovarian abscess, salpingitis, endometriosis
  - genito-urinary etiologies: UTI, pyelonephritis, ureterolithiasis, testicular torsion

8. Discuss the common non-surgical conditions that can present with abdominal pain  
Examples: MI, pneumonia, pleuritis, hepatitis, gastroenteritis, mesenteric adenitis, sickle cell crisis, DKA, herpes zoster, nerve root compression.
9. Compare and contrast acute appendicitis in young adults, the very young, very old, and pregnant women. Discuss issues relevant to presentation, diagnosis, treatment, complications etc. Example: perforation risk.
10. Discuss the diagnosis and treatment of abdominal problems with particular relevance to the pediatric population. Include: neonates, infants, children, adolescents. Be able to list the abdominal problems, characteristic of each group, and outline diagnostic and intervention strategies for:
  - Congenital: hernias, malrotation, midgut volvulus
  - Hirschsprung's disease
  - Pyloric Stenosis
  - Intussusception
  - Meckel's diverticulitis
  - Child abuse
11. Describe the normal bacterial flora of the GI, GU and GYN systems and compare to pathologic infections.
  - Discuss appropriate antibiotic therapy where indicated in various conditions manifesting with abdominal pain.
12. Discuss the approach to patients with postoperative abdominal pain. Contrast findings in non-operated patients with regards to:
  - presentation
  - examination
  - differential diagnosis
  - intervention strategies

### **Skills**

1. Focused history and physical examination including rectal/genital/and pelvic examinations with emphasis on characterization of findings, differentiation of signs/symptoms of peritonitis and adjunctive maneuvers to enhance diagnostic abilities.
2. Interpretation of laboratory findings and various imaging modalities that contribute to the diagnosis of common abdominal problems. Consider plain films of the abdomen, CT scans, ultrasound etc.

3. Placement of:

- nasogastric tubes
- peripheral intravenous catheters
- venipuncture & insertion of Foley catheters
- composition of appropriate admission orders as part of the initial assessment and care of patients with acute abdominal pain.

***ABDOMINAL WALL & GROIN MASSES***

**Assumptions**

The student understands the anatomic relationships of the abdominal wall musculature and fascia.

**Objectives**

1. Discuss the differential diagnosis of inguinal pain, mass or bulge.
  - consider hernia, adenopathy, muscular strain
2. Describe the anatomic differences between indirect and direct hernias.
3. Discuss the relative frequency of indirect, direct and femoral hernias by age and gender.
4. Discuss the clinical conditions that may predispose to development of inguinal hernia.
5. Discuss the indications, surgical options, and normal post-operative course for:
  - inguinal hernia repair
  - femoral hernia repair
6. Define and discuss the clinical significance of incarcerated, strangulated, reducible and Richter's hernias.
7. Discuss the differential diagnosis of an abdominal wall mass.
  - consider desmoid tumors, neoplasm, hernia, adenopathy, and rectus sheath hematoma
8. Describe the potential sites for abdominal wall hernias.
  - consider incisional, umbilical, inguinal, femoral, Spigelian, and epigastric
  - differentiate diastasis recti from abdominal hernia
9. Compare the natural history and treatment of umbilical hernia in children and adults.
10. Describe clinical factors contributing to the development and repair of an incisional hernia.

### **Skills**

1. Focused H&P to include abdominal, rectal and genital exams.
2. Confirm reducibility or incarceration of an abdominal wall hernia.

### **Prevention**

1. Role of surgical repair in prevention of hernia complications.

## ***ALTERED NEUROLOGIC STATUS***

### **Assumptions**

Students understand basic central and peripheral neurological anatomy and function, including: cross sectional anatomy, histology, gross anatomy, and sensory/motor endpoints.

### **Objectives**

1. Recognize the Cushing reflex and its clinical importance (brain herniation).
2. Discuss the diagnosis and management of the patient with headaches.
  - Describe the signs, etiology and treatment of intracranial hemorrhage (subarachnoid hemorrhage and intracerebral hemorrhage).
  - Describe the relative incidence and location of the most common brain tumors, their clinical manifestations, their diagnosis, and general treatment strategies.
  - Differentiate brain abscesses from tumors, and discuss the treatment of intracranial infections.
3. Describe the evaluation and management of a patient with an acute focal neurologic deficit.
4. Differentiate TIA, RIND, and CVA.
  - Outline the diagnostic tests and monitoring of carotid occlusive disease, including role of angiography and noninvasive methods.
  - Discuss medical vs. surgical management of carotid artery disease.
5. Describe the signs, symptoms, and treatment of common peripheral nerve entrapment syndromes, as well as other nerve injuries.
6. Describe the presentation and management of hydrocephalus.

### **Skills**

1. Perform a focused neurological history and examination.
2. Interpret various neurologic imaging studies (CT scans, MRI, x- rays).

### **Prevention**

1. Students will understand the importance of blood pressure control in the prevention of stroke.
2. Students will understand the importance of early diagnosis and treatment in subarachnoid hemorrhage.
3. Students will understand the importance of appropriate diagnosis, management, referral in the prevention of complications of carotid occlusive disease.

### ***ASYMPTOMATIC PATIENT WITH POSITIVE TEST***

#### **Assumptions**

The student understands the concepts of test sensitivity, specificity, false negative and false positive rates, positive and negative predictability, and prior probability.

#### **ELEVATED PSA**

#### **Objectives**

1. Understand the significance of the PSA and its implications for screening, diagnosis, and follow-up.
2. When should it be used?
3. When should it not be used?
4. How often should it be done?

#### **PROSTATE NODULE**

#### **Objectives**

1. Understand the significance of a prostatic nodule, its differential diagnosis, evaluation, and treatment.
  - Discuss the differential diagnosis.
  - Discuss the evaluation of a nodule.
  - role of ultrasound
  - role of biopsy
2. Discuss the staging of cancer of the prostate.
3. Discuss treatment options for cancer of the prostate.



## GALLSTONES

### Objectives

1. Understand the natural history of symptomatic and asymptomatic gallstone disease.
2. Define "symptomatic" in the context of gallstone disease.
3. Discuss the available literature on the natural history of asymptomatic gallstones.
4. Discuss the indications for cholecystectomy.
5. Discuss the options, pros and cons, for treatment of gallstones:
  - cholecystectomy
  - dissolution therapy
  - watchful waiting
6. Discuss impact of associated medical conditions on the decision to treat gallstones.
7. Discuss the association of cancer of the gallbladder and gallstones.

## CAROTID BRUIT

### Objectives

1. Understand the significance of a carotid bruit found in an asymptomatic person and how and when to further evaluate it.
2. What is the significance of a bruit?
3. What are the symptoms of carotid disease?
4. How should a patient with a carotid bruit be evaluated?
5. What are the available treatments for carotid disease and what are their indications?

## HYPERCALCEMIA

### Objectives

1. Discuss and understand calcium homeostasis.
2. Understand the symptoms and signs of acute and chronic hypercalcemia.
3. Discuss the differential diagnosis of hypercalcemia.
4. Discuss the evaluation and management of hypercalcemia

## INCIDENTAL MASS ON COMPUTER TOMOGRAPHY

### Objectives

1. Discuss the differential diagnosis of incidental masses of:
  - Liver
  - Kidney
  - Adrenal

### Skills

1. Use specificity, sensitivity, prior probability in making care decisions.

## *BACK PAIN*

### Assumptions

1. Students have a working knowledge of musculoskeletal anatomy of the spine.
2. Students have a basic understanding of disease spread (neoplastic, infectious).

### Objectives

1. Elicit history and physical exam finding that permits a focused evaluation of back pain. Incorporate a detailed neuromuscular assessment.
2. Describe the key manifestations of various back pain syndromes. Consider: acute vs. chronic, age and gender, occupational & recreational risk factors.
3. Recognize radicular pain symptoms (herniated disc) and correlate neurologic findings with neuroanatomic level of disease.
4. Develop a differential diagnosis, initial evaluation and treatment strategies for:
  - herniated disc
  - spondylosis / spondylolisthesis
  - scoliosis
  - osteoporosis & degenerative disc disease
  - primary & metastatic tumors of the spine
  - infectious: osteomyelitis, epidural and paraspinal abscess
  - traumatic (musculoskeletal strain, vertebral fractures/dislocation ± cord injury)
  - retroperitoneal sources (aortic aneurysm, GU sources, pancreatic disease).
5. Discuss the use of diagnostic studies available for evaluation of back and leg pain. Include spine radiographs, CT scan, MRI, bone scan, myelography, angiography.
6. Discuss the indications for surgical consultation and treatment in problems addressed above.

## **Skills**

1. Demonstrate a focused musculoskeletal and neurologic exam. Include straight leg testing and scoliosis evaluation.
13. Interpret plain films of the back, CT and MRI findings of common entities presenting with back symptoms.

## **Prevention**

1. Describe methods for preservation of back function occupationally and during leisure activities as part of healthy lifestyles
2. Encourage screening studies for at risk populations: PSA, AAA, and osteoporosis

## ***BREAST PROBLEMS***

### **Assumptions**

Student understands benign changes within the breast and their relevance to breast cancer surveillance. Student understands the topographic and structural anatomy of the breast. Student understands the hormonal changes that effect the breast.

### **Objectives**

1. Develop a differential diagnosis for a 20-year-old patient with breast mass and a 45-year-old patient with breast mass. Consider benign vs. malignant, abscess.
2. Describe the diagnostic work-up and sequence:
  - discuss importance of the patient's history: estimated duration of illness, nipple discharge, breast cancer risk factor assessment.
  - discuss physical findings to look for.
  - discuss in-office procedures for evaluation and treatment (FNAC, needle aspiration, incision & drainage, core needle biopsy) and their diagnostic/therapeutic implications.
  - discuss the importance of such breast imaging studies as ultrasound and mammography.
3. Discuss the diagnosis and management of the patient with an abnormal mammogram (consider microcalcifications)
4. Discuss the rationale for management with specific emphasis on:
  - clinical staging of breast CA
  - various possible malignant, pre-malignant, and benign pathology results (including hormonal receptor analysis, tumor DNA analysis)
  - follow-up for a patient with a benign lesion (alterations in lifestyle, imaging studies, cancer risk)
  - role of incision and drainage and antibiotics in breast abscess treatment.

- current recommendations for screening mammography.
- therapeutic options for the patient with breast CA
- role of surgery/when to consult a surgeon for further diagnosis & treatment

### **Skills**

1. Focused H&P related to breast problems (including palpation of lymph node regions)
2. Identifying location and character of nipple discharge.
3. Technique of needle aspiration (both for cyst and cytology).
4. Technique of incision & drainage.

### **Prevention**

1. Stress current recommendations for screening mammography.
2. Stress importance of self-exam.
3. Discuss hormone replacement therapy.
4. Discuss role of genetic screening.

## ***CHEST PAIN & SHORTNESS OF BREATH***

### **Assumptions**

The student will have an understanding of chest and cardiac anatomy and physiology including esophageal motility. The student should be able to interpret chest radiographs and ECGs.

### **Objectives**

1. Describe the causes, diagnosis, and treatment of spontaneous pneumothorax.
  - Discuss the risks of pneumothorax which could prove life-threatening.
  - Discuss the underlying pulmonary pathology you might expect to find.
  - Discuss the role of: observation, tube thoracostomy, chemical sclerosis, and surgical management of this condition.
  - Discuss the likelihood of recurrence and occurrence on the opposite side.
2. Describe the common etiologies for hemothorax.
  - Discuss an appropriate diagnostic evaluation for a patient with hemothorax.
  - Discuss the appropriate management of blood in the pleural cavity.
  - Which patients need an operation?
  - What are the risks in leaving the blood in the chest?
3. Describe the presentations, etiologies and management of pulmonary embolus.
  - Discuss the predisposing factors which may lead to PE.

- Discuss the electrocardiographic changes which might be seen and how they might be distinguished from those of myocardial infarct.
  - Discuss the main points in the diagnostic evaluation for PE.
  - Discuss management options:
    - Who needs anticoagulation with heparin?
    - Who needs lytic therapy?
    - Who needs vena caval filter protection?
4. Describe the presentation, etiology and management of acute thoracic aortic dissection.
- Discuss initial medical vs. surgical management
  - Discuss the usual sites of dissection within the proximal aorta and how the location affects prognosis and management.
5. Describe the usual presenting symptoms and etiology of esophageal rupture.
- Discuss the most common causes of rupture.
  - Discuss the sites within the esophagus most frequently perforated.
  - Discuss the risks of untreated perforation.
  - Discuss the treatment priorities in treating most esophageal perforations.
  - Discuss the relationship of underlying esophageal disease to treatment options in the management of perforation.
6. Describe the common presenting symptoms associated with gastro-esophageal reflux.
- Discuss the relationship of reflux to chronic asthma and aspiration.
  - Discuss the appropriate diagnostic work-up of a patient with suspect reflux. What is the role of barium swallow, endoscopy, manometry, 24 hour pH testing?
  - Discuss the evaluation of dysphagia.
  - Discuss the treatment of esophageal stricture. What are the risks of dilation?
  - Discuss Barrett's esophagus and its implications.
  - What are the risks of malignancy?
  - Who needs surgical management and which procedure (antireflux or resection) is needed?
  - Discuss the pathophysiology and treatment of achalasia and diffuse esophageal spasm.
7. Describe the clinical findings, symptoms, and etiology of empyema.
- Discuss the clinical situations likely to be associated with formation of an empyema.
  - Discuss the usual organisms isolated in culture.

### **Skills**

1. Interpretation of EKG and CXR.
2. Management of acute and chronic anticoagulation with heparin and coumadin.
3. Needle decompression of tension pneumothorax.
4. Recognition of altered breathing patterns.
5. Establishment and maintenance of an airway.
6. Perform and interpret thoracentesis.

### **Prevention**

1. Which patients are at significant risk for DVT and need prophylaxis?

### ***EAR & NOSE PROBLEMS***

#### **Assumptions**

The student understands the anatomy, function and physiology of the organs and tissues of the head and neck.

#### **Objectives**

1. Discuss the differential diagnosis of ear pain (otalgia).
  - consider infection, trauma, neoplasm, inflammation, vascular
  - contrast etiologies in children versus adults
2. Discuss the diagnosis, treatment and complications of acute and chronic otitis media. Include indications for myringotomy tube placement
3. Outline the evaluation of a patient presenting with hearing loss;
  - differentiate between conductive and sensorineural hearing loss
  - Identify treatable causes.
4. Outline the evaluation of a patient presenting with tinnitus
5. Describe the risk factors, diagnosis and management of epistaxis
  - describe the indications and techniques for nasal packing
6. Discuss the causes and mechanisms of chronic rhinitis/rhinorrhea.
  - Outline the evaluation and management of chronic rhinitis.

7. Describe the indications for tonsillectomy.
8. Outline the evaluation of a patient with a salivary gland mass.
  - describe the potential etiologies
  - Describe the common tumors of the salivary gland and their management.
9. Discuss the potential etiologies of oral cavity pain.
  - include inflammation, infection, neoplasm

### **Skills**

1. H&P to include ear, nose and oropharynx exam.
2. Demonstrate the use of a nasal speculum.
3. Describe the technique involved in the removal of a foreign body from the ear canal.

### **Prevention issues**

1. Chewing tobacco as risk for oral cavity neoplasm.
2. Occupational risks for hearing loss.

## ***FLUID, ELECTROLYTE & ACID BASE DISORDERS***

### **Assumptions**

The student understands: the distribution of fluids and electrolytes in the body compartments; the role of the kidneys in regulating fluid and electrolyte balance; the basic physiology and biochemistry of the process of respiration.

### **Fluids and electrolytes**

#### **Objectives**

1. List the normal range of  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{HCO}_3^-$ ,  $\text{Cl}^-$  in serum and indicate how these ranges change in perspiration, gastric juice, bile and ileostomy contents.
2. List at least four endogenous factors that affect renal control of sodium and water excretion.
3. List at least six symptoms or physical findings of dehydration.
4. List and describe the objective ways of measuring fluid balance.
5. List the electrolyte composition of the following solutions:
  - normal (0.9%) saline
  - 1/2 normal saline

- 1/3 normal saline
  - 5% dextrose in water
  - Ringer's lactate
6. In the following situations, indicate whether serum Na, K, HCO<sub>3</sub>, Cl and blood pH will remain stable (0), rise considerably (++), rise moderately (+), fall moderately (-), or fall considerably (--):
- excessive gastric losses
  - high volume pancreatic fistula
  - small intestine fistula
  - biliary fistula
  - diarrhea
7. In the following situations, indicate whether serum and urine Na, K, HCO<sub>3</sub>, Cl and osmolality will remain stable (0), rise considerably (++), rise moderately (+), fall moderately (-), or fall considerably (--):
- acute tubular necrosis
  - dehydration
  - inappropriate ADH secretion (SIADH)
  - diabetes insipidus
8. Describe the possible causes, appropriate laboratory studies needed, and treatment of the following conditions:
- hyponatremia
  - hypernatremia
  - hypokalemia
  - hyperkalemia
  - hypochloremia
  - hyperchloremia
9. Describe the concept of a "third space" and list those conditions that can cause fluid sequestration of this type.

### **Acid base balance**

#### Objectives

1. List the physiological limits of normal blood gases.
2. List the factors that effect oxygen delivery and consumption.



3. Indicate the mechanisms, methods of compensation, differential diagnosis, and treatment of the following acid base disorders:
  - acute metabolic acidosis
  - acute respiratory acidosis
  - acute metabolic alkalosis
  - acute respiratory alkalosis

### **Skills**

1. Focused physical examination looking at signs of dehydration, overload, electrolyte abnormality, acid base abnormality.
2. Write postoperative fluid and electrolyte orders after an appendectomy for perforated appendicitis in a 5-year-old, a 30-year-old, and in an 85-year-old, and explain rationale.
3. Demonstrate the ability to:
  - draw venous blood from an antecubital vein
  - arterial blood gas interpretation

## ***GASTROINTESTINAL HEMORRHAGE***

### **Assumptions**

Students understand the anatomy (including blood supply) and physiology of the gastrointestinal tract, to include the esophagus, stomach, small bowel, colon, and ano-rectum.

### **Objectives**

1. Outline the initial management of a patient with an acute GI hemorrhage.
  - Discuss indications for transfusion, fluid replacement, and choice of fluids.
2. Differentiate upper vs. lower GI hemorrhage
  - Discuss history and physical exam abnormalities.
  - Discuss diagnostic studies.
3. Discuss the differences in evaluation and management of the patient presenting with:
  - hematemesis
  - melena
  - hematochezia
  - guaiac positive stool

4. Discuss medical vs. surgical management for:

- peptic ulcer
- variceal hemorrhage
- Mallory-Weiss tear
- gastric ulcer (benign vs. malignant)
- Meckel's diverticulum
- intussusception
- diverticulosis
- ulcerative colitis
- colon cancer
- rectal cancer
- hemorrhoids

**Skills**

1. Focused H & P to include abdominal, pelvic and rectal exams
2. Placement of NG tube
3. Venipuncture

**Prevention**

1. Discuss the role of diet, medication, alcohol, caffeine, and H. pylori treatment in natural history and prevention of GI hemorrhage.

***JAUNDICE***

**Assumptions**

Student understands the mechanisms for production, excretion, and metabolism of bile and can recall the anatomy of the hepatobiliary system.

**Objectives**

1. Describe the differential diagnosis of a patient with jaundice.
  - Discuss, prehepatic, intrahepatic (both non-obstructive) and posthepatic (obstructive) etiologies.
  - Discuss painful vs. non-painful
  - Discuss benign vs. malignant
  - Discuss inflammatory vs. non-inflammatory
14. List & explain justification for the diagnostic modalities used in the evaluation of a patient with jaundice, to include limitations, relative costs and potential risks.
  - Discuss importance of the patient's history: estimated duration of illness, associated symptoms (pain and its characteristics), and risk factors.

- Discuss important physical exam findings:
  - hepatomegaly
  - palpable mass
  - Courvoisier's sign
  - Murphy's sign
  - scleral icterus
  - abdominal tenderness
  - lymphadenopathy
  - Charcot's triad
  - Reynold's pentad
- 2. Explain the rationale for using these diagnostic tests in the evaluation of a patient with jaundice. What is the significance of abnormalities?
  - liver function tests
  - other laboratory tests and their indications (including hepatitis profile, peripheral blood smear, Coombs tests, etc.)
  - hepatobiliary imaging procedures (ultrasound, CT scan, ERCP, PTHC, HIDA scan).
- 3. Discuss the management principles (to include initial treatment; role and timing of surgery; and, if necessary, timing of appropriate consultation) of:
  - cholecystitis
  - choledocholithiasis
  - cholangitis
  - cholangiocarcinoma
  - pancreatic CA
  - periampullary CA
  - hepatic CA
  - hepatitis

### **Skills**

1. Focused H & P to include abdominal and rectal exam, palpating liver and spleen, Courvoisier's sign, Murphy's sign
2. Confirm physical findings of jaundice

### **Prevention**

1. Discuss alcohol abuse
2. Discuss importance of hepatitis vaccination
3. Discuss importance of appropriate transfusion practices

## ***LEG PAIN***

### **Assumptions**

Students understand the anatomy of the lower extremities and the physiology of the clotting cascade.

### **Objectives**

1. Describe atherosclerosis, its etiology, prevention and sites of predilection.
  - Discuss the intimal injury that characterizes the process and how that injury impacts therapy and prevention.
2. Describe the differential diagnosis of hip, thigh, buttock, and leg pain associated with exercise.
  - Discuss neurological vs. vascular etiologies of walking induced leg pain.
  - Discuss musculoskeletal etiologies.
  - Discuss the relationship of impotence to the diagnosis.
3. Describe the pathophysiology of intermittent claudication.
  - Discuss the diagnostic work-up of chronic arterial occlusive disease.
  - Discuss the medical management of arterial occlusive disease.
  - Discuss risk factors associated with arterial occlusive disease.
4. Describe the pathophysiology of ischemic rest pain.
  - Discuss evaluation and management of rest pain.
  - Discuss the role of anticoagulation in peripheral vascular disease.
5. Describe the etiologies and presentation of acute arterial occlusion.
  - Discuss embolic vs. thrombotic occlusion.
  - Discuss the signs and symptoms of acute arterial occlusion (the “P’s”)
  - Discuss the medical and surgical management.
  - Discuss the complications associated with prolonged ischemia and revascularization.
  - Discuss the diagnosis and treatment of compartment syndrome.
6. Describe the differential diagnosis, location, appearance and symptoms of leg ulcers due to:
  - arterial disease and venous stasis disease
  - neuropathy
  - infection and malignancy

7. Describe the differential diagnosis of the swollen leg.
  - Discuss how to differentiate lymphedema from venous stasis.
  - Discuss painful vs. non-painful swelling.
8. Describe the factors that lead to venous thrombosis and embolism.
  - Discuss the usual locations for thrombosis.
  - Discuss differing implications of deep and superficial venous thrombophlebitis.
  - Discuss the common invasive and noninvasive diagnostic tests for DVT.
  - Discuss methods for DVT prophylaxis and identify high-risk patients.
  - Discuss the risks, benefits and available options for anticoagulation and thrombolysis.
  - Discuss the signs, symptoms, diagnostic evaluation and treatment of pulmonary embolism.
9. Describe the diagnosis, work-up and management options for symptomatic varicose veins and venous ulcers.
  - Discuss the physical exam and tests for venous valvular competence.
  - Discuss the role of venography, ultrasound and plethysmography.
  - Discuss medical vs. surgical management.

### **Skills**

1. Perform a complete physical examination of the vascular system, including pulse identification, auscultation, Doppler evaluation and ankle-brachial index determination.
2. Identify the physical signs of chronic and acute ischemia including: pallor, dependent rubor, delayed capillary refill, hair loss, thin and shiny skin, nail deformity, pallor on elevation, ulceration and gangrene.
3. Perform a competent neurological examination of the lower extremities including sensory, motor and autonomic distribution.

### **Prevention**

1. Understand the relationship of smoking cessation, hypertension control, and lipid control in the prevention of atherosclerotic diseases.
2. Understand the principles and appropriate use of DVT prophylaxis.
3. Understand which patients may benefit from antiplatelet therapy for full anticoagulation to prevent arterial thrombosis

## ***LUNG NODULE***

### **Assumptions**

Student has reviewed lung anatomy and normal physiology. Student is familiar with TNM classification of lung neoplasms.

### **Objectives**

1. Create an algorithm for the evaluation of a patient with a lung nodule on chest x-ray.
2. Discuss the common risk factors and clinical symptoms of lung cancer.
3. Describe the role of surgery in lung cancer
  - Describe pulmonary function tests and values that are predictive of severe risk of pulmonary complications following thoracic surgery.
  - Identify conditions that preclude curative surgical resection for lung cancer.
4. List the most common sources of malignant metastases to the lungs.
5. Compare and contrast the management and prognosis of metastatic vs. primary lung malignancies.
6. Describe the most common diagnostic procedures used to evaluate pulmonary and mediastinal lesions.
7. List the common tumors of the anterior, posterior and superior mediastinum.

### **Skills**

1. Read a chest x-ray.
2. Interpret pulmonary function tests.
3. Doctor/patient communication skills: giving bad news, communication with patient on ventilator.

### **Prevention**

1. Discuss smoking cessation.
2. Role of screening & disease transmission for tuberculosis.

## ***NECK MASS***

### **Assumptions**

The student has an understanding of head & neck anatomy, embryology, and thyroid / parathyroid physiology and can perform a competent head and neck physical exam.

## Objectives

1. Describe the neck masses commonly presenting in childhood.
  - Discuss the embryologic origin of these lesions and the anatomic implications to consider when resecting them.
2. Describe the signs, symptoms & etiologies of inflammatory neck masses.
  - Discuss Ludwig's angina and why it may be life-threatening.
  - What is appropriate treatment for cervical adenitis?
  - Discuss the evaluation of suspected tuberculous adenitis.
3. Describe the most common neoplastic neck masses and their origin.
  - Discuss the role of fine-needle cytology, open biopsy, CT scan, MRI, thyroid scan, and nasopharyngeal endoscopy in the diagnostic work up of a neck mass.
  - Discuss the relationship of smoking and alcohol abuse to squamous cell cancers.
  - Discuss the evaluation and differential diagnosis of a patient with a thyroid nodule.
  - Discuss the common thyroid malignancies, their cell of origin and their management. Which has the best prognosis? The worst? Which is associated with MEN syndrome?
  - Discuss the relationship of radiation exposure to thyroid malignancy.
  - Which malignancies frequently metastasize to the neck? How is the metastatic nodal disease managed and how does this differ based on the origin of the primary?
4. Discuss the common non-neoplastic thyroid diseases that could present as a mass.
  - Discuss the symptoms associated with hyperthyroidism and discuss treatment options.

## Skills

1. Perform a complete head and neck physical exam including indirect laryngoscopy and intra-oral exam.
2. Interpret routine thyroid function tests.

## Prevention

1. Understand the relationship of smoking and chewing tobacco use to head and neck malignancy.
2. Understand the relationship of thyroid malignancy to radiation exposure.

## ***NON-HEALING WOUNDS***

### **Assumptions**

Students will review and understand the fundamental principles of wound healing and the physiologic sequelae of diabetes and malnutrition.

### **Objectives**

1. Define “non-healing”.
2. Discuss a differential diagnosis, evaluation, and treatment of a patient with:
  - non-healing lower extremity wound
  - non-healing wound of the torso, or body area other than the lower extremity
3. Describe the pathophysiology involved for each of the diagnostic possibilities.
  - Consider: pressure, ischemia, infection, malignancy, and foreign body

### **Prevention**

1. Discuss the prevention of non-healing wounds. What the patients can do? What the physicians can do?
2. Discuss the issues of prevention especially related to the diabetic and the patient with venous insufficiency would be appropriate.
3. Recognition of patients at risk for pressure sores.

## ***PERIANAL PROBLEMS***

### **Assumptions**

The student knows the basic anatomy of the anal canal and rectum and is familiar with the basics of the mechanism of defecation.

### **Objectives**

1. Develop a differential diagnosis for a patient with perianal pain. (Be sure to include benign, malignant and inflammatory causes.)
2. Discuss the characteristic history findings for each of the above including:
  - character and duration of complaint
  - presence or absence of associated bleeding
  - relationship of complaint to defecation
3. Describe physical exam findings for each diagnosis. Indicate in which part of exam (external, digital, anoscopic or proctoscopic) these findings are identified.



4. Discuss treatment plan for each diagnosis listed in objective one, including non-operative interventions and role and timing of surgical interventions.

### **Skills**

1. Focused H&P for perianal complaints
2. Thorough and accurate anorectal exam to include external, digital, and anoscopic exams.

### **Prevention**

1. Discuss dietary habits, which may help prevent anorectal problems.

## ***PERIOPERATIVE CARE***

### **Assumptions**

The student can perform a complete history and physical examination. The student will review pharmacology of common anesthetic medications, antibiotics, and pain control agents. The student can integrate the physiology of cardiovascular, pulmonary, gastrointestinal, renal, hepatic, endocrine and nervous system function. The student is familiar with carbohydrate, protein and fat metabolism and the role of vitamins / minerals in health and disease

### **Objectives**

#### **PREOPERATIVE ASSESSMENT**

1. Describe features of a patient's clinical history that influence surgical decision making. Consider: known diseases, risk factors, urgency of operation, medications etc.
2. Discuss tools that may assist in preoperative risk assessment. Consider laboratory studies, imaging studies etc. Include the following:
  - Pulmonary (example: exercise tolerance, pulmonary function testing)
  - Cardiovascular (ASA classification, Goldman criteria, echocardiography, thallium studies, Doppler)
  - Renal (Bun/Cr, dialysis history)
  - Metabolic (nutritional assessment, thyroid function)
3. Compare and contrast anesthetic risk factors. Consider the following variables:
  - Age: neonates to geriatrics
  - Urgency of intervention:
    - emergent versus elective surgery
    - associated conditions: pregnancy, diabetes, COPD, valvular or ischemic heart disease, cerebral/peripheral vascular disease, renal insufficiency etc.

4. Discuss history, physical and laboratory findings utilized in nutritional assessment. Be familiar with the most common forms of nutritional & deficiency disorders. Consider: protein-calorie malnutrition, chronic alcoholism, iron & B12 deficiencies, malabsorption syndromes and requirements of the morbidly obese.
  - Discuss disease states and surgical interventions at high risk for nutritional impairment.
  - Discuss the advantages and disadvantages of nutritional support.
  - Compare and contrast enteral vs. parenteral administration complications
  - Methods of determining requirements and assessing response

#### PERIOPERATIVE ASSESSMENT

1. Discuss the components of informed consent as it applies to surgical interventions (procedures, transfusions etc.)
  - Demonstrate documentation of consent in the medical record.
  - Discuss the rationale for documentation in the medical record.
  - Describe the components and demonstrate the ability to formulate an operative or procedure note, postoperative orders, a postoperative note.
2. Describe the indications and efficacy of various monitoring techniques.
  - Compare & contrast invasive vs. noninvasive.
  - Consider the following: vital signs, I&O, arterial lines, pulse oxymetry, ABG, ECG, Swan Ganz, CVP, ICP etc.
3. Discuss conditions that potentially interfere with fluid and electrolyte homeostasis in the peri-operative period, and describe strategies for replacement / monitoring.
  - Example: effects of bowel preparation, NPO status, NG drainage, dialysis, operative losses, etc.
4. Describe factors that might impair coagulation or increase risk of bleeding.
  - Describe the various blood component therapies available.
  - Discuss the indications, risks and benefits of transfusion therapy.
  - Consider: packed cells vs. whole blood , FFP, platelets, cryoprecipitate, albumin.
  - Discuss alternatives to allogeneic blood transfusion and their appropriate use. Include: autologous donation, hemodilution, , iron / erythropoetin therapy, and modification of transfusion trigger.
5. Discuss risk factors for alcohol withdrawal syndromes. Consider prevention strategies.

#### POSTOPERATIVE ASSESSMENT

1. List the conditions necessary for discharge of a patient to home or to the floor following a general or spinal anesthetic

2. Understand the pharmacological action, benefits, risks, and side effects of various pain control agents.
  - Compare and contrast : parenteral vs. enteral agents and describe the role of epidural and nerve blocks in pain management
3. Describe the expected outcome of an uncomplicated surgical procedure. Discuss a normal post-operative course for various common operations. Consider:
  - Time to recovery, order of recovery of digestive function (stomach, small bowel, colon) etc.
  - Characteristics of a healing surgical wound.
  - Impact of various incisions on recovery.
  - Functional abilities and disabilities acutely and chronically.
  - Nutritional and fluid needs and options for replacement.
  - Potential complications: prevention strategies.
  - Patient support systems and options for post hospital care.

### **Skills**

1. Students should be able to obtain a focused history and physical exam that addresses pre-operative risk and post-operative care.
2. Students should have exposure to a variety of bedside procedures and be able to relate the indications, contraindications and complications of various techniques.
  - Demonstrate sterile technique.
  - Assess a post-op wound and change a surgical dressing.
  - Perform simple suturing; remove sutures and staples.
  - Place a peripheral IV and obtain a venous blood sample.
  - Place a NG drain.
  - Place a Foley catheter in males/females.
  - Remove a drain.
  - Assume a medical student role in the operating room.
3. Demonstrate the ability to perform basic record keeping on a surgical service. Consider common surgical procedures: laparoscopic cholecystectomy, colon resection, AAA resection and include:
  - pre and post-operative orders
  - operative note
  - daily progress note
  - discharge instructions

4. Outline a specific perioperative care plan for various patients who are to undergo surgery (i.e., advanced pulmonary disease, diabetes mellitus, known cardiovascular disease, etc.). Include the following in your discussion:
  - preoperative evaluation and preparation
  - anesthetic considerations
  - perioperative prophylaxis
  - post-operative care and monitoring
5. Calculate the nutritional needs and describe preferred routes of administration of nutritional therapy for patients with various surgical problems.

### **Prevention**

1. Describe what is meant by the term prophylaxis and discuss its rationale in preventing infectious and pulmonary complications.
2. Discuss alternatives, including their appropriate uses and risks, for prophylaxis of DVT and PE.
3. Discuss the indications for antibiotic prophylaxis; include commonly utilized agents, timing and duration of prophylaxis. Consider alternatives in patients with known drug allergies.
4. Discuss the rationale for bowel preps in patient undergoing various abdominal surgeries.
5. Describe modifications in diet, chronic medications, behavior (smoking, alcohol) that might be indicated in patients undergoing major surgery.

### **POST-OPERATIVE COMPLICATIONS**

#### **Assumptions**

The student understands that prevention is the best form of management for postoperative complications; is knowledgeable about the normal physiology of the cardio-respiratory, gastrointestinal, renal, immunological, neurological, and circulatory systems; and understands the alterations in physiology which are produced by surgical stress.

#### **Objectives**

1. Describe the differential diagnosis of a patient having postoperative fever. For each entity, discuss the clinical manifestations, appropriate diagnostic work-up, and management:
  - Intraoperative - malignant hyperthermia
  - Within 24 hours - response to surgical trauma; atelectasis; necrotizing wound infections.
  - Between 24 and 72 hours:
    - pulmonary disorders (atelectasis, pneumonia)
    - catheter related complications (IV-phlebitis, Foley-UTI)

- After 72 hours:
    - infectious (UTI, pneumonia, wound infection, deep abscess, anastomotic leak, prosthetic infection, acalculous cholecystitis, parotitis)
    - noninfectious (deep vein thrombosis)
2. Discuss the following wound complications in terms of predisposing risk factors (patient condition, type of operation, technique), as well as their recognition, treatment, and prevention:
    - hematoma and seroma
    - wound infection
    - dehiscence
    - incisional hernia
  3. Discuss the various causes of respiratory distress and respiratory insufficiency that may occur in the postoperative patient. For each complication, describe the etiology, clinical presentation, management, and methods of prevention:
    - atelectasis
    - pneumonia
    - aspiration
    - pulmonary edema
    - ARDS
    - pulmonary embolism (including deep venous thrombosis)
    - fat embolism
  4. Discuss the diagnostic work-up and treatment of oliguria in the postoperative period. Include pre-renal, renal, and post-renal causes (including urinary retention).
  5. Discuss the possible causes of hypotension which may occur in the postoperative period. For each etiology describe its pathophysiology and treatment:
    - hypovolemia
    - sepsis
    - cardiogenic shock - including postoperative myocardial infarction, fluid overload, arrhythmias, pericardial tamponade
    - medication effects
  6. Describe the management of postoperative chest pain and arrhythmias.

7. Describe factors which can lead to abnormal bleeding postoperatively, and discuss its prevention and management:
  - Surgical site - inherited and acquired factor deficiencies, DIC, transfusion reactions, operative technique
  - Gastroduodenal (i.e. stress ulcerations)
8. Discuss disorders of alimentary tract function following laparotomy which may produce nausea, vomiting, and/or abdominal distension:
  - paralytic ileus
  - acute gastric dilatation
  - intestinal obstruction
  - fecal impaction
9. Discuss precipitating factors and treatment of the following postoperative metabolic disorders:
  - hyperglycemia
  - adrenal insufficiency
  - thyroid storm
10. Discuss external gastrointestinal fistulas:
  - contributing factors
  - management
11. Describe the factors which can give rise to alterations in cognitive function postoperatively, as well as their evaluation and treatment:
  - hypoxia
  - perioperative stroke
  - medication effects
  - metabolic and electrolyte abnormalities
  - functional delirium
  - convulsions

### **Skills**

1. Focused physical examination to include mental status changes, lungs, heart, and abdomen.
2. Ability to assess surgical incision for wound complications.
3. Recognition of findings on CXR indicative of atelectasis, pneumonia, pulmonary edema, and ARDS.
4. Ability to insert NG tube, Foley catheter.

## **Prevention**

Many postoperative complications may be avoided through prevention.

1. Wound complications - meticulous surgical techniques, perioperative antibiotics for clean-contaminated wounds, delayed closure of dirty wounds.
2. Respiratory complications - avoid smoking in advance of elective surgery, encourage coughing and deep breathing, sufficient but not excessive analgesia, early postoperative ambulation.
3. Oliguria - adequate intravenous fluids, assure outflow.
4. Hypotension - avoid hypovolemia, monitor for arrhythmias, early recognition and treatment of infection, titrate medication doses carefully.
5. Bleeding - Surgical site: meticulous operative technique, screen for factor deficiencies, give platelets and fresh frozen plasma for massive blood loss, avoid DIC by preventing infections and treating them early. Gastroduodenal: keep gastric pH neutral.
6. Alimentary tract dysfunction - use nasogastric tube, stool softeners, and cathartics when necessary.
7. Hyperglycemia - avoid too large infusions of glucose, monitor diabetics carefully and administer insulin appropriately.
8. Adrenal insufficiency - provide stress doses of corticosteroids when adrenals are chronically suppressed.
9. Thyroid storm - control hyperthyroidism prior to surgery.
10. Alterations in cognitive function - avoid hypoxia and electrolyte imbalances, titrate medications carefully.

## ***SCROTAL PAIN & SWELLING***

### **Assumptions**

The student knows the anatomy of the scrotal contents. The student is familiar with the embryologic development and descent of the testicle.

### **Objectives**

1. Generate a list of potential diagnoses for the patient who presents with pain or a mass in the scrotum.
  - Discuss testicular vs. extratesticular origins
  - Discuss benign vs. malignant causes
  - Discuss emergent vs. nonemergent causes

2. List history and physical exam findings that will help you differentiate etiologies. Be sure to discuss the following issues:
  - pain - presence, absence, onset, severity
  - palpation - distinguish testicular from extratesticular (adnexal) mass
  - effect of Valsalva maneuver
  - transillumination
  - age of the patient
3. Discuss the diagnostic algorithm for scrotal swelling and/or pain.
4. Discuss treatment of non-malignant causes of scrotal swelling and/or pain.
5. Discuss diagnosis and treatment of the undescended testicle (be sure to consider age of diagnosis).

### **Skills**

1. Focused H&P for testicular mass.
2. Technique for transillumination of scrotum.

### **Prevention**

1. Discuss role of scrotal self-exam in early detection of testicular cancer.
2. Discuss methods for prevention/early detection of testicular cancer for patients with a previously undescended testicle.

### ***SHOCK***

#### **Assumptions**

Student understands the physiologic principles that govern normal blood pressure and hemodynamic homeostasis.

#### **Objectives**

1. Define shock.
2. Differentiate the signs, symptoms, and hemodynamic features of shock:
  - hemorrhagic
  - cardiogenic
  - septic
  - neurogenic
  - anaphylactic
  -



3. Discuss priorities and specific goals of resuscitation for each form of shock:
  - Define goals of resuscitation
  - Defend choice of fluids
  - Discuss indications for transfusion
  - Discuss management of acute coagulopathy
  - Discuss indications for invasive monitoring
  - Discuss use of inotropes, afterload reduction in management
4. Discuss priorities in resuscitation (ABC's)

### **Skills**

1. Focused physical exam to include neck veins, cardiac, pulmonary and abdominal exams.
2. Placement of large-bore intravenous access.
3. Interpretation of EKG and chest x-ray.
4. Interpretation of hemodynamic measurements, to include Swan Ganz catheter measurements.

### **Prevention**

1. Discuss the importance of shock prevention.
  - Describe a patient who one might predict would develop hypovolemic shock; cardiogenic shock; neurogenic (distributive) shock; septic shock; anaphylactic shock.
  - Discuss strategies that would prevent your patient from developing shock.

## ***SKIN & SOFT TISSUE LESIONS***

### **Assumptions**

The student understands gross anatomy and histology of the soft tissue structures.

### **Objectives**

1. Describe the commonly used local anesthetics.
  - Discuss the advantages and disadvantages of epinephrine in the local anesthetic.
  - Discuss special precautions needed on the digits.
  - Discuss safe dosage ranges of the common anesthetics and the potential toxicities of these drugs.
2. Describe the common benign skin lesions and their treatment (papillomas, skin tags, subcutaneous cysts, lipomas).

3. Describe the characteristics, typical location, etiology and incidence of basal cell and squamous skin cancers.
  - Discuss the relationship to solar irradiation, ethnicity, previous tissue injury, & immunosuppression.
  - Discuss the characteristics of malignant skin lesions which distinguish them from benign lesions.
  - Discuss the appropriate treatment of small and large basal and squamous cancers and their prognosis.
  
4. Describe the characteristics, typical locations, etiology and incidence of malignant melanoma.
  - Discuss the relationship of melanoma to benign nevi and characteristics which help differentiate them.
  - Discuss risk factors for melanoma. What are the lesions which have high potential for malignant transformation?
  - Discuss the various types of melanoma and prognosis for each type.
  - Discuss the relationship of size and thickness to prognosis.

### **Skills**

1. Techniques of:
  - infiltration of local anesthetic and nerve blocks for cutaneous excision
  - incision and drainage
  - skin biopsy (punch and excisional)

### **Prevention**

1. Stress the importance of sun screens and other skin protection, particularly in fair-skinned individuals.
2. Promote awareness of the importance of self-exam of skin lesions for suspicious changes.
3. Remove congenital hairy nevi prior to adulthood.

## ***SWALLOWING DIFFICULTY & PAIN***

### **Assumptions**

Students will review anatomy, physiology, and pathophysiology of the swallowing mechanism. It is assumed that the students will have this knowledge and apply it to the clinical situation.

### **Objectives**

1. Define dysphagia and odynophagia.

2. Describe the differential diagnosis for a patient with dysphagia / odynophagia.
  - Motility Disorder
    - neurologic disorders
    - motor disorders
  - Extrinsic obstruction / compression
  - Intrinsic obstruction
    - neoplasm
    - inflammation
    - foreign body
  - Inflammation/Infections
3. Compare and contrast the history, presentation, physical findings, and laboratory findings for these different conditions.
4. Discuss the diagnostic modalities available, how they are used, and how they relate to the normal swallowing mechanism.
5. Describe the options for management of these conditions.
6. Discuss indications for operative vs. non-operative management when appropriate.

### **Skills**

1. Focused history and physical relevant to dysphagia.
2. Ability to interpret:
  - Contrast studies of the pharynx, esophagus, and stomach
  - Manometry of the esophagus
  - CT scans of the chest
  - pH studies

### **Prevention**

1. Risk factors for esophageal carcinoma.
2. Screening and surveillance for patients who are at risk for carcinoma.

### ***TRANSPLANTATION***

#### **Assumptions**

The student has a basic understanding of the immune system and its role in the response to foreign antigens. The student should also have an understanding of the anatomy and physiology of the renal, pancreatic, hepatic, pulmonary and cardiac organ systems.

## **Objectives**

1. Describe the common organs and tissues currently being transplanted:
  - Discuss issues of living related and unrelated vs. cadaveric donation.
  - Discuss potential ethical issues as they relate to organ donation.
  - Define autograft, allograft, xenograft, orthotopic and heterotopic as they relate to transplantation.
2. Discuss common infectious complications of immunosuppression and their prevention and management.

## **Skills**

1. Think about how you would approach the topic of organ donation with the family of a severely brain injured patient, and if possible, be present when such a discussion is held.

## **Prevention**

1. What are the major preventable causes of renal failure? Liver failure? Heart failure?
2. Understand the relationship of viral hepatitis B and C to cirrhosis and hepatic failure and measures that will decrease the risk of developing chronic infection from these organisms.

## ***TRAUMA***

### **Assumptions**

The student understands the basic physiology of the circulatory system and changes that occur due to shock. The student will review the pertinent anatomy of the organ systems discussed in the trauma chapter.

## **Objectives**

1. Describe the priorities and sequence of a trauma patient evaluation (ABC's).
2. Describe the four classes of hemorrhagic shock and how to recognize them.
3. Describe the appropriate fluid resuscitation of a trauma victim.
  - Discuss choice of IV access
  - Discuss the choice of fluid and use of blood components.
  - Discuss the differences between adult and pediatric resuscitation.
4. Discuss the types, etiology and prevention of coagulopathies typically found in patients with massive hemorrhage.

5. Describe the appropriate triage of a patient in a trauma system.
  - Discuss the importance of mechanism of injury on management and triage decision making.
6. Describe the diagnostic evaluation, differences between blunt and penetrating mechanisms of injury and the initial management of:
  - Closed head injury (consider Glasgow Coma Scale, ICP, subdural hematoma, epidural hematoma, diffuse axonal injury, basilar skull fractures & CSF leaks)
  - Spine injury (consider mechanism of injury, level of injury, use of steroids, immobilization, neuro exam, management of shock)
  - Thoracic injury (consider hemo / pneumothorax, tension pneumothorax, tamponade, pulmonary contusion, massive air leak, widened mediastinum, flail chest)
  - Abdominal injury (consider role of physical exam, ultrasound, CT, peritoneal lavage, operative vs. non-operative management of liver and spleen injury, which patients need urgent laparotomy, management of hematomas)
  - Urinary injury (consider operative vs. non-operative renal injury, ureteral injury, testicular trauma, intraperitoneal and extraperitoneal bladder injury, urethral trauma, when not to place a Foley, candidates for cystogram, relationship to pelvic fracture)
  - Bony injury (consider open vs. closed fractures, compartment syndromes, concepts of immobilization (splinting, internal fixation), treatment of patients with pelvic fractures, hemorrhage control, commonly associated vascular injuries)
7. Describe the early management of a major burn.
  - Discuss estimation of total body surface burn and burn depth.
  - Discuss fluid resuscitation, choice of fluid and monitoring for adequacy of resuscitation (rule of 9's, differences in pediatric and adult management).
  - Discuss options for topical antimicrobial therapy.
  - Discuss inhalation injury, CO poisoning and triage of patients to burn centers.
  - Discuss the basic principles of wound coverage, skin grafting, and timing.
8. Describe the recognition of suspected child abuse and domestic violence presenting as trauma and the physician's role in reporting.

### **Skills**

1. Perform rapid, concise, thorough trauma history and physical focusing on the ABC's, AMPLE history, and primary/secondary surveys.
2. Emergency airway management..
3. Needle decompression of tension pneumothorax.
4. IV access

## **Prevention**

1. Understand the importance of passenger and appropriate infant restraints in motor vehicles.
2. Understand the role of helmets in preventing head injury in motorcycle, bicycle, and roller blade accidents.
3. Understand the significant influence of the use of drugs and alcohol on a large percentage of traumatic injuries including assaults, burns and motor vehicle accidents.
4. Understand the value of smoke and carbon monoxide detectors, and evacuation drills in reducing mortality and injury.

## ***URINARY COMPLAINTS***

### **Assumptions**

The student understands the anatomy and embryology of the urinary tract system.

### **Objectives**

1. Describe the potential etiologies of hematuria.
  - Consider age, presence of pain, character of bleeding trauma, etc.
  - Consider occult vs. gross hematuria
2. Discuss the diagnostic modalities available for evaluation of hematuria including cost, risks indications and limitations.
  - Consider CT, cystoscopy, IVP, ultrasound, cystourethrogram, and retrograde pyleography.
3. Discuss the risk factors for composition of, and management of renal and ureteral calculi.
4. Discuss the clinical presentation of renal and ureteral calculi and the differential diagnosis of renal colic.
5. Discuss the etiologies and diagnostic evaluation of a patient with dysuria.
6. Outline the etiologies and work-up of a patient with pneumaturia.
7. Outline the evaluation and treatment options for patients with urinary stress, urge, total and overflow incontinence.
8. Outline the initial evaluation of patients presenting with urinary frequency, nocturia, urgency or urinary retention.
  - Consider pertinent H & P, and diagnostic tests including prostate ultrasound.

## ***VOMITING, DIARRHEA, CONSTIPATION***

### **Assumptions**

Students understand the anatomy, embryology and physiology of the gastrointestinal tract.

### **VOMITING**

#### Objectives

1. Discuss in general, the differential diagnosis for a patient with emesis.
  - Consider timing and character of the emesis and associated abdominal pain.
  - Contrast etiologies in infants, children and adults.
  - Contrast dysmotility vs. ileus vs. mechanical obstruction.
2. Describe the clinical presentation and etiologies of gastric outlet obstruction.
3. Describe the types of neoplasms that occur in the stomach and discuss diagnosis and prognosis for each.
4. Discuss the diagnosis and management of peptic ulcer disease.
5. Describe the signs and symptoms of small bowel obstruction.
6. Describe the common etiologies of mechanical small bowel obstruction, including less frequent causes, such as small bowel tumors.
7. Discuss the potential complications and management of small bowel obstruction.
8. Outline the initial management of a patient with mechanical small bowel obstruction, including laboratory tests and x-rays.
9. Contrast the presentation and management of partial vs. complete small bowel obstruction.
10. Differentiate the signs, symptoms and radiographic patterns of paralytic ileus and small bowel obstruction

### **Diarrhea**

#### Objectives

1. Discuss the differential diagnosis of diarrhea in adults.
  - Consider chronicity, absence or presence of blood and associated pain.
  - Consider infectious causes.
2. Describe the presentation and potential complications of ulcerative colitis and Crohn's disease.
3. Contrast the pathology, anatomic location and pattern, cancer risk and diagnostic evaluation of ulcerative colitis and Crohn's disease.

4. Discuss the role of surgery in the treatment of patients with ulcerative colitis and Crohn's disease.
5. Discuss the clinical manifestations, risk factors, diagnosis and management of pseudomembranous colitis.
6. Outline the risk factors, presentation, diagnosis and management of ischemic colitis.

## **Constipation**

### Objectives

1. Discuss the potential etiologies of constipation in adults and children.
  - Consider chronic vs. acute.
2. Describe the clinical presentation and etiologies of large bowel obstruction, including pseudo-obstruction (Ogilvie's syndrome).
3. List the diagnostic methods utilized in the evaluation of potential large bowel obstruction, including contraindications and cost effectiveness.
4. Outline the diagnosis and management of colonic volvulus, diverticular stricture, fecal impaction and obstructing colon cancer.
5. Outline the treatment of carcinoma located at different levels of the colon, rectum and anus. Include a discussion of the use of radiotherapy and chemotherapy for each.
6. Describe the postoperative follow-up of patients with colorectal carcinoma.
7. Discuss the staging and survival of patients with colorectal carcinoma.

### Skills

- H & P to include abdominal and rectal exam.
- Nasogastric tube insertion.
- Interpretation of abdominal x-rays, including small bowel obstruction, ileus and colonic obstruction.

### Prevention

- Indications for and methods of screening for colorectal carcinoma.
- Use of surveillance endoscopy in ulcerative colitis.



ABC's .....	33, 36, 37	claudication.....	20
abdominal aortic aneurysm .....	4	CO poisoning.....	37
abdominal pain.....	3, 4, 5, 6, 39	colon cancer.....	18, 40
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