

Title:

General Surgery Clerkship

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► Course Objective:

The goal of the clerkship is to provide students with an extensive experience in the evaluation and treatment of patients with surgical disease. Specifically, we emphasize:

(1) The evaluation and initial management of acute 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:
 - i. prior surgery or illness, associated conditions (pregnancy, menstrual cycle, diabetes, atrial fibrillation or cardiovascular disease, immunosuppression).
 - ii. 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.

- a. *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.
 - a. *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 certain challenging situations
 - infants and children with abdominal pain.
 - pregnant patients
 - 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 vs. adult vs. 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 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) tubo-ovarian 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.
 - Be able to list the abdominal problems, characteristic of neonates, infants, children, adolescents and outline diagnostic and intervention strategies for:
 - Congenital: hernias, malrotation, midgut volvulus
 - Hirschsprung's disease
 - Pyloric Stenosis
 - Intussusception
 - Meckel's diverticulitis
 - Child abuse
 11. Discuss unique causes of abdominal pain in patients who are immune-suppressed and the implication on treatment and outcomes.
 - *Examples: neutropenic enterocolitis, CMV enterocolitis, bowel perforation, acalculous cholecystitis, acute graft rejection.*
 12. Discuss the approach to patients with common abdominal problems with emphasis on indications for surgical consultation, indications / contraindications to surgery, complications of disease and intervention, and expected outcomes.
 - *Examples: laparoscopy vs. laparotomy; complication rates of emergent vs. elective surgery, perforated vs. non-perforated colon cancer; complications: intra-abdominal abscesses, fistulae, bleeding, anastomotic disruption.*
 13. 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.
 14. Describe the resources available for readily accessing information to evaluate patients with abdominal pain.
 - *Examples: Internet access sites, textbooks, pocket handbooks, journal articles.*

(2) The evaluation and initial management of the traumatized patient,

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, intraperitoneal and extraperitoneal bladder injury, urethral trauma, when not to place a Foley, candidates for cystogram, relationship to pelvic fracture)
 - Orthopedic 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.
 - Discuss the assessment and need for escharotomy.
 8. Describe the effects of trauma on the individuals' ability to return to full health and employment.
 9. Discuss the role of physical therapy, occupational therapy, speech therapy and other rehabilitation services in the patient's recovery.
 10. Discuss the economic impact of traumatic injury and disability.
 11. Describe the recognition of suspected child abuse and domestic violence presenting as trauma and the physician's role in reporting.
 12. Describe the importance of careful documentation in the medical record for traumatic injury and the basic concepts of a "trail of evidence" in victims of assault.

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.

(3) The preoperative and postoperative management of surgical patients,

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. , including 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.
4. Describe criteria for admission of a patient to an ICU or special care unit following surgery.
 - Compare and contrast post-operative courses of patients undergoing Whipple procedure, coronary artery bypass, multiple trauma with craniotomy, laparotomy and orthopedic injuries.
 - List criteria for weaning a patient from the ventilator post-operatively.

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.
 - Compose nutritional orders and routine laboratory studies utilized to follow response.
 - Consider patients with:
 - inflammatory bowel disease
 - 50% TBSA burn
 - intestinal fistula
 - major esophageal resection for tumor

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;
 - 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:
 - 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)
 - Intraoperative - malignant hyperthermia
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).
 6. 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
 7. Describe the management of postoperative chest pain and arrhythmias.
 8. 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)
 9. 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
 10. Discuss precipitating factors and treatment of the following postoperative metabolic disorders:
 - hyperglycemia

- adrenal insufficiency
 - thyroid storm
11. Discuss external gastrointestinal fistulas:
 - contributing factors
 - management
 12. 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.

(4) The evaluation and initial management of certain malignancies

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
4. Discuss the rationale for management with specific emphasis on:
 - Clinical staging of breast CA
 - The various possible malignant, pre-malignant, and benign pathology results (including hormonal receptor analysis, tumor DNA analysis)
 - The follow-up for a patient with a benign lesion (alterations in lifestyle, imaging studies, cancer risk)
 - The 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
- role of radiotherapy
- role of chemotherapy (adjuvant or neoadjuvant)
- role of hormonal therapy
- surgical options including reconstruction

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.
 - Discuss the usual treatment for cutaneous melanoma including margins, depth and lymph node management including sentinel node mapping.
5. Describe the incidence, etiology, epidemiology and classification for soft tissue sarcomas.
 - Discuss the differences in frequency and cell type between childhood and adult sarcomas.
 - Discuss the features which differentiate benign from malignant soft tissue tumors.
 - Discuss staging and how the stage impacts prognosis for these tumors.
 - Discuss the potential role and extent of surgery in their treatment; chemotherapy? radiation? immunotherapy?
 - Discuss the relationship of Kaposi's sarcoma to HIV infection and the implications for the patient's management.

Skills

- 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.

(5) The evaluation and initial management of certain vascular conditions (especially, carotid artery disease, abdominal aortic aneurysm, distal vascular disease),

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. Describe the evaluation and management of a patient with an acute focal neurologic deficit.
2. Differentiate TIA, RIND, and CVA.
 - Differentiate anterior vs. posterior circulation symptoms.
 - Outline the diagnostic tests and monitoring of carotid occlusive disease, including role of angiography and noninvasive methods.
3. Discuss medical vs. surgical management of carotid artery disease.

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 role of segmental Doppler studies and arteriography
 - Discuss the medical management of arterial occlusive disease.
 - Discuss risk factors associated with arterial occlusive disease.
 - Discuss operative and nonoperative interventions for aortoiliac, femoropopliteal and distal vascular occlusion.
4. Describe the pathophysiology of ischemic rest pain.
 - Discuss evaluation and management of rest pain.
 - Discuss the role of anticoagulation in peripheral vascular disease.
 - Discuss the indications for amputation and choice of amputation level.
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. Discuss the presentation of and risk groups for bony tumors.
 9. 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.
 10. 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.
 - Discuss the role of stripping, sclerosis, laser ablation.

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.

(6) The evaluation and initial management of gastro-intestinal hemorrhage

Assumptions

- Students understands 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

- 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.
 11. Outline the management of an abdominal wall desmoid.

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.

(7) Wound healing,

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

(8) The evaluation and initial management of surgical causes of 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
2. 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
 - Reynolds's pentad
3. 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).
4. 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
 - hepatic abscess
 - pancreatic CA
 - periampullary CA
 - hepatic CA
 - autoimmune hemolysis
 - hepatitis
 - hematemesis
 - periampullary duodenal diverticulum

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

(9) The evaluation and initial management of 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, radionuclide 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.
 - Discuss the role of liver biopsy in the diagnosis and the available techniques.
2. Describe the causes of splenomegaly.
 - Discuss the most common signs and symptoms associated with hypersplenism.
 - Compare and contrast hypersplenism with an enlarged and normal sized spleen.
 - Discuss the role of splenectomy in the treatment of hypersplenism.
 - Discuss the consequences of hyposplenism. How can these be diminished?
 - 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.

- Discuss the indications and techniques of biopsy the pancreas.
 - Discuss the management of cystic lesions of the pancreas.
 - How do you differentiate a pseudocyst from a cystadenoma or true cyst?
 - Which patients need surgery and when?
 - What are the major complications of pancreatic necrosis and pseudocyst formation?
4. Describe the most frequently encountered retroperitoneal masses.
 - Discuss the appropriate imaging studies and work up for these tumors.
 - Discuss the most frequently encountered lymphomas and their treatment.
 - Discuss the most common retroperitoneal sarcomas and their management.
 5. Describe the evaluation and management of abdominal aortic aneurysms.
 - Discuss appropriate imaging studies for aneurysms.
 - Discuss which patients need angiograms.
 - Discuss the relationship of aortic aneurysms to other vascular 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.
 6. Describe the tumors most frequently associated with abdominal carcinomatosis and omental metastasis.

(10) The evaluation and initial management of vomiting, diarrhea, constipation

Assumptions

- Student 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 principles of curative and palliative surgery for patients with gastric neoplasm.
5. Discuss the diagnosis and management of obstructive ulcer disease.
6. Describe the signs and symptoms of small bowel obstruction.
7. Describe the common etiologies of mechanical small bowel obstruction.
8. Describe the pathology and relative frequency of malignant and benign small bowel neoplasms.
9. Discuss the potential complications and management of small bowel obstruction.
10. Outline the initial management of a patient with mechanical small bowel obstruction, including laboratory tests and x-rays.
11. Contrast the presentation and management of partial vs. complete small bowel obstruction.
12. 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.
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.
8. Describe the presentation and treatment of acute and chronic colonic pseudo-obstruction.

We also provide exposure to subspecialty surgery and the office practice of surgery in part as practiced by attending physicians and in the ambulatory setting. Toward these ends, the clerkship stresses:

1. direct student participation in the care of patients from initial presentation, through treatment and on a daily basis until discharge,
2. student acceptance of personal responsibility as a physician for the care of the patient, acting always under the supervision of the attending and resident surgical team (the student will act and function as an integral member of the surgical team; the student is, therefore, expected to be versed in the knowledge applicable to the care of the patient, being particularly prepared to address issues of differential diagnosis, treatment alternatives and operative interventions; daily rounds and chart notations are expected),
3. The student is also expected to attend relevant seminars and grand rounds as part of his/her clinical team (in addition to his/her ward responsibilities, the student will prepare for and attend scheduled didactic sessions; these sessions will involve lectures, student case presentations and problem-based learning (PBL) modules.

▶ Course Description:

It is not the purpose of the surgical clerkship to train medical students in the practice of surgery. The third year clerkship in surgery is designed to provide the student with a broad experience in the general surgical disciplines. This experience is designed to emphasize direct patient contact, including all phases of evaluation, diagnosis and treatment.

Students spend a period of time on a general surgical service (four weeks at University Hospital and the VAMC, and six weeks at Winthrop University Hospital). During this portion of the clerkship, they are given the opportunity to follow patients from initial presentation and evaluation, participate in the patient's surgical therapy, and care for the patient in the postoperative recovery period until discharge from the hospital.

Opportunity is also provided to participate in surgical office practice (at University Hospital and Winthrop University Hospital) or in outpatient clinics (at the VAMC), allowing greater participation in both the pre hospital evaluation of elective patients and the long term follow-up of patients seen in-hospital.

The remainder of the surgical clerkship is split among associated surgical services, providing the student with a broad experience in the surgical disciplines. Emphasis continues on the evaluation and diagnosis of surgical disease. Additional experience is provided in one or more of the following disciplines of

- vascular surgery
- cardio-thoracic surgery
- urology
- orthopaedic surgery
- otolaryngology.

While patient care responsibilities are foremost, didactic teaching sessions are held each week throughout the rotation. These sessions utilize group presentations, lecture, and problem-based learning formats. During these sessions, the student is expected to master and demonstrate the fund of knowledge necessary for the general practice of medicine as it relates to surgical disease.

Each student is assigned to a surgical team of residents and attending physicians. The student is expected to function as a member of the surgical team under the supervision of residents and attending physicians.

- The student will participate in the initial evaluation of patients, including the performance of an admitting history and physical (H&P) examination. It is the responsibility of the student to review the H&P with his/her resident or attending physician.
- The student will follow patients on a daily basis, presenting those patients on morning rounds and writing appropriate chart notes.
- Admission, daily and post operative orders may be written by the student under the direction of a physician.
- He/she may perform basic tests and procedures under the direct supervision of a physician until he/she is credentialed to perform such tasks independently.
- The student will prepare for and attend surgical procedures performed upon those patients that he/she is following.
- In addition, the student may be assigned to attend ambulatory care clinics, operations upon patients not otherwise assigned or duties attendant to the performance of the responsibilities of the surgical team to which he/she is assigned.
- Additional experience or opportunities, particularly in surgical subspecialties may be arranged on an ad hoc basis as desired by the student **through consultation with the clerkship site director.**

It is expected that the student will attend the clinical activities of his/her assigned service on a daily basis. If a student is unable to attend the activities of clinical service for personal reasons, the student will notify his/her chief surgical resident and the site director. The site director must be notified for an absence to be excused. **Unexcused absence from clinical activities may be the basis of a failing clinical grade.**

Students will be on-call every fifth night and can go home after morning rounds on the following day. A student may not work greater than 80 hours per week.

Students will be assigned to a preceptor group of approximately 4 students or less. The preceptor will be an attending surgeon engaged in active practice. It is expected that the student will meet with his/her preceptor weekly. The substance of these meetings will include some of the following:

1. right upper quadrant abdominal pain
2. right lower quadrant abdominal pain
3. left upper quadrant abdominal pain
4. left lower quadrant abdominal pain
5. jaundice
6. bowel obstruction
7. fluid & electrolytes
8. nutrition.

In general, the preceptor is to be utilized as a resource towards the clarification and teaching of the necessary fund of knowledge relating to surgery. The preceptor will particularly stress patient evaluation skills, specifically evaluating the student's differential diagnosis, and therapeutic plans. Additionally, the preceptor will be available to the student for general assistance or conflict resolution. The student is encouraged to participate in the office or outpatient activities of his/her preceptor in order to gain a fuller appreciation of the practice of surgery.

Students are expected to maintain a log on CBase of all patient evaluations and operations attended. It is expected that each student will perform a complete history and physical examination and follow the patient through his/her complete clinical course for a minimum of twenty (20) patients during the 8 week surgical rotation. In addition, the students will maintain a log of their nights on-call. A printed copy of these logs will be presented at the time of the oral examination and may provide the basis of oral examination questions. Failure to complete the CBase log or failure to present it at the end of the clerkship may be the cause for receiving an incomplete grade.

▼Grading:

Clerkship grades will be assigned as Honors, High Pass, Pass, Fail and Incomplete. In addition to the final grade, a narrative describing the student's performance will be forwarded to the office of the Dean of Academic Affairs. All grades and comments are entered into Conet by the Surgery Department.

Grades are calculated as follows:

- Clinical Grade 50%
- Written Exam (SHELF EXAM) 12.5%
- Written Exam (IN HOUSE EXAM) 12.5%
- Oral Exam 25%

The clinical grade will be assigned based upon the following evaluations: Preceptor evaluation Faculty evaluations Chief Resident evaluations PBL module evaluations.

As in all your academic work here, professionalism is one of the criteria by which we evaluate our students. Please refer to the standard professionalism evaluation criteria for a description of the characteristics of particular importance. To the extent possible faculty judge and include comments regarding your professional behavior in your academic record. If you need the link it is: <http://www.uhmc.sunysb.edu/son/academics/Prof-ismPreClin.html>

At the conclusion of the general surgery clerkship, the student will sit for an oral examination. This examination will emphasize clinical problem solving skills and differential diagnosis. The examination will be conducted utilizing standardized questions. In general, the topics for the exam include questions on the following topics:

- (1) trauma/critical care medicine,
- (2) Surgical oncology,
- (3) benign general surgery.

At the conclusion of the surgical clerkship, the student will be required to write a standardized National Board examination. This examination will emphasize mastery of the general fund of knowledge relating to

the practice of surgery. Grading of the examination will be done by standardized national curve. Final clerkship grades are calculated as described above. At the conclusion of the surgical clerkship, the student will be required to write an in house exam which emphasizes a greater depth of knowledge than is examined by a multiple choice test. Most of the questions will be uncued questions taken from a previously validated (at another medical school) bank of questions. This examination will emphasize mastery of the type of knowledge which would be specifically taught during this clerkship. The following standards are applied:

Overall Grade	Clinical Grade	Written Exam average	Oral Exam Grade
HONORS	B+	95%	A-
	A-	85%	A-
	A+	80%	A
	A+	85%	B+
High Pass	A-	75%	A-
	B+	85%	A-
	A-	85%	B
Pass	C+	20%	C-
Low Pass	C-	15%	C-
Fail	D	<20%	
Note well: you must get at least 15%tile to pass this clerkship			

▼**Recommended Texts:**

So that the student may have a clearer insight about what a student should be learning during the surgical clerkship, the student will be provided with:

- The Manual of Surgical Objective, 4th edition, prepared by the Curriculum Committee of the Association for Surgical Education
- A textbook (Way LW (ed): Current Surgical Diagnosis and Treatment, ed 7 Los Altos, CA, Lange Medical Publications)
- A booklet of clinical problems in surgery

In order to master the requisite fund of knowledge relating to surgery and achieve a passing grade on the written examination, it is necessary to read an adequate textbook. ***Review books, pocket manuals, syllabi, and books of "surgical secrets" may be valuable aids to your understanding but are not adequate to master the knowledge necessary to successfully pass this course.***

▼**Additional Notes:**

Statement Regarding AIDS and Seropositive Patients

It is the philosophy of the directors of the surgical clerkship that patients with AIDS are to be cared for in accordance with their desires and without compromise of medical and ethical principles. However, students rotating on a surgical service are at increased risk of infection relating to needle-stick or other injuries during the conduct of an operation due to their lack of experience at the operating table. For this reason, students are excused and actively discouraged from participating in operations involving AIDS patients or patients known to be seropositive for HIV or hepatitis. The student may observe these operations and is otherwise expected to participate in care as he/she would for any other patient. Statement Regarding Winthrop University Hospital All medical students beginning a rotation at Winthrop University Hospital must call the Employee Health Office prior to their start date: Ms Barbara Richardson Employee Health Office 222 Station Plaza North Mineola, NY 11501 516-663-2534

▶ **Grading:**

Overall Grade	Clinical Grade	Written Exam average	Oral Exam Grade
HONORS	B+	95%	A-
	A-	85%	A-
	A+	80%	A
	A+	85%	B+
High Pass	A-	75%	A-
	B+	85%	A-
	A-	85%	B
Pass	C+	20%	C-
Low Pass	C-	15%	C-
Fail	D	<20%	

Note well: you must get at least 15%tile to pass this clerkship

▶ **Recommended Texts:**

▶ **Additional Notes:**