

Orthopedic Surgery

Office for Clinical Affairs
(515) 271-1629
FAX (515) 271-1727

General Description

Elective Rotation

This elective rotation in Orthopedic Surgery is a four (4) week experience in the management of injury and illness of the musculoskeletal system. The student may be required to travel to the clinic, outpatient surgery center and/or hospital facility during his/her rotation time. Many students electing this rotation will be in their third or fourth year of osteopathic medical school. A post-rotation examination is not required.

Recommended Textbooks

Lawrence, Peter F. **Essentials of Surgical Specialties**, 3rd Ed. Lippincott, Williams and Wilkins, 2007.
- Chapter 6: Orthopedic Surgery: Diseases of the Musculoskeletal System, pp 231-284.

Skinner, Harry B., **Current Diagnosis and Treatment Orthopedics, 4e**, Lange Series, The McGraw-Hill Companies, 2006. (Available electronically on *Access Medicine* through DMU Library portal.)

Other Suggested Textbooks

Brunicaudi FC, et al. **Schwartz's Principles of Surgery**, 9th Ed. The McGraw-Hill Companies, 2010.

- Chapter 43: Orthopedic Surgery (Available electronically on *Access Surgery* through DMU Library portal.)

Doherty, Gerard M (ed.), **Current Diagnosis and Treatment: Surgery**, 13e. The McGraw-Hill Companies, 2010.

- Chapter 40: Orthopedic Surgery (Available electronically on *Access Surgery* through DMU Library portal.)

Feliciano DV., Mattox KL, and Moore EE. **Trauma**, 6e. The McGraw-Hill Companies, 2008.

- Chapter 24: Injury to the Vertebrae and Spinal Cord
- Chapter 38: Pelvic Fractures
- Chapter 43: Lower Extremity

(Available electronically on *Access Surgery* through DMU Library portal.)

McMahon, Patrick J., **Current Medical Diagnosis and Treatment**. 2007, Lange Series, The McGraw-Hill Companies,

- Chapter e5: Sports Medicine & Outpatient Orthopedics (Available electronically on *Access Medicine* through DMU Library portal.)

Pre- request for Elective

Basic textbook knowledge and skills lab experience with basic suturing and aseptic techniques.

Basic textbook knowledge and skills lab experience with local anesthetics and patient resuscitation.

Basic textbook knowledge of the anatomy, physiology, biochemistry, and pathology of the musculoskeletal system.

Basic textbook knowledge of and understands principles of bone and soft tissue repair.

Student Responsibility

It is required that the student meet with their preceptor at the beginning of the rotation to discuss the learning objectives outlined in this document. Students should also seek and receive preceptor feedback midway through the rotation.

Because of the short duration of this rotation, students must be professionally assertive, attentive, and well prepared.

These characteristics are imperative for the student to get the most out of this rotation. Student must develop a trusting relationship with the attending before asking to attempt skills on a patient.

Purpose

The overall goal of this rotation is to provide the student with a basic understanding of the pre and post –operative evaluation of the emergent and elective surgery cases, basic knowledge of surgical decision making, proper wound and musculoskeletal management.

At the completion of this rotation, the student should have reinforced certain broad goals, including:

- The ability to obtain and report a basic orthopaedic patient history for common orthopaedic conditions and injuries.
- The ability to perform and report a basic orthopaedic physical examination of the spine, shoulder, elbow, wrist and hand, pelvis and hip, knee, foot and ankle.
- Demonstrate and understanding of the basic science, physiology, pathophysiology, pathology, and natural history of common orthopaedic conditions and injuries.
- The ability to develop a working differential diagnosis for common orthopaedic conditions and injuries and to demonstrate an understanding of the appropriate timing and use of common diagnostic testing modalities to assist with determining a definitive diagnosis.
- Knowledge of appropriate available treatment alternatives, including both non-operative and operative for common orthopaedic conditions and injuries. Students should be able to discuss the relative merits and limitations of each type of treatment as well as any potential side effects or complications of the treatment.
- Knowledge of possible preventative measures to avoid common orthopaedic conditions and injuries.

Students are expected to assist in the management of preoperative, perioperative and postoperative patient care under supervision. The student should also develop fundamental psychosocial skills by observing physician-patient interactions during this rotation.

We recognize that four weeks is an insufficient amount of time to cover a comprehensive list of objectives in any area of practice. Clearly, subjects addressed in any clinical rotation are dependent on the numbers of patients and kinds of disease entities presenting to a particular service. Nevertheless, certain minimum content **must** be addressed, either by clinical exposure or by didactic materials so that students are prepared for Board examinations and other testing. Broad goals listed above are a minimum; objectives for rotations not specifically listed in these guidelines should include the Affective Objectives listed below. The College depends on the supervising physician to establish more specific objectives dealing with the scope of the particular specialty. Therefore, the following sections contain relatively broad, basic objectives for which students are responsible.

Competencies

Osteopathic Philosophy and Osteopathic Manipulative Medicine

OBJECTIVES: Osteopathic Philosophy and Osteopathic Manipulative Medicine

1. Demonstrate the ability to perform and record an osteopathic structural examination on a surgical patient and document such using acceptable osteopathic terminology.
2. Demonstrate the application of the osteopathic philosophy into the pre- and post-operative care of the surgical patient.
3. Demonstrate an understanding of palpatory findings, which are found in common conditions, encountered in a surgical practice.
4. Demonstrate ability to assess sensory and perfusion of extremities after injury and after reconstruction.
5. Demonstrate ability to assess unique congenital deformities in the head, neck, and spine that can affect pre- and postoperative care.

Interpersonal and Communication Skills

OBJECTIVES: Interpersonal and Communication Skills

1. Communicates effectively with attending, resident, team members and other health care professionals.
2. Documentation in medical records is legible.
3. Communicates appropriately and professionally to patient and family members.
4. Demonstrates ability to develop and execute patient care plans appropriate for level of training and follows the SOAP/problem oriented format.

Professionalism

OBJECTIVES: Professionalism

1. Demonstrates a commitment to continuity of patient care.
2. Displays a sense of responsibility and respect to patients, families, staff and peers.
3. Demonstrates cultural sensitivity.
4. Maintains a professional appearance, well groomed, appropriately dressed.
5. Punctual in attendance, prompt and available when called upon.
6. Motivated to learn, shows appropriate assertiveness, flexibility, adaptability toward education.
7. Demonstrates appropriate attitude, cooperative, receptive to feedback.
8. Introduce self to those who you are working with, the patient, attending, resident, other physicians, nurses, staff, etc.

Practice-Based Learning

OBJECTIVES: Practice-Based Learning

1. Demonstrates motivation and a desire to learn.
2. Demonstrates the ability to learn from practice.
3. Critiques personal practice outcomes appropriate to level of training.
4. Demonstrates recognition of the importance of lifelong learning in medical/surgical practice.
5. Seeks and responds to feedback.

Systems-Based Practice

OBJECTIVES: Systems-Based Practice

1. Know where to go for help—personal and professional.
2. Attends all required orientations presented by the facility and completes needed paperwork for rotation.
3. Follows policy and procedures set forth by the health care facility and departments within that facility.
4. Follows the policies for a medical student at the surgery rotation facility.
5. Report to appropriate institutional authority when absent following Clinical Affairs guidelines.

Patient Care

1. Communicates effectively with attending, resident, team members and other health care professionals.
2. Demonstrate the ability to obtain and report a basic orthopaedic **patient history** for common orthopaedic conditions and injuries with particular emphasis on the chief complaint, inciting events, mechanism of injury, exacerbating and alleviating factors, timing of symptoms and associated symptoms.
3. Demonstrate the ability to perform and report a basic orthopaedic **physical examination** of the spine, shoulder, elbow, wrist and hand, pelvis and hip, knee, foot and ankle.
4. Documentation in medical records is legible.
5. Communicates appropriately and professionally to patient and family members with the attending knowledge of the discussion.
6. Demonstrates ability to develop and execute patient care plans appropriate for level of training and follows the SOAP/problem oriented format.
7. Describe different suture materials and how selection for use is based.
8. Describe alternative methods of wound closures dependent on anatomical location.
9. Demonstrate aseptic technique in the OR and in ER when asked to manage a wound.
10. Demonstrate patient safety concerns regarding body alignment, padding bony prominence, proper tourniquet application, and environmental safety preoperatively when preparing the patient for surgery.
11. Demonstrate proper extremity immobilization methods, drain care, surgical site assessment postoperatively and rehabilitation.

Medical Knowledge

Fractures, Dislocations, and Subluxations: Students should be able to define, describe and discuss:

Discuss open and closed fractures, dislocations, and subluxations.

Discuss the clinical and radiological features of fractures.

Discuss management priorities in treating fractures, dislocations and subluxations.

1. Fractures

Type-

- Open
- Closed
- Stress fracture
- Pathological fracture

Site-

- Proximal epiphysis
- Distal epiphysis
- Metaphysis
- Diaphysis

Pattern-

- Transverse
- Spiral or Oblique
- Comminuted
- Impacted
- Compression
- Greenstick

Displacement-

- Apposition
- Angulation
- Rotation
- Length

Growth Plate Fractures-

- Salter-Harris type I-V

Dislocation and Subluxation-

- Clinical and radiologic features of dislocations and subluxations
- Management

Rehabilitation of Function

Complications-

- Local- infection, delayed union, nonunion, malunion, avascular necrosis.
- Systemic-shock, sepsis, tetanus (open injuries), gas gangrene, venous thrombosis, pulmonary embolism, fat embolism

2. Evaluation of Patients with Musculoskeletal Trauma

- Symptoms
- Vascular integrity
- Radiology

3. Fracture Management- Discuss indications and complications

- Reduction
- Maintenance of Reduction-
 - Cast
 - Internal Fixation
 - External Fixation
 - Traction

4. Compartment Syndrome

- "4 Ps"

5. Common Fractures, Dislocations, and Ligament Injuries

- Carpal Scaphoid Fracture
- Colles Fracture
- Olecranon Fracture
- Supracondylar Humerus Fracture
- Shoulder Dislocation
- Hip Fracture

Femoral Shaft Fracture
Hip Dislocation
Tibia/Fibular Shaft Fracture
Ankle Injuries
Spinal Fractures
Pelvic Fractures

6. Discuss common fractures and joint injuries; identify specific problems with their diagnosis and management.
7. Traumatic Amputations and Replantation
 - a. Discuss the indications and contraindications for replantation of an amputated appendage.
 - b. Discuss the proper method of transporting the amputated part.

SPORTS MEDICINE - Students should be able to define, describe and discuss:

(More Common Injuries)

1. Stress Fractures
2. Lateral Epicondylitis (Tennis Elbow)
3. Rotator Cuff Tendinitis (Shoulder Bursitis)
4. Plantar Fasciitis (Heel Spur)
5. Patellar Overload Syndrome (Chondromalacia Patella)
6. Exercise Compartment Syndrome (Shin Splints)
7. Sprains
8. Ankle Sprains
9. Knee Ligament Sprains
10. Meniscal Injury
11. Acromioclavicular (Shoulder) Separation
12. Gamekeeper's Thumb
13. Mallet (Baseball) Finger
14. Boxer's Fracture
15. Achilles Tendon Rupture
16. Turf Toe
17. Myositis Ossificans
18. Describe the pathophysiology of attritional sports-related injuries as they affect bone, muscle, and tendon.
19. Define the term sprain and its three gradations. Discuss the methods of diagnosing the common sprains at the knee and ankle.

MUSCULOSKELETAL INFECTION - Students should be able to define, describe and discuss:

1. Osteomyelitis
2. Septic Arthritis
3. Infection Hand Flexor Tenosynovitis
4. Discuss the symptoms and signs of infectious, processes of bone and joints (osteomyelitis and septic arthritis)
5. List and discuss the diagnostic workup used in making a definitive diagnosis of bone and joint infection.

ARTHRITIS - Students should be able to define, describe and discuss:

1. Osteoarthritis
2. Rheumatoid Arthritis
3. Discuss the symptoms and signs of inflammatory (noninfectious) joint disease.
4. List and discuss the laboratory and radiological techniques used in making the diagnosis of rheumatoid arthritis and osteoarthritis.
5. List and discuss the nonsurgical and surgical treatment options of degenerative joint disease of the hip, knee, and spine.

METABOLIC ENDOCRINE DISORDERS - Students should be able to define, describe and discuss:

1. Osteoporosis
2. Osteomalacia
3. Hyperparathyroidism
4. Paget's Disease
5. Define osteoporosis and osteomalacia and list common etiologies of each.
6. Discuss the pathophysiology, symptoms, and laboratory and radiographic findings of hyperparathyroidism and Paget's disease.

BONE NECROSIS - Students should be able to define, describe and discuss:

1. Discuss the pathophysiology of osteonecrosis.

SPINE - Students should be able to define, describe, and discuss:

1. Lumbar Spine
 - Etiology of Low Back Pain
 - Lumbar Strain
 - Spondylolysis
 - Disc Herniation
 - Spinal Stenosis
2. Cervical Spine
 - Cervical Disc Protrusion
 - Cervical Spondylosis
 - Rheumatoid Arthritis of the Cervical Spine
3. List and discuss common causes of low back pain and cervical pain.
4. Discuss the symptoms and signs and outline the diagnostic workup for a patient with lumbar or cervical herniation.

BONE TUMOR - Students should be able to define, describe and discuss:

1. Diagnostic workup for a patient with a suspected primary and secondary malignant neoplasm of bone

GAIT- Students should be able to define, describe and discuss:

1. Basic components of gait and discuss common gait abnormalities in relation to mechanical or neurological disorders

Implementation

Course objectives are to be accomplished in a College affiliated hospital or clinical facility, under supervision. Basic objectives **must** be covered during the rotation to assure adequate student preparation for Board examinations and other evaluations such as post-rotation examinations. The use of diverse methods appropriate to the individual and the clinical site are encouraged, but patient-centered teaching is optimal.

Didactic methods to achieve required objectives include:

- reading assignments
- lectures
- computer-assisted programs (if available)
- student attendance at/participation in formal clinical presentations by medical faculty

Clinically oriented teaching methods may include:

- assignment of limited co-management responsibilities under supervision
- participation in clinic visits, daily patient rounds and conferences
- supervised and critiqued clinical work-ups of patients admitted to the service
- assigned, case-oriented reading case presentations

Three levels of achievement are identified:

- familiarity with a variety of medical procedures through observation and assisting
- proficiency in clinical procedures through actual supervised performance
- awareness of the availability of various medical procedures and their use

Evaluations of student must be completed within one week from completion of the rotation.

On the last day of service, the supervising physician should review the student's performance with the student. If a student signs the evaluation the signature simply indicates that the student has received a grade directly from the attending; it does not indicate agreement with the grade.

Assignments

The rotation director or preceptor may direct specific and general reading assignments from texts and current literature. Supplemental readings from current periodical literature are recommended.