

Overall Departmental Objectives

The primary goal of the surgical clerkship is to introduce and involve the student to the principles of care for the surgical patient through the observation of the evolution and resolution of surgical disease processes.

1. Curricular
 1. To provide an equivalent clinical clerkship experience at all clerkship sites
 2. To have specialty teaching part of the departmental umbrella
 3. To acquaint students with specialties of possible future career interest
 4. To maintain an up to date surgical education program consistent with other medical schools

2. Clinical Clerkship
 1. Knowledge acquisition in “surgical medicine” by learning the natural history of diseases of importance to surgical disciplines and their treatment
 2. Knowledge of the physiologic and pathologic changes in the structure and function of diseased organs
 3. Demonstrate the ability to perform a comprehensive history and physical examination, develop a working differential diagnosis and formulate an appropriate management strategy
 4. Develop knowledge of the indications, limitations and the ability to interpret commonly used clinical laboratory and imaging tests
 5. Develop deductive skills in solving clinical problems
 6. Develop skills for commonly used surgical techniques including venapuncture, IV cauterization, arterial puncture, nasogastric intubation, urinary catheterization, sigmoidoscopy, wound care and suturing, thoracentesis and paracentesis, and limb immobilization techniques and cast application and use of hand held Doppler
 7. Develop knowledge about pain relief and amelioration of suffering.

3. Functional Skills
 1. Develop an understanding of the basics of admission and post-op orders.
 2. Understand the function and construction of progress notes
 3. Learn organizational skills for patient presentations
 4. Develop the ability to communicate effectively and create inter-personal relationships with patients, families and other personnel involved in the care of the patient. Learn how to transmit “bad” news effectively and compassionately.
 5. Develop an understanding of cost effectiveness pertaining to surgical care.
 6. Develop an understanding of informed consent and medical malpractice issues and guidance.

4. Scholarship
 1. Learn techniques for the retrieval of information from the literature

CLERKSHIP EDUCATIONAL OBJECTIVES

The educational objectives of the surgical clerkship have been constructed to establish a basic framework to insure an academic experience which is contemporary to other U.S. medical schools. In addition, the objectives have been developed recognizing that the USU model involves multiple clinical sites, often remote from daily senior faculty involvement. To this point, the template of objectives has been created to provide a comprehensive framework to insure an acceptable degree of equivalency in clinical exposure and teaching at each of the Department's affiliated sites. These are general points that relate specifically to the academic educational role that the Department has as a unit of the University. This document will outline the general clinical approach the affiliated sites will provide to accomplish the knowledge based, functional and scholarly skills required.

Clinical Clerkship Structure Template

1. All students will be treated with respect and offer respect to those that they are working with.
2. Students will be recognized as "student doctors" and assigned tasks and responsibilities appropriate to this position.
3. Students will work closely with resident staffs that have been briefed as to the student's role and the resident's responsibility in teaching and furthering the education of the assigned students.
4. Students will be made aware of their responsibilities to the "treating team" including hands-on tasks, routine ward work, literature data gathering, operating room duties and on-call responsibilities.
5. Staff physicians will take an active role in the student's clinical experience and be appropriately available to further the educational process with didactic discussion and patient exposure.
6. On-site clinical coordinators will be readily available to students to further the learning process. In addition, these coordinators will monitor the student's progress during all phases of the rotation and offer help and direction when appropriate. Coordinators will formally meet with each student at the mid point of the clerkship; formulate an evaluation of the student to that point and forward that evaluation to the Department at USU.
7. Students will be expected to develop history and physical skills relative to specific patient presentations in those areas of Surgery that they are working.
8. Students will be actively incorporated in the rounding process to include patient evaluation, wound care and data development and processing.
9. Students will be introduced into the operating room environment and be expected to attend in a timely and helpful manner. Students are expected to arrive at the theatre having read appropriately the technical and didactic information relative to the patient. They will carry out assigned tasks. When deemed appropriate by the staff, students should be allowed to perform certain surgical maneuvers, under supervision, consistent with their level of performance.
10. Various invasive and non-invasive technical maneuvers, commonly performed on the various surgical services specific to different specialties, should be taught to all students during the rotations. Students should perform those procedures, under supervision, when appropriate.
11. Students should be taught patient interactive skills involving discussion techniques, listening techniques and good and bad information transmission.
12. Students should be taught the nuances of pain recognition and relief.
13. Students should become aware of the "business" of medicine such as informed consent, cost effective care, malpractice issues and moral and ethical issues.
14. The core lecture series (*attachment 3*) should be adhered to at all institutions. Supplemental lectures are always welcome. If a lecture is cancelled, that session should be rescheduled promptly. Students are required to attend all lectures whether on General Surgery or a specialty.
15. A weekly preceptor session will be held for all students on General Surgery. Students are required to attend.
16. Students should be taught data retrieval from the literature, internet and texts.
17. Students should be encouraged to freely discuss concerns and methods to improve the clinical clerkships with the on-site coordinator, clinical staff and USU Surgical faculty.

GENERAL SURGERY

Objectives

1. Know the anatomy as it relates to a particular surgical problem
2. Become familiar with the acute presentation of common surgical emergencies:
 - a. Acute abdomen
 - b. Appendicitis
 - c. Incarcerated hernia
 - d. Acute cholecystitis
 - e. Bowel obstruction
 - f. Hollow viscus perforation
 - g. Acute arterial occlusion
 - h. Ruptured aneurysm
3. Understand major trauma triage principles
4. Develop knowledge of the acute treatment of major trauma including:
 - a. Hemorrhage
 - b. Pneumothorax
 - c. Head injury
 - d. Blunt and penetrating abdominal injuries
5. Learn tenants of critical care medicine (ICU) to include:
 - a. Endotracheal intubation and respirator use
 - b. Cardiopulmonary resuscitative techniques
 - c. Monitoring use
 - d. Placement and understanding of CVP, Swan Ganz and arterial lines
6. Develop history and physical exam techniques to create differential diagnoses, diagnostic evaluation plans and treatment plans for the common surgical problems seen in the clinic setting
7. Develop a basic knowledge through reading, observation, diagnostic evaluation, operative observation and post operative care of the clinical problems encountered during time on the General Surgical service.
8. Self-broaden your overall knowledge base to include study (primarily by reading) in those organ system disease processes not encountered on your service. These are categorized in the table of contents of all General Surgery texts.
9. Develop skills in:
 - a. Patient presentation
 - b. Rounds preparation
 - b. Group discussion presentation
 - c. Knowledge of operative procedures

Skills Development

1. Develop dissection and suturing techniques
2. Develop blood drawing and line placement techniques
3. Learn appropriate order writing
4. Develop skills in catheter, NG tube and chest tube placement
5. Learn wound care, debridement and dressing techniques
6. Develop skills at radiological interpretation of common surgical problems
7. Learn to recognize and apply acute treatment to post operative complications
8. Learn acute resuscitative techniques

CARDIOTHORACIC SURGERY

Cardiac Component

Objectives

1. Develop knowledge of coronary artery and cardiac valvular disease.
2. Develop skills in history and physical examination relative to heart problems.
3. Learn to interpret basic major EKG changes.
4. Understand basic major ultrasonographic and angiographic data relative to cardiac dysfunction.
5. Develop an understanding of the mechanics of cardiopulmonary bypass.
6. Develop an understanding of the technical aspects of:
 - a. Saphenous vein harvest.
 - b. Median sternotomy
 - c. Coronary artery bypass
 - d. Valvular replacement.
7. Develop an understanding of post cardiac surgical complications including:
 - a. Bleeding management
 - b. Airway and chest tube management
 - c. Recognition of major peripheral complications
 - d. Performance of acute cardiopulmonary resuscitation

Skills Development

1. Chest tube placement
2. Central line placement
3. Endotracheal intubation
4. Operating room assisting
5. Operating room wound closure

Thoracic Component

Objectives

1. Understand the anatomy of the chest and it's contents.
2. Understand the physiology of pulmonary function and it's testing
3. Develop skills in history and physical examination for chest diseases and trauma
4. Learn to recognize major abnormalities on chest X-Ray and CT.
5. Become familiar with the pathology, recognize and learn to treat:
 - a. Acute post-op atelectasis
 - b. Pneumonia
 - c. Pneumothorax
 - d. Hemothorax
 - e. Pericardial effusion
6. Understand the evaluation and treatment of:
 - a. Lung mass
 - b. Sucking chest wound
 - c. Chest missile injury
 - d. Esophageal tumor

Skills Development

1. Learn chest tube placement and management
2. Become familiar with bronchoscopy techniques and findings

3. Develop operating room assistant techniques
4. Assist in operating room wound closure

NEUROLOGICAL SURGERY

Objectives

1. Understand the anatomy and Pathophysiology of patients with neurological diseases
2. Demonstrate skill in performing a neurological history and physical to include:
 - a. Mental status
 - b. Motor, sensory and cranial nerve testing
 - c. Determination of central or peripheral disease processes
3. Learn to recognize major abnormalities on spine and skull X-Rays, CT and MRI
4. Develop an understanding of the pathology and treatment of common neurological problems including:
 - a. Tumors of the neurological system
 - b. Degenerative diseases
 - c. Peripheral nerve trauma problems
5. Recognize head trauma syndromes and understand surgical treatment

Skills Development

1. Airway management in neuro-trauma
2. Immobilization techniques in neuro-trauma

ORTHOPEDIC SURGERY

Objectives

1. Achieve an understanding of bone and tendon anatomy
2. Learn to recognize and immobilize common peripheral fractures
3. Develop a knowledge and treatment response to post casting complications
4. Develop a knowledge of fracture healing physiology
5. Learn to broadly assess the skeletal system in multiple trauma cases
6. Learn the major points of skeletal testing in multiple trauma cases
7. Understand and recognize lower extremity compartment syndromes
8. Learn types and acute care of various acute spinal injuries
9. Recognize major components of skeletal and tendonous hand injuries

Skills Development

1. Develop an ability to read and assess skeletal radiology
2. Learn closed reduction and immobilization techniques of common fractures
3. Learn cast application and management
4. Develop an understanding of immobilization of various skeletal anatomic regions

OTOLARYNGOLOGY

Objectives

1. Develop an understanding of nasal, sinus and ear anatomy
2. Develop a knowledge of common ENT diseases
3. Learn to assess facial trauma
4. Be able to recognize and understand the management of foreign bodies in the ear, nose, trachea and esophagus
5. Understand airway management and indications for a surgical airway

Skills Development

1. Learn otoscopic evaluation of the ear
2. Learn mirror laryngoscopy
3. Learn technique of cricothyroidotomy
4. Understand the method of tracheotomy
5. Observe bronchoscopy and esophagoscopy

PLASTIC AND RECONSTRUCTIVE SURGERY

Objectives

1. To understand wound physiology and healing
2. To learn wound care and appropriate use of topical agents and antibiotics
3. To learn basic wound and laceration closure principles
4. To understand types and usage of different skin grafts and skin flaps
5. To learn to evaluate and provide immediate care in acute facial trauma
6. To learn to evaluate and provide immediate care in acute hand trauma

Skills Development

1. Develop skills in various suture techniques and laceration closures
2. Learn to distinguish skin lesions and develop skills with excision techniques
3. Develop skills in wound debridement

TRANSPLANTATION

Objectives

1. Develop an understanding of chronic renal failure and end stage liver disease and the associated early and late complications
2. Develop an understanding of peritoneal dialysis and hemodialysis
3. Develop a knowledge of cirrhosis, hepatitis C and glomerulosclerosis
4. Develop an understanding of immunosuppression, immunotherapy and the associated complications
5. Develop an awareness of organ rejection
6. Learn fluid and electrolyte balance
7. Participate in one multi-organ procurement
8. Participate in at least one kidney transplantation
9. Attend tumor board and M/M conferences with the service
10. Understand tissue typing and ESRD treatment

Skills Development

1. Learn types and techniques of various dialysis access procedures
2. Understand changes and variations of pertinent laboratory data

VASCULAR SURGERY

Objectives

1. Develop a knowledge of vascular anatomy
2. Develop an understanding of flow dynamics
3. Develop skill in the performance of the vascular exam
4. Develop an understanding of the primary pathology of:
 - a. Atherosclerosis
 - b. Carotid stenosis
 - c. Aortic aneurysm and occlusive disease
 - d. Peripheral aneurysms
 - e. Peripheral occlusive disease
 - f. Chronic venous insufficiency
 - g. Acute thrombophlebitis
5. Develop an understand of the use, parameters and techniques of vascular testing
6. Understand the techniques of various vascular bypasses
7. Demonstrate the ability to recognize acute vascular emergencies and complications

Skills Development

1. Develop skill in recognizing abnormalities on the vascular exam
2. Develop skill in selecting, using and monitoring anticoagulation
3. Learn arterial and venous puncture techniques at various sites
4. Develop skills at vascular radiology
5. Learn recognition of clinical differences between arterial and venous disease
6. Learn treatment techniques foe arterial and venous ulcers

UROLOGY

Objectives

2. Become familiar with the pathophysiology, signs and symptoms and treatment of:
 - a. Urinary tract infection
 - b. Benign and malignant prostatic disease
 - c. Urinary tract calculi
 - d. Renal and bladder tumors
 - e. Recognition of GU anomalies
3. Understand appropriate sequential diagnostic testing for GU problems
4. Develop management skills for GU problems including:
 - a. Acute urinary retention
 - b. Acute stone symptoms
 - c. Acute testicular problems
5. Develop familiarity with postoperative complications

Skills Development

1. Learn male and female catheter placement
2. Develop skill in examining the prostate gland
3. Develop an understanding of urologic radiology

OPHTHALMOLOGY

Objectives

1. Develop skill in performing an eye exam
2. Develop an understanding of the essential optics physics
3. Develop an understanding of the refraction process
4. Develop an understanding of the common ocular diseases
5. Develop a knowledge of the treatment of ocular infections

Skills Development

1. Learn to remove foreign bodies from the eye
2. Learn to apply first aid for eye trauma

OBJECTIVES OF GENERAL SURGERY BASIC CORE LECTURE SERIES

GENERAL SURGERY:

1. Acute Abdomen
 - a. Describe examination and physical findings
 - b. Define types of abdominal pain i.e.colic
 - c. Discuss nonsurgical causes of abdominal pain
 - d. Discuss common causes of surgical pain in abdomen
 - i. Diverticulitis
 - ii. Appendicitis
 - iii. Cholecystitis
 - iv. Bowel obstruction
2. Basics of Trauma and Critical Care
 - a. Discuss physiology of hypotension, blood loss
 - b. Discuss various strategies for stopping hemorrhage
 - c. Talk about pros and cons of scoop and run vs. stay and play
 - i. Emergency evacuation systems in the military
 - ii. Aerovac systems
 - d. Define fluid requirements in sickness and disease
 - i. Discuss various IV fluids, compositions, electrolyte balance
 - ii. Talk about IV access, techniques of various IV lines
 - iii. Mention blood, blood products, newer options
 - e. Discuss antibiotic prophylaxis, treatment of sepsis
 - f. Discuss various strategies for wound care, closure
 - g. Review damage control surgery
3. Burns
 - a. Define first, second, third-degree burns
 - b. Discuss Rule of Nines
 - c. Discuss fluid replacement formulae
 - d. Review burn wound care and various topical agents with their pros, cons
 - e. Review surgical care including debridement and escharotomy
 - f. Discuss pulmonary burn care
 - g. Discuss long-term care, rehabilitation
4. Shock
 - a. Define shock
 - b. Discuss the various types of shock
 - c. Discuss diagnosis and prevention of shock
 - d. Discuss the consequences of shock (renal failure, etc.)
 - e. Review about in-the-field strategies to treat shock, including positioning, hemorrhage control including direct pressure, hemostatic dressings and pelvic and long bone stabilization.
 - f. Discuss fluid and electrolyte balance, IV fluid therapy for shock
5. Fluids, Electrolytes, and Nutrition
 - a. Review the basic physiology of circulation
 - b. Discuss electrolyte composition in various sicknesses and diseases
 - c. Discuss the cause and physiology of hypokalemic, hypochloremic, metabolic alkalosis
 - d. Discuss pros and cons of enteral vs. parenteral hyperalimentation
 - e. Describe delivery systems of nutrition including complications of each sort of system available-costs, patient comfort, risks
6. Hernia
 - a. Define the various common hernias treated by General Surgery
 - b. Review the proper examination techniques when looking for a hernia
 - c. Discuss pros and cons of mesh repairs, plug repairs, tissue repairs, open vs. laparoscopic repairs
 - d. Discuss various anesthesia techniques for hernia repairs
7. Appendix and Small Bowel Diseases
 - a. Discuss the cause(s) of appendicitis
 - b. Discuss the nature of appendicitis pain, and explain the anatomic basis for the pain

- c. Talk about McBurney's Point, the McBurney Incision, and discuss open versus laproscopic treatment of appendicitis
 - d. Discuss the causes, symptoms and treatment of small bowel obstruction
 - e. Discuss Meckel's Diverticulitis, and mention small bowel tumors, intussusception, malrotation, volvulus.
8. Colon, Ano-rectal, and Bowel Obstruction
- a. Explain colorectal physiology, the anorectal inhibitory reflex, the importance of the puborectalis muscle and the anorectal angle
 - b. Discuss perianal, perirectal infection, how fistulas form and spread, Goodsall's Law, and hemorrhoidal disease
 - c. Discuss Crohn's Disease, ulcerative colitis, and their differences
 - d. Explain the various types of colorectal polyps, the polyp-cancer sequence, and the operations for colorectal cancer
 - e. List the various causes of colonic obstruction, and discuss the Law of LaPlace, cecal perforation, the role of colostomy and ileostomy
9. Breast
- a. Review normal breast anatomy, including lymphatic drainage
 - b. Discuss fibroadenoma, nipple discharge, benign disease
 - c. Discuss carcinoma-in-situ and invasive carcinoma
 - d. Review mammograms and other diagnostic techniques i.e. ultrasound
 - e. Discuss various surgical strategies for breast cancer, including sentinel node biopsy, lumpectomy, radical mastectomy
 - f. Mention complications of surgery, including lymphedema
 - g. Review breast reconstruction
10. Benign and Malignant Esophageal Disease
- a. Discuss esophageal perforation, its prevention and treatment
 - b. Review the LES, and discuss gastro-esophageal reflux disease
 - c. Discuss the Nissen operation, with its pros, cons, possible difficulties
 - d. Discuss Barrett's esophagitis, surveillance endoscopy, resection
 - e. Discuss cancer of the esophagus, and the various operations which are possible to treat that disease
11. Peptic Ulcer Disease and Gastric Cancer
- a. Review the history of PUD, including the "no acid-no ulcer" theories of the past, the advent of H2 blockers, and the discovery of H. Pylori.
 - b. Review the operations for PUD, including truncal vagotomy, superselective vagotomy, the various pyloroplasties, the BI and BII operations
 - c. Discuss strategies for stopping GI hemorrhage, including endoscopic techniques
 - d. Discuss Mallory-Weiss tears, Dieulafoy Ulcers, other causes of bleeding
 - e. Discuss the treatment of perforated gastric or duodenal ulcer disease
 - f. Briefly mention the various surgical approaches to gastric cancer
12. Bariatric Surgery
- a. Define the problem; discuss the incidence of obesity in America, the costs involved in treating obesity-related disease
 - b. Mention the history of bariatric surgery, including small bowel bypass surgery, vertical banded gastroplasty, the various Roux en Y operations
 - c. Discuss the morbidity of open vs. laparoscopic surgery, the various techniques available, etc.
 - d. Discuss the physiology, management and care of the morbidly obese patients, and some of the complications of these operations
13. Hepatobiliary Diseases
- a. Discuss the composition of normal and abnormal bile
 - b. Mention the race-related incidence of gallstones and stone composition
 - c. Discuss laparoscopic vs. open cholecystectomy, mentioning injury to common duct, other possible complications
 - d. Mention cirrhosis, portal hypertension, and the various porto-caval shunt operations, with their attendant morbidity/mortality; discuss Child's criteria
14. Pancreas
- a. Review the anatomy and physiology of the pancreas
 - b. Discuss main causes of pancreatitis and their treatments
 - c. Discuss Ranson's criteria

- d. Mention formation of pseudocysts, and their treatment
 - e. Discuss chronic pancreatitis, and its possible complications and treatment
 - f. Discuss the rare operations for pancreatitis
 - g. Discuss cancer of the pancreas, the Whipple resection, pros and cons of surgery
15. Thyroid and Parathyroid
- a. Review anatomy and physiology, including the recurrent and superior laryngeal nerves
 - b. Discuss management of the cold thyroid nodule
 - c. Emphasize the role of past irradiation in the etiology of thyroid cancer
 - d. Discuss the common forms of thyroid cancer and their treatment(s)
 - e. Discuss anaplastic thyroid cancer
 - f. Discuss hypocalcemia and its detection and treatment
 - g. Mention parathyroidectomy, the various methods of doing the operation, the MEN syndromes
16. Melanoma and Skin Cancer
- a. Mention the demographics of melanoma, the role of exposure to sun, the high incidence in Australia
 - b. Discuss the diagnosis of melanoma, describing the main types, how they present
 - c. Discuss the tumor staging systems we use, Clarks vs. Breslow, the pros and cons of each
 - d. Discuss the sentinel lymph node technique, its advantages
 - e. Discuss margins, skin grafts, other surgical methods like primary excision

OBJECTIVES OF SPECIALTY SURGERY BASIC CORE LECTURE SERIES

1. Pediatric Surgery . . . Introduction and approach to the child and parent
 - a Discuss indirect hernia formation and repair
 - b Discuss current thinking about repair of pyloric stenosis, umbilical hernia, omphalocele, gastroschisis
 - c Explain IV fluid therapy, difficulties with anesthesia, hypothermia and its prevention
 - d Discuss diaphragmatic hernias, and their repairs
 - e Mention malrotation, volvulus, and prevention of small bowel necrosis
 - f Discuss intussusception, its diagnosis and treatment
2. Transplant Surgery . . . Introduction
 - a Briefly talk about the history of transplantation, the importance of anti-rejection drugs, and the contribution of surgical pioneers like Dr. Carrel, Dr. Barnard, Dr. Murray, Dr. Starzl.
 - b Mention the present status of kidney, liver, heart, lung, bowel, pancreas, face, and arm transplantation.
 - c Discuss the pros and cons of kidney transplant vs. chronic dialysis
 - d Discuss pros and cons of living-related donors, vs. living non-related donors, vs. cadaveric donors
 - e Describe the role of laparoscopy in harvesting kidneys for transplant
3. Vascular Surgery . . . Cerebrovascular and Aneurysm Disease
 - a Discuss the pathophysiology of atherosclerosis, the formation of plaque, and the formation of aneurysms, including the role of hypertension, genetics, race, gender
 - b Describe TIA's, amaurosis fugax, the significance of carotid bruits and their work-up, duplex scanning, the pros and cons of angiography
 - c Talk about the techniques of carotid endarterectomy, the risks, the benefits vs. angioplasty and stenting
 - d Discuss abdominal aortic aneurysms, their formation, their monitoring, indications for repair
 - e Discuss aspects of open and endovascular surgery for infrarenal abdominal aortic aneurysm
 - f Discuss complications of aneurysm repair
4. Vascular Surgery . . . Peripheral Arterial Occlusive Disease
 - a Discuss claudication, rest pain and tissue loss
 - b Review the work-up of a symptomatic patient, including physical exam, ABI Doppler pressures and invasive testing
 - c Discuss the vascular significance of impotence and the LaRiche Syndrome
 - d Talk about the various operations available for PVD, including aorto-bifemoral bypass, fem-pop bypass, fem-distal bypass, ax-fem bypass
 - e Mention graft materials, their pros and cons i.e. vein vs. synthetic
 - f Discuss the complications associated with vascular reconstruction i.e. infection, thrombosis and review treatment
 - g Mention the various amputations for ischemic disease
 - h Briefly discuss the diabetic foot
5. Vascular Surgery . . . Venous Disease
 - a Review the anatomy of the venous system, including the importance of valves, the high-pressure deep system, the lower pressure superficial system, incompetent valves and the formation of varicosities, venous ulcers
 - b Discuss deep vein thrombosis: causes and treatment
 - c Discuss venous insufficiency, venous ulcers and varicose veins including operative and non-operative therapy
6. Thoracic Surgery . . . Tumors of the Lung and Mediastinum
 - a Discuss the etiology of lung cancer, and its increasing incidence among women
 - b Describe the diagnostic work-up of a pulmonary nodule
 - c Discuss the standard operations for common bronchogenic tumors
 - d Discuss benign lung conditions including bleb disease
 - e Review the need for and technique for the insertion and management of chest tubes
 - f Discuss the common tumors of the mediastinum, including to location, and their treatment

7. Thoracic Surgery . . . Introduction to Cardiac Surgery
 - a. Mention the history of cardiac surgery, the importance of cardiopulmonary bypass, the pioneers who developed the specialty, and some of the milestones achieved along the way in the past 100 years
 - b. Discuss the indications for the various valve replacement operations
 - c. Discuss coronary artery bypass grafting
 - d. Mention the role of robotic surgery, thoracoscopic approaches, minimally-invasive surgery
 - e. Discuss briefly the insertion and care of pacemakers and automatic defibrillators
8. Plastic Surgery . . . Wound Healing
 - a. Discuss the phases of wound healing, the role of Vitamin C, fibrin, inflammation, collagen, and the concept of contraction, scarring, remodeling
 - b. Mention ways that we can influence wound healing, including the use of pressure devices to decrease hypertrophic scarring
 - c. Discuss keloid, its cause, treatment, and prevention
 - d. Discuss Ehlers-Danlos Syndrome
 - e. Mention routine care of wounds, the importance of leaving battlefield wounds open, the concept of delayed primary closure of wounds, the proper application of dressings, the use (or not) of topical ointments and agents
9. Plastic Surgery . . . Hand Trauma
 - a. Discuss common injuries to the hand, including scaphoid fracture, and its diagnosis and treatment
 - b. Discuss tendon repair, the concept of “no man’s land”, rehabilitation after tendon repair
 - c. Mention proper splinting, dressing of typical hand wounds
 - d. Discuss the spread of infection via the synovial sheaths, and the proper and aggressive treatment of infection of the hand; also mention the consequences of a neglected hand infection
 - e. Discuss common ER emergencies, such as subungual hematoma, felon, common lacerations
 - f. Mention the proper exam of the injured hand, including the neurological exam, checking for ruptured tendon(s), the Allen test
10. ENT . . . Facial Trauma
 - a. Discuss common scenarios involving the face, including fractures of the nose, the zygoma, lacerations of the ear, etc.
 - b. Explain the diagnosis and proper treatment of a blow-out fracture
 - c. Mention the facial nerve, with its various branches, and the importance of documenting deficits, and doing no further harm while probing wounds, stopping bleeding, etc. Mention the marginal mandibular branch, its course, its importance
 - d. Discuss common strategies for dealing with nosebleed
 - e. Discuss repair of lip lacerations, the importance of the vermilion border
 - f. Emphasize the importance of surgical airway in major facial trauma
11. ENT . . . Head and Neck Tumors
 - a. Discuss the common tumors of head and neck, including benign masses, such as thyroglossal duct cysts, ranula, branchial cleft cysts, cystic hygroma, and cancers, including thyroid malignancies, invasive squamous cell cancers, cancers of tongue, tonsil, larynx, etc.
 - b. Discuss typical surgeries for benign conditions, such as excision of a neck sebaceous cyst
 - c. Discuss typical radical surgery for cancer, including radical neck dissection
 - d. Discuss rehabilitation of neck surgery patients, including artificial larynx, learning to swallow, etc.
 - e. Discuss the diagnosis and treatment of hypocalcemia
12. Ophthalmology . . . Acute Eye Injuries
 - a. Discuss common scenarios which are seen in a typical emergency room
 - b. Discuss the proper history, physical exam, documentation of deficits, the importance of visual fields and acuity and their documentation
 - c. Discuss the diagnosis and treatment of hyphema
 - d. Discuss proper technique for everting lids, looking for foreign bodies, using the Woods’ Lamp with fluorescein dye, etc.
 - e. Discuss the proper technique for patching the eye, the use of antibiotic ointments, proper follow-up
13. Neurosurgery . . . Head Injury Assessment
 - a. Discuss common scenarios which are seen in typical emergency rooms

- b. Mention the anatomy of arteries to the brain, especially the middle meningeal artery, and the possibility of epidural hematoma (discuss how a patient might present, the importance of rapid drainage, etc.)
 - c. Discuss the typical formation of subdural hematoma, its presentation, its treatment
 - d. Mention the use of steroids, diuretics, other drugs or procedures (like pressure monitoring) in treating brain injury
 - e. Discuss the Glasgow Coma Scale, its use, and some examples to test the students and the need to support ABC's to minimize secondary brain injury.
14. Neurosurgery . . . Acute Spinal and Peripheral Nerve Injuries
- a. Mention the anatomy of the peripheral nervous system
 - b. Define spinal shock, neurogenic shock
 - c. Discuss the use of steroids, other drugs or devices in treatment of the acute spine injury
 - d. Discuss immobilization, transportation of the acute patient
 - e. Mention importance of immediate evaluation of the injured, with careful documentation of deficits
 - f. Discuss surgical intervention, methods of stabilizing the unstable spine, approaches
15. Urology . . . Prostate Diseases
- a. Review the anatomy of the prostate, its lymphatic drainage, and the various surgical approaches to it
 - b. Discuss benign prostatic hypertrophy, its signs and symptoms, and its treatment
 - c. Discuss the role of PSA testing, the importance of early detection of prostate cancer, and whether early treatment is beneficial in these patients
 - d. Discuss the various operations and other therapies for prostatic cancer
 - e. Discuss the various hormonal manipulations, castration, etc., for metastatic disease
16. Urology . . . GU Trauma and Stone Disease
- a. Discuss the common causes of GU trauma, including blunt and penetrating trauma to the kidney and bladder, and the various treatments
 - b. Discuss the cut or injured ureter, its diagnosis and repair; discuss prevention of this injury during surgery
 - c. Review ATLS teaching about the importance of making the diagnosis of urethral trauma, how the patient presents, how passing a Foley catheter can be harmful
 - d. Discuss the pathophysiology of stone disease, the importance of calcium metabolism, uric acid metabolism, parathyroid disease
 - e. Discuss the various options available to treat stones, including lithotripsy, basketing, endoscopic techniques, ultrasound ablation, open surgery
17. Orthopedics . . . Common Traumatic Extremity Problems
- a. Discuss common scenarios and fractures seen in the ER
 - b. Mention how each injury can be caused, the mechanism, the pitfalls
 - c. Discuss the physical findings of each injury, including how to check for pulses, how to rule out compartment syndromes,
 - d. Discuss the proper work-up, including the most useful X-ray films to order
 - e. Discuss proper immobilization, casting, and splinting
 - f. Discuss pain control, instructions to patients, follow-up
18. Orthopedics . . . Bone Tumors
- a. Discuss the most common tumors, how they present, how they are worked up and followed
 - b. Discuss the role that surgery can play in treating these tumors, including strategies for replacing bone, saving limbs, avoiding amputations
 - c. Discuss newer radiation and chemotherapy techniques and limb salvage
 - d. Discuss radical extirpative surgery, its indication, its costs