

Orthopedics Rotation Educational Goals & Objectives

Musculoskeletal complaints are extremely common in the practice of primary care. They may reflect overuse or trauma, or be a manifestation of a broad range of musculoskeletal disorders or other systemic diseases. The Orthopedics rotation will provide the resident with exposure to patients with musculoskeletal disorders of autoimmune, congenital, degenerative, or traumatic etiology. The goal of the rotation is to provide the resident with opportunities in both the inpatient and outpatient settings to diagnose and manage musculoskeletal disease. Focus will be on learning normal and abnormal anatomy, the natural history of musculoskeletal disease (untreated, treated medically, and treated surgically), basic procedural skills, and the prevention, treatment and rehabilitation of musculoskeletal disease.

Faculty will facilitate learning in the 6 core competencies as follows:

Patient Care and Procedural Skills

- I. All residents must be able to provide compassionate, culturally-sensitive, and appropriate care for patients with musculoskeletal disorders.
 - PGY2s should seek directed and appropriate medical consultation when necessary to further patient care.
 - PGY3s should facilitate seamless transitions of care between the patient's primary care physician and the consultant and when appropriate, between inpatient and outpatient care.

- II. Residents will demonstrate the ability to take a pertinent history and perform a systematic physical exam, with emphasis on the musculoskeletal and neurologic exams. PGY1s should be able to elicit the timing, intensity, and impact on functional status of a patient's symptoms. PGY1s should be able to obtain the following historical details:
 - Joint, muscular, and neuropathic symptoms
 - Systemic symptoms, such as fatigue, fever, poor sleep, sweats, or weight loss
 - Occupational history, and history of repetitive use
 - History of antecedent events, such as trauma and exercise or sports injury
 - Family or personal history of autoimmune disease

PGY2s should be able to differentiate inflammatory from mechanical joint pain and recognize the contribution of comorbidities and medication compliance to a patient's symptoms. PGY2s should be able to perform an appropriately targeted physical exam prior to sports participation.

PGY3s should be able to independently obtain the above details for patients with a complex medical history.

- III. Residents should be able to characterize the following physical findings:
 - PGY1s
 - Abnormal posture or gait
 - Baker's cyst

- Clubbing
 - Dislocation
 - Dupuytren's contracture
 - Foot drop
 - Fracture
 - Joint abnormalities, including Bouchard and Heberden's nodes, crepitus, instability, effusion, range of motion, subluxation, and ulnar deviation
 - Kyphosis
 - Muscle atrophy
 - Nail pitting
 - Tendon abnormalities
 - Tophi
- PGY2s should also be familiar with muscle action and innervation as reflected on physical exam, as well as physical maneuvers to evaluate for
 - Hip muscle flexibility and gluteus medius weakness
 - Ligamentous and meniscal injuries
 - Limitations in joint range of motion and flexibility
 - Patellofemoral problems
 - Leg length discrepancy, sciatica, SI joint pathology, and spondylosis
 - AC joint pathology, biceps tendinitis, labral tear, shoulder joint instability, and subacromial impingement
 - PGY3s should be able to independently perform a complete exam and understand the sensitivity and specificity of physical findings

IV. Residents will understand the indications, contraindications, complications, limitations, and interpretation of following procedures, and become competent in their safe and effective use:

- PGY1s: common joint aspirations and injections, common injections for bursitis and tendinopathy, dislocation reduction, splinting and casting
- PGY2s: other joint arthrocentesis and injection (optional), traction application

Medical Knowledge

- I. PGY1s will develop an approach to the evaluation and treatment of the following presenting conditions:
- Back or neck pain, acute and chronic
 - Joint erythema, pain, swelling, or stiffness
 - Muscle weakness, pain or swelling
 - Musculoskeletal trauma, fractures and dislocations
 - Overuse syndromes

PGY1s will explore the basic pathophysiology, clinical presentation, and treatment of more common conditions, such as Baker's cyst, bursitis, carpal tunnel syndrome, costochondritis, ganglion cyst, hallux valgus, labral and meniscal tears, plantar fasciitis, Morton's neuroma, osteoarthritis, osteoporosis and vertebral compression fracture, rotator cuff tear, scoliosis, tendonitis, and trigger finger.

PGY2s will also develop a more complete understanding of the pathophysiology, clinical presentation, and therapy for the following conditions:

- Adhesive capsulitis
- Avascular necrosis
- Compartment syndrome
- Greater trochanteric pain syndrome
- Myofascial strain
- Nerve injuries
- Osteomyelitis
- Radiculopathy
- Sacroiliac dysfunction
- Septic arthritis and bursitis
- Spinal cord injury
- Spinal stenosis
- Spondyloarthropathies
- Tendinosis, and tendon rupture

PGY3s will also

- recognize musculoskeletal manifestations of systemic diseases, such as acromegaly, diabetes (Charcot joint), gout, hemochromatosis, infection (HIV, parvovirus, Strep), psoriatic arthritis, rheumatoid arthritis, and thyroid disease
- be familiar with the prevention of and attention to common injuries in sports medicine

II. Residents will understand the following principles of management and therapy for musculoskeletal disease:

- Natural history of acute and chronic musculoskeletal problems and the expected course with and without therapy
- Use of braces, casts, splints, orthotics, and elasticized bandage and taping
- Use of prosthetics, assist devices, and durable medical equipment for temporary or chronic disability
- Risks and benefits of medical/conservative therapies as well as alternative and complementary therapies

III. All residents will be able to understand the indications for ordering and the interpretation of the following laboratory values and procedures:

- Analysis of synovial fluids
- Arthroscopy
- CBC with peripheral smear

- Chemistries
- EMG and nerve conduction studies
- Imaging with plain films, MRI, arthrogram, and myelogram
- Sedimentation rate and c-reactive protein
- Uric acid
- Urinalysis with microscopy

PGY3s will independently, appropriately order studies and be able to interpret results within the context of patient comorbidities, pretest probability of disease, and patient values.

- IV. All residents will spend some time in the operating room and become familiar with:
 - pre-procedure patient preparation e.g. NPO, perioperative medication management, etc.
 - knowledge of basic anatomy
 - estimation of blood loss
 - function of and types of instruments, drains and dressings
 - internal and external fixation devices
 - artificial joint replacement
 - wound closure
 - use of arthroscopic techniques

- V. Residents should understand and be able to counsel patients on activity and exercise, prevention of musculoskeletal injury and re-injury, and appropriate use of physical and occupational therapy and referral for rehabilitation.

Practice-Based Learning and Improvement

- I. All residents should be able to access current national guidelines (e.g. American Academy of Orthopaedic Surgeons – Research & Quality, Clinical Practice Guidelines <http://www.aaos.org/>) to apply evidence-based strategies to patient care.
- II. PGY2s should develop skills in evaluating new studies in published literature, through Journal Club and independent study.
- III. All residents should participate in case-based therapeutic decision-making, involving the primary care provider, orthopedic surgeon, and where appropriate, rheumatologist. Residents should learn to coordinate patient care as part of a larger team, including the nurse, physical therapist, occupational therapist, and orthotics/prosthetics specialist to optimize patient care, and PGY3s should take a leadership role.
- IV. All residents should respond with positive changes to feedback from members of the health care team.

Interpersonal and Communication Skills

- I. PGY1s must demonstrate organized and articulate electronic and verbal communication skills that build rapport with patients and families, convey information to other health care professionals, and provide timely documentation in the chart.
- II. PGY2s must also develop interpersonal skills that facilitate collaboration with patients, their families, and other health professionals as well as with coaches, sports organizations, school administrators, and employers.
- III. PGY3s should demonstrate leadership skills to build consensus and coordinate a multidisciplinary approach to patient care.
- IV. PGY3s must be able to navigate complex discussions on sensitive topics with patients and their families.

Professionalism

- I. All residents must demonstrate strong commitment to carrying out professional responsibilities as reflected in their conduct, ethical behavior, attire, interactions with colleagues and community, and devotion to patient care.
- II. PGY1s should be able to educate patients and their families in a manner respectful of gender, age, culture, race, religion, disabilities, national origin, socioeconomic status, and sexual orientation on choices regarding their care.
- III. PGY2s should be able to use time efficiently in the clinic to see patients and chart information.
- IV. PGY2s should be able to counsel patients and families both on diagnostic and treatment decisions.
- V. PGY3s should be able to provide constructive feedback to more junior members of the team.

Systems-Based Practice

- I. PGY1s must have a basic understanding that their diagnostic and treatment decisions involve cost and risk and affect quality of care.
- II. PGY2s must also demonstrate an awareness of alternative therapies and their costs, risks, and benefits.
- III. PGY3s must be able to identify current quality issues in orthopedic surgery, particularly issues where the primary care physician may be involved in patient counseling and/or subsequent care, such as duration of postoperative DVT prophylaxis, use of vertebroplasty, and use of supplements for osteoarthritis.

Teaching Methods

- I. Supervised patient care in the inpatient and outpatient setting and in the operating room.
 - Residents will initially be directly observed with patients to facilitate the acquisition of excellent history taking and physical exam skills.
 - As residents become more proficient, they will interact independently with patients and present cases to faculty.

- Initial emphasis will be on diagnosis and basic management.
- When residents have mastered these skills, focus will be on medical decision-making and technical skills, and residents will work with supervising physicians to finalize a care plan.

II. Conferences

- Rotating conferences - Fracture, M&M, Specialty

III. Independent study

- Journal and Textbook reading
 - Rosenbaum, A. (2013). Case Files Orthopaedic Surgery (LANGE Case Files). McGraw-Hill Education.
 - Parks, E. (2017). Practical Office Orthopedics. McGraw-Hill Education.
- Online educational resources
 - American Academy of Orthopedic Surgeons <http://www.aaos.org/>
 - Clinical Key
 - Orthobullets <https://www.orthobullets.com/>
 - Up to Date
 - VuMedi <https://www.vumedi.com/>
 - Pain management and addiction:
 - <https://www.cdc.gov/drugoverdose/prescribing/resources.html>
 - https://journals.lww.com/jorthotrauma/Fulltext/2019/05000/Clinical_Practice_Guidelines_for_Pain_Management.11.aspx

Evaluation

- I. Mini-CEX
- II. Real time weekly feedback from attendings and Orthopaedic Surgery senior residents
- III. 360 Evaluation
- IV. Attending written evaluation of resident at the end of the month based on rotation observations and chart review.

Rotation Structure

- I. Residents will meet with the Program Director and Chief Resident on the first Monday of the rotation at 0715 in the residency trailer. A schedule for the rotation will be provided at that time.
- II. Residents will divide their time between the hospital, the operating room, and the clinic to achieve the above educational goals.
 - Rotations are a “hands-on” learning experience. Residents will be involved in discussion of patient presentation, differential diagnosis, decision for or against surgical intervention, and patient follow up. In addition, residents will be involved in surgical procedures as is appropriate.
 - When possible, residents should follow the same patients during the rotation in clinic, perioperatively, and then postoperatively in clinic.
 - Case-based learning is most effective. Nightly reading/study should be based on cases reviewed during the day.

- Residents may be asked to do focused literature searches or presentations during the course of the rotation.
 - When doing consults, ensure the resident understands the question asked and provides a concise answer.
- III. Call and weekend responsibilities TBD by the attending physician.
- Hours worked must be consistent with ACGME requirements and are subject to approval by the Program Director.
- IV. Residents have scheduled mandatory didactics and should be excused in a timely fashion to attend.