5. Surgery Core Clerkship

Mission and Introduction

To provide a Surgical Curriculum that applies consistently to all clerkship sites in order to include comparable educational experiences and equivalent methods of assessment across all instructional sites and to support a learning environment that fosters professional competence within a culture that prepares students for international medical practice.

To emphasize, review and integrate the student's knowledge of basic scientific information with clinical material to result in favorable educational outcomes in the acquisition of knowledge regarding the etiology, pathophysiology, diagnosis, treatment, and prevention of surgical diseases.

To emphasize to the students the integration of the basic sciences in the development of current clinical knowledge in conjunction with ongoing changes in surgical treatment and technology.

To provide students with the tools for life-long adult learning of surgical diseases for their ongoing professional development.

Guidelines

- Length: eight weeks
- An orientation at the start of the clerkship should be provided by the Clerkship Director. This should include a discussion of the expectations and responsibilities of the clerk, an overview of the department and facilities of the site, the student schedule and assignments to residency teams and preceptors. The curriculum should be provided as a reference within the orientation process. A review of the Goals and Objectives, Clerkship Guidelines and evaluation process should be conducted.
- Site: predominately general surgical wards with inclusion of ICU, OPD and ED experience as well as those subspecialty experiences that are available. Students must attend operations performed on their patients.
    - The eight week rotation should include exposure to the subspecialties of urology, anesthesia and orthopedic surgery as well as others that may be available, including ENT and ophthalmology.
    - Students must take night, weekend, and holiday call with their teams.
    - Attending rounds for house staff and students should be conducted at least three times a week.
    - The clerkship must include a schedule of teaching conferences, both in conjunction with and parallel to the educational opportunities of the residents/registrars, including grand rounds, subspecialty conferences and didactic sessions.

Protected Study Time

There should be direct preceptor supervision of the students at least three hours per week to include case presentations by the students with bedside rounds, when appropriate including physical examination and interactive sessions.

A minimum of five clinical write-ups or formal presentations are required. The exercise should be structured to address the development of Clinical Skills through a defined problem solving approach with data gathering based on:

- clinical history,
- physical examination and
- laboratory, imaging and other ancillary studies in order to develop a rank-order differential diagnosis list and concluding with a primary working diagnosis that will direct treatment and/or further investigation.
- Formative feedback on the exercise must be part of the process.
- Electronic patient logs are to be maintained and up to date at all times.
- Electronic patient logs should be periodically inspected by the Program Director and at Mid-rotation in order to monitor the types of patients or clinical conditions that students encounter and modify them as necessary to ensure that the objectives of the education program are met. The patient logs may also be used by the clinical Dean and the Chair of Surgery in order to monitor the types of patients or clinical conditions that students encounter in order to determine if the objectives of the medical education program are being met.

Educational Objectives

Medical Knowledge

- To apply and reinforce knowledge of the basic sciences, especially anatomy and physiology
- To the understanding, presentation and treatment of diseases that are commonly addressed within the field of surgery.
- To identify how and when evidence - based information and other aspects of practice - based learning and improvement affect the care of the surgical patient and the alternatives in management.
- To develop an understanding of the cost to benefit ratio, the role of payment and financing in the healthcare system, the role of multi-disciplinary care including ancillary services such as home-care and rehabilitation and other aspects of systems-based practice in the implementation of the available technologies used in surgical treatment.
- To develop an understanding of the Core Topics (modules listed below) and to apply the associated surgical knowledge to clinical analysis and problem solving.
- To utilize distributive learning through the use of on-line resources for surgical learning and problem-solving.

Clinical Skills

- To apply the principles of surgical practice, including operative and non-operative management, to common conditions.
- To develop and apply the tools of clinical problem solving for surgical conditions including the process of data collection (history, physical examination and laboratory and imaging studies) in establishing a list of differential diagnoses and a primary working diagnosis for treatment and further investigation.
- To develop interpersonal and communication skills, in conjunction with the broad-range of clinical skill acquisition, by accessing and completing modules 17 (Informed Decision-making) and 35 (Discussing Medical Error) of the Drexel University communications course @ doc.com.
- To identify the importance of and approach to informed consent for surgical operations and procedures, with emphasis on the risks, benefits, and alternatives.
- To identify the importance of interpersonal and communication skills and to apply those skills in the multidisciplinary care of the surgical patient in an environment of mutual respect.
- To demonstrate the ability to conduct proper sterile preparation and technique.

Professional Behavior

- To function as a part of the surgical care team in the inpatient and outpatient setting.
- To demonstrate proper behavior in the procedural setting, including the operating room, at all times.
- To understand the limits of one's position within the surgical care team in order to appropriately engage each patient, their friends and associates and their family.
- To appropriately seek supervision as provided through the hierarchical structure of the surgical care team.
- To identify and respond sensitively to cultural issues that affect surgical decision-making and treatment.
- To develop an understanding of and approach to the principles of professionalism as they apply to surgery through the observation of the role-modeling provided by the surgical faculty.
- Students will be responsible for the review of basic anatomy, pathology and physiology of all surgical problems encountered.
- Students will be responsible for the requirements and recommendations in the Log Book of Manual Skills and Procedures

Study Topics

Evaluations:

In addition to formative feedback given within the daily progress of the 8-week rotation, a defined formative feedback session must be provided by the Program Director (or their designate) at the approximate mid-point of the clerkship.

The patient encounter log should be reviewed at the time of the mid-core session. The mid-core feedback session must be a one-on-one session with each student with completion of the standard form, signed by both the Program Director and the student. Summative evaluation of each student will include the administration of an end-of- core written examination in the form of the National Board of Medical Examiners Subject Examination in Surgery.

In addition to formative feedback given over the course of the 8-week rotation, a defined summative feedback session must be provided by the Program Director (or their designate) at the conclusion of the clerkship.

The final summative feedback evaluation will determine the grade for the clerkship and will be based on five components weighted as follows: 1. Medical Knowledge (20%) 2.

CORE TOPIC GOALS and OBJECTIVES

In addition to general medical knowledge students will be required to demonstrate knowledge in the followed surgical areas that will form the basis for learning within the clerkship.

Module 1: Shock

- Define the types of shock: hypovolemic, distributive (septic, and anaphylactic) neurogenic and cardiogenic.
- Describe the clinical signs of hypovolemic shock and relate them to the underlying patho-physiological process.
- Describe the critical objective measurements used to monitor the patient in shock.

- Describe the initial clinical management and resuscitation of the patient in shock.
- Explain the ATLS teaching of primary and secondary survey in the initial evaluation and treatment of acutely injured patients and define the classes of hemorrhage used in estimating loss of circulating blood volume.
- Describe the initial evaluation, stabilization, resuscitation and management of the patient with blunt and penetrating abdominal and thoracic trauma.
- Describe the initial evaluation, resuscitation and management of the patient with an isolated splenic injury.

Module 3: Head Injuries

- Explain the Glasgow coma score.
- Describe the principles of evaluation and treatment of head injuries including epidural and subdural hematoma.
- Classify burns according to the depth of injury and etiology.
- Estimate the area of burn injury using the rule of nines.
- Describe the resuscitation of the burn patient using the Parkland Formula.
- Outline the basic principles of burn wound care.
- Outline the pathophysiology, clinical presentation and consequences of acute peritonitis, both localized and generalized.
- Describe the diagnosis and treatment of acute appendicitis, acute diverticulitis and acute perforated peptic ulcer.
- Develop a detailed understanding of the diagnosis and treatment of common biliary tract-associated causes of the acute abdomen including acute and chronic cholecystitis, cholangitis and acute pancreatitis.
- Describe the diagnosis and treatment of commonly occurring causes of the acute abdomen in infants and children including pyloric stenosis, intussusception and midgut volvulus.
- Differentiate large and small intestinal obstruction and list common causes of each condition.
- Differentiate intestinal obstruction from a dynamic (also referred to as paralytic) ileus.
- Explain the pathophysiology of fluid and electrolyte disturbances associated with small intestinal obstruction.
- Describe the diagnosis, initial resuscitation and management options in the treatment of intestinal obstruction, including partial small intestinal obstruction, complete small intestinal obstruction, and colonic obstruction.
- List the common etiologies of upper and lower gastrointestinal hemorrhage.
- Describe of the emergency diagnosis (including clinical examination, endoscopy and radiologic imaging), resuscitation and management of acute gastrointestinal hemorrhage.
- List the indications for surgical intervention in upper and lower gastrointestinal hemorrhage.
- Describe the pathophysiology of portal hypertension and the principles of management.
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Module 8: Common Gastrointestinal and Cutaneous Malignancies

- Outline the steps involved in the clinical diagnosis and management of cutaneous malignancies.

- Outline the steps involved in the clinical diagnosis and management of gastrointestinal malignancies.
- Demonstrate an understanding of the relevant anatomy that determines the strategy and extent of resection employed in the surgical management of gastrointestinal malignancies.
- Acquire an overview of the staging and prognosis of the common malignancies noted above.

Module 9: Hernias

- Define hernia and describe the different types of abdominal wall hernias.
- Demonstrate an understanding of the incidence, etiology, and complications, operative risks and rate of recurrence in the management of abdominal wall hernias.
- Outline the fundamental principles in the surgical management of inguinal, umbilical and ab abdominal incisional hernia.
- Define the terms related to abdominal wall hernias: reducible, irreducible, incarcerated, obstructed and strangulated.
- Discuss the evaluation and management of common benign diseases of the breast.
- Describe the risk factor analysis, clinical examination, diagnosis and surgical management (both breast-conserving and breast-sacrificing) of in-situ and invasive malignancy of the breast.
- Describe the rationale for and technical approach to axillary lymph node management, including sentinel lymph node biopsy, in the surgical management of malignancy of the breast. Module 11: Benign Colo-rectal Disorders
- Describe the diagnosis and treatment of common benign ano-rectal conditions including hemorrhoids, fissure-in-ano, fistula-in-ano, perianal abscess and peri-rectal abscess.

Module 12: Peripheral Arterial Disease

- Describe signs and symptoms of acute ruptured abdominal aortic aneurysm and describe the diagnosis, resuscitation and surgical management.
- Describe the pathophysiology and diagnosis, both non-invasive and invasive, and treatment of peripheral arterial occlusive disease.
- Describe the diagnosis and treatment of acute and chronic limb ischemia.
- Describe the signs and symptoms of cerebral transient ischemic attacks and outline the available diagnostic modalities, non-invasive and invasive, used in the evaluation of carotid artery disease.
- Describe the clinical course of mesenteric thromboembolic disease and discuss the approach to diagnosis and treatment.
- Review the venous system of the lower extremity and develop an understanding of the effect of tissue pressure, the significance of the muscle pump and the effect of valvular insufficiency.
- List the principles of management of varicose veins associated with venous insufficiency.
- Explain the pathophysiology of venous stasis ulcers of the extremities and the principles of their treatment.
- Describe the diagnosis and treatment of deep vein thrombosis (DVT), pulmonary embolism (PE) and the post-phlebitic syndrome.
- Develop an understanding of the evaluation of a solitary lung nodule seen on chest imaging.
- List an overview of tumors commonly seen in the chest by location.
- Delineate the principles of surgical management of lung cancer.
- Develop an understanding of the commonly seen benign and malignant esophagea disorders including esophageal malignancy, achalasia and gastro-esophageal reflux disease (GERD).

Module 15: Transplant Surgery

- Develop an understanding of the status of transplant surgery in the USA and worldwide.
- Develop an understanding of the immunological aspects of transplant surgery including commonly used immunosuppressive medications and the side effects of immune-suppressive therapy.
- Define the terms, anatomic and biologic, used in the description of transplant donors and recipients.
- Identify the comparative benefits and risks of laparoscopic surgery in comparison to open surgical procedures.
- Develop an understanding of advanced laparoscopic techniques and robotic surgery.

Module 17: Bariatric Surgery

- Define obesity and morbid obesity based on the body mass index (BMI).
- List the co-morbid conditions associated with morbid obesity.

Module 18: Endocrine Surgery

- Describe the symptoms, signs and management of hyperthyroidism.
- Discuss the evaluation of a thyroid nodule.
- Discuss the differential diagnosis and treatment of the patient with hypercalcemia.
- Discuss the pathophysiology of primary, secondary and tertiary hyperparathyroidism.
- Discuss the diagnosis and management of pheochromocytoma.
- Discuss the features of Multiple Endocrine Neoplasia (MEN) syndromes and their surgical treatment.
- Discuss the diagnosis and treatment of disorders of the pituitary adrenal axis.
- Describe the principles of medical ethics applied to surgery including the concepts of patient advocacy, un-masking of economic influences and the duty to relieve suffering and ease pain with dignity.
- Describe the fundamental elements of the patient-physician relationship.
- Describe the responsibilities of the patient and the physician.
- Discuss those aspects of medical ethics of particular concern to the surgeon:
    1. “Futile” care.
    2. Organ procurement.
    3. Transplantation guidelines.
    4. Withholding or withdrawing care.
    5. HIV testing.
    6. Referral of patients.
    7. Confidentiality.
    8. Fee splitting.
    9. Informed consent.
    10. Substitution of surgeon.
    11. Disputes between medical supervisors and trainees.
    12. New medical and surgical procedures.

Module 20: Surgery in the Elderly

- Describe and explain the effect of the following factors on wound healing and recovery from illness, injury and operative treatment in elderly patients:

1. Nutrition.
2. Metabolic state (including diabetes mellitus).
3. Collagen synthesis and deposition.
4. Pharmacologic manipulation.
5. Physical activity/mobility.
6. Physiologic reserve and frailty.
7. Immune competence

- Develop an understanding of the unique physiology and risk factors seen in the elderly in relation to the management of shock, trauma, head injuries, burns, the acute abdomen intestinal obstruction, common GI malignancies, hernias, surgery of the breast, venous disease, thoracic surgery, transplant surgery, laparoscopic and robotic surgery, bariatric surgery and endocrine surgery.

Communication skills are critical to surgery in that surgical therapy is offered as an alternative to patients with whom a long term professional relationship has not been previously developed. Students will:

- Learn to communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds particularly in regard to the concept of informed consent for surgical procedures.
- Describe the use of certified interpreters and language interpretation services in the process of informed consent for surgical procedures.
- Describe the unique aspects of effective communication with physicians, other health professionals, and health related agencies in association with surgical treatment and follow-up surgical care.
- Learn to work effectively as a member or leader of a health care team in surgery.
- Describe the consultative role of the surgeon to other physicians and health professionals.
- Learn to maintain comprehensive, timely, and legible medical records associated with surgical care.

Reading

REQUIRED

***Print*:**

Essentials of General Surgery *and* Essentials of Surgical Specialties
Lawrence, Williams and Wilkins

RECOMMENDED

Suggested additional print and on-line sources are:

Books:

Code of Medical Ethics Current Opinions with Annotations, AMA press.
Early Diagnosis of the Acute Abdomen
Cope, Oxford University Press
Essentials of Diagnosis and Treatment in Surgery
(Lange Current Essentials Series)
The Ethics of Surgical Practice Cases, Dilemmas and Resolutions, Jones JW, McCullough LB and Richman BW, Oxford University Press.
Lecture Notes: General Surgery
Ellis and Calne, Blackwell

Principles of Surgery
Schwartz, McGraw Hill
The ICU Book
Marino, Williams and Wilkins

Journals:

Journal of the American College of Surgeons
Elsevier

British Journal of Surgery
Wiley-Blackwell

Surgical Organizations:

Student membership in The American College of Surgeons is available through FACS.org, with the support of the Chair of Surgery, and is a well-developed source of educational material for the study of surgery.

WEB BASED EDUCATIONAL ASSIGNMENTS FOR INDEPENDENT LEARNING

The school requires the successful completion of web-based assignments in order to receive credit for this clerkship. Students should log into their portal to see these assignments. The Clinical Science department monitors student performance on these assignments. The clinical faculty feels these assignments are excellent preparation for the NBME clinical subject exams as well as Step 2.