

**RIVERSIDE UNIVERSITY HEALTH SYSTEM – MEDICAL CENTER
ORTHOPAEDIC SURGERY RESIDENCY PROGRAM**

**Orthopaedic Surgery (PGY-1)
(Duration: 24 weeks)**

Supervising Faculty: Dr. Wade Faerber

The PGY-1 resident will be a fully integrated member of the Orthopaedic Surgery team, under the supervision of the senior Orthopaedic Surgery resident and the Orthopaedic Surgery attending staff. The PGY-1 residents will participate in all care rendered to inpatient Orthopaedic Surgery patients at RUHS: admission, diagnostic, work-up, operations, post-operative care and discharge. In addition, the PGY-1 residents will participate in the care/operation of Orthopaedic Surgery patients in the Orthopaedic Surgery clinic.

Patient Care

Goals

The orthopaedic resident must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health programs and the promotion of health.

During the rotation, the PGY-1 resident should learn and practice to:

- Demonstrate caring and respectful behaviors when interacting with patients and their families; demonstrate sensitivity to gender, age, ethnicity, religion, value systems and other potential differences of patients and their families; practice according to the clinical standards of RUHS.
- Gather patient and case specific essential, comprehensive multi-source and accurate information about their patients for initial or peri-operative workup and patient follow-up in the inpatient and outpatient setting.
- Using all available resources, under the guidance of the senior Orthopaedic Surgery resident and attendings make informed decisions about diagnostic and therapeutic interventions based on patient information, up-to-date scientific evidence and clinical judgment; evaluate and implement priorities in patient care and incorporate preventive measures.
- Under the guidance of the senior Orthopaedic Surgery resident and attending, develop and carry out patient management plans.
- Under the guidance of the senior Orthopaedic Surgery resident and attending, monitor closely the patients clinical progress, review and react to variances in patient progress or response to therapeutic interventions; communicate the details and changes of patient care, progress and complications to the senior Orthopaedic Surgery resident and/or attending in a timely manner.
- Under close and direct supervision of the Orthopaedic Surgery attending, counsel and educate patients and their families on the state of the patient's disease, necessary diagnostic tests, operative procedures and medical management.
- Use information technology (hospital computer system) to support patient care decisions and patient education (electronic patient record, electronic radiology studies, online educational resources, including literature research).
- Work closely with other healthcare professionals, including those from other disciplines (Trauma Surgery, Neurosurgery, Internal Medicine, Pediatrics and mid-level providers, nurses, Orthopaedic Surgery office staff, etc.), to provide patient-focused and optimum outcome driven care.
- Ensure that the needs of the patient and team supersede individual preferences when managing patient care; incorporate evidence-based medicine into patient care whenever possible; comply with changes in clinical practice and standards given by senior Orthopaedic Surgery resident and/or attending.

Objectives:

During the rotation, the resident should:

- Under the one-on-one supervision of the Orthopaedic Surgery attending, perform competently and/or assist in procedures (both in the inpatient and outpatient setting) considered essential for the area of practice.

- Perform closed reduction of extremity fractures and dislocations and immobilization, sing various splints and casts.
- Perform application of spine and extremity traction systems.
- Perform simple joint aspiration/injections such as the knee or shoulder.
- Evaluation of post-operative wounds and application of orthopaedic dressings and braces.
- Assist/observe external/internal fixation of extremity fractures.
- Assist/observe joint replacement (hip, knee, shoulder)
- Assist/observe arthroscopic surgery (mostly knee, also shoulder, ankle or hip)
- Assist/observe soft tissue repairs/reconstruction (rotator cuff, quadriceps or Achilles tendon, anterior cruciate ligament (ACLS)
- Observe complex cases (limb lengthening, soft tissue and bone tumor resections, joint revision, total joint arthroplasty, operative treatment of osteomyelitis and hardware infection.
- Observe orthopaedic spine surgery (discectomy, scoliosis, spinal fusion)
- Under supervision by the senior Orthopaedic Surgery resident and attending, participate in the pre- and post-operative surgical management of patients before and after orthopaedic procedures; evaluate new emergency and inpatient consultations; participate on daily morning and afternoon patient rounds on the Orthopaedic Surgery service at RUHS.
- Under the supervision by the senior Orthopaedic Surgery residents and attendings, manage post-operative surgical complications, including wound infection, compartment syndrome, neurovascular injuries, non-union, bleeding, etc.
- Attend Orthopaedic Surgery (attending) clinic two to three time a week and under supervision by the Orthopaedic Surgery senior residents and attendings participate in the evaluation of patients in the office setting.

Medical Knowledge

Goals

The orthopaedic resident must gain medical knowledge of established and evolving biomedical, clinical, epidemiological and social-behavioral sciences, as well as the application of this knowledge to patient care.

Objectives

At the end of the Orthopaedic Surgery rotation, the resident should be able to:

- Describe the anatomy and (patho-)physiology of the musculo-skeletal system, including normal anatomy of the major bones and joints, histology of different types of bone and their dynamic nature, basics of fracture healing (primary, secondary), basics of arthritis/degenerative joint disease and changes of bone structure and physiology with joint disease and changes of bone structure and physiology with age/hormonal influences/medication, etc; differences of bone and joint anatomy and behavior in childhood.
- Describe the gross anatomical structures of the skeletal system and the function of the specific bones and muscles of the body; understand fundamental patients of innervation and sensory feedback from the musculoskeletal system, particularly pain.
- Explain the physiology and biochemistry of bone growth and maturation from childhood to adulthood;
 - Basic bone, cartilage and muscle embryology, common genetic abnormalities of the musculoskeletal system
 - Calcium-phosphate homeostasis, osteoblast and osteoclast activity.
 - Vascular supply and innervation of bones
 - Components of long bones, growth plate function
 - Influence of hormones on bone growth and metabolism (estrogen and testosterone, corticosteroids, PTH and calcitonin, etc.)
 - Influence of (mal-) nutrition on bone growth and healing
 - Influence of vascular disease and inactivity on bone growth and metabolism.
- Analyze the principal concepts of pain causation and perception
- Analyze the orthopaedic role in evaluation and management of;
 - Musculoskeletal trauma

- Inflammatory, infectious and metabolic disorders (Rheumatoid arthritis, Pyogenic arthritis, osteomyelitis, osteomalacia, hypothyroidism, hyperparathyroidism, gout, etc.)
- Musculoskeletal tumors (sarcomas, malignant bone tumors, benign bone tumors)
- Degenerative conditions (osteoarthritis, traumatic arthritis, osteoporosis)
- Soft tissue sprains and overuse injuries (ankle sprain, tendon tear, myofascial pain)
- Outline a systematic approach for the assessment of the skeletal system using history taking and physical examination; identification and localization of potential fractures/dislocations, accurate assessment of neurovascular status.
- Discuss the use of radiographic imaging in the evaluation and management of the following orthopaedic pathology:
 - Musculoskeletal tumors (primary, metastatic)
 - Isolated extremity injuries (long bones, joints)
 - Spinal injury (fracture, [sub-]luxation)
 - Pelvic trauma (fracture, hip dislocation)
 - Chronic musculo-skeletal pain syndromes
 - Degenerative, inflammatory, metabolic joint and bone disease (osteoarthritis, osteoporosis, gout, osteomalacia, rheumatoid arthritis, SLE, hyperparathyroidism/Vitamin D deficiency, etc.)

And including imaging techniques such as:

- Plain films in 2 planes and special projections, functional plain radiographs (spine flexion and extension), conventional contrast studies (myelography)
- Computed tomography (axial, sagittal, 3D reconstruction)
- Magnetic resonance imaging (MRI), with and without contrast
- Radionuclide imaging
- Arteriography
- Discuss the role of arthroscopy in the evaluation and therapy of orthopaedic pathology (specifically for the knee).
- Identify considerations for basic care of patients with acute trauma to the musculo-skeletal system:
 - Fundamental fracture classification (open [grade]/closed, simple, complex/comminuted, fractures that involve growth plate/joints, angulation / dislocation) and their implication for management.
 - Types of spine fractures (including dens), mechanism of trauma and implications for stability and spinal cord/nerve root injury.
 - Major types of pelvic fractures (including acetabulum), mechanism of trauma and implications for bleeding problems; acute stabilization (binder, external fixation).
 - Types of shoulder and proximal humerus fracture/dislocation, mechanism of vascular injury; supracondylar humerus fracture.
 - Wrist fractures and injury to carpal bones, mechanism of trauma and implication for neurovascular injury.
 - Types of hip fracture/dislocation, mechanism of trauma and implications for neuro-vascular injury and aseptic bone necrosis.
 - Types of hip fracture/dislocation, mechanism of trauma and implications for neurovascular injury, aseptic bone necrosis.
 - Types of hip fracture/dislocation, mechanism of trauma and implications for neuro-vascular injury and aseptic necrosis of the hip.
 - Types of knee (distal femur, proximal tibia) fractures/dislocation, mechanism of trauma and implications for neurovascular injury.
 - Types of ankle fractures and mechanism of trauma, calcaneus and major tarsal fractures / dislocations.
 - Combination injuries (bone, soft tissue), crush injury (compartment syndrome, rhabdomyolysis), fractures that have potential for neuro-vascular involvement and their implication for management; diagnosis and management of fat embolism.
 - Pain – physiologic implications, diagnosis and management (immobilization, analgesic [non-steroidal, narcotics, anti-depressants and medications for neuro-pathic pain])
 - Considerations in the management of poly-traumatized patients:
 - Head, chest, abdominal trauma, shock
 - Management priorities
 - Orthopaedic damage control techniques
 - Explain the fundamental management principles for orthopaedic trauma, including:

- Compartment pressure problems – accurate (clinical) diagnosis and indication / technique(s) of fasciotomy (upper and lower extremity).
 - Indications and limitations of closed reduction and casting.
 - Indications and limitations of reduction and external fixation, including orthopaedic damage control (pelvic fracture external fixation for pelvic hemorrhage, extremity external fixation with acute vascular injury).
 - Indications for open reduction and internal fixation of fractures, and basic techniques (plates and screws, rods/nails)
 - Open fracture management: debridement, irrigation, primary vs. delayed closure
 - Timing of therapy
 - Principles of early mobilization and rehabilitation
 - Assessment of DVT risk, prevention and management
- Understand differences in trauma management in children and elderly patients:

Children:

- Epiphyseal fractures: Salter-Harris Classification, impact on growth and deformity
- Greenstick fractures (plastic deformation)
- Differences in bone healing and remodeling in the pediatric patient
- Pediatric joint trauma
 - Supracondylar elbow fractures in children (optimal treatment, risks, vascular evaluation)
 - Operative Salter-Harris fractures
 - Hip dislocation or fracture (risk of avascular necrosis)
 - Role of closed reduction/casting
 - Femur fractures (spica cast vs. external fixation vs. intra-medullary fixation)
 - Differences in pain management, management of psycho-social stress, involvement of Pediatric specialists.

Elderly patients:

- Comorbid conditions and their influence of peri-operative complications
 - Fractures with lower impact trauma (osteoporosis); differences in bone healing in the elderly patient
 - Increased risk for thromboembolic disease, bleeding dyscrasias, (occult) infections, wound healing problems, prolonged immobilization, etc.
- Explain the management of nerve injury associated with musculoskeletal trauma and other pathology, including:
 - Response of nervous tissue to injury (regeneration, degeneration, chronic pain)
 - Evaluation of nerve injury (peripheral nerve/radicular/cord)
 - Referred pain, non-somatofom pain
 - Therapy with physical therapy, non-drug therapy, analgesics (non-steroidal, narcotics, anti-depressants, etc.), nerve injection, electro-stimulation, operative options.
- Determine the management of selected congenital and developmental musculoskeletal defects in children to include:
 - Scoliosis
 - Achondroplasia
 - Cervical spine congenital deformity, pseudo-subluxation
 - Development hip dislocation
 - Talipes equinovarus (club foot)
- Explain the basic management of the following (systemic diseases affecting the musculo-skeletal system:
 - Osteoporosis
 - Infectious diseases (septic arthritis, osteomyelitis)
 - Initial evaluation and rheumatology referral of psoriatic arthritis, rheumatoid arthritis, gout, SLE, etc.
 - Use of other providers ([Rehabilitation-] Medicine, Rheumatology, pain management, etc.)
- Outline the management of musculo-skeletal tumors, including:
 - Identification of most common musculoskeletal tumors with basic patterns of spread and prognosis.
 - Evaluation and staging: Enneking Classification
 - Open- versus fine needle aspiration, open biopsy, total excision
 - Frozen section versus permanent section
 - Adjuvant therapy options for most common tumors

- Chemotherapy
 - Radiation
- Demonstrate the evaluation of back and leg pain using a standard algorithm
 - Bone vs. disc related disease
 - Local vs. radicular pain
 - Operative vs. non-operative management
 - Diagnostic imaging
 - Recognize emergencies (sensory-motor loss)
- Demonstrate the management of the painful/swollen joint and chronic joint disease
 - Differential diagnosis (trauma, osteoarthritis, gout, infection, etc.)
 - Indications and contraindications for joint aspiration and arthroscopy
 - Summarize the role of joint replacement in the management of orthopaedic pathology (particularly knee and hip); basic understanding of expected outcomes, complications and longevity.
- Summarize the characteristics of infection/sepsis secondary to prosthetic implants or orthopaedic hardware; discuss treatment strategies.
 - Diagnosis of overt and occult infection (osteomyelitis, septic joint)
 - Systemic +/- local antibiotic therapy, indications for removal of hardware.
 - Techniques for prevention, including the “clean air” OR environment (laminar air flow systems, use of ultraviolet light, operating room traffic, and soft tissue handling, use of prophylactic antibiotics, etc.)
- Explain the importance and timing of physical therapy and rehabilitation in the care of postoperative orthopaedic repairs
- Explain the importance of organized approach to chronic pain (psycho-social impact of chronic pain, the “drug-seeking patient,” disability, etc.)

Practice-based Learning and Improvement

Goals

The orthopaedic resident must demonstrate the ability to investigate and evaluate his/her care of orthopaedic patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning.

Objectives

- Identify strengths, deficiencies, and limits in one’s knowledge and expertise.
- Set learning and improvement goals.
- Identify and perform appropriate learning activities
- Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement.
- Locate, appraise, and assimilate evidence from scientific studies related to their patients’ health problems.
- Use information technology to optimize learning.
- Participate in the education of patients, families, students, residents and other health professionals.
- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.
- Complete the personal learning project in the practice based learning and improvement curriculum for the rotation.

Interpersonal and Communication Skills

Goals

The orthopaedic resident must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and other health professionals.

Objectives

- Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds.
- Communicate effectively with physicians, other health professionals, and health related agencies.
- Act as a consultative role to other physicians and health professionals.
- Maintain comprehensive, timely, and legible medical records.
- Use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills, if applicable.

Professionalism

Goals

The orthopaedic resident must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles

Objectives

- Demonstrates an understanding of the importance of compassion, integrity, respect, sensitivity, and responsiveness, and is able to exhibit these attitudes consistently in common and uncomplicated situations.
- Is aware of personal beliefs and values that impact interactions with others and may influence provision of medical care; is able to manage these values and beliefs so that they have minimal impact on patient care.
- Is able to exhibit these attitudes in complex and complicated situations.
- Recognizes how one's own personal beliefs and values impact medical care; consistently manages one's own values and beliefs to optimize relationships and medical care.
- Exhibits an interest in and formulates strategies to learn about issues of diverse populations.
- Is knowledgeable about the beliefs, values, and practices of diverse patient populations and their potential impact on patient care.
- Consistently recognizes ethical issues in practice; is able to discuss, analyze, and manage these in common clinical practice.
- Effectively analyzes and manages frequently encountered ethical issues.
- Recognizes personal beliefs and their potential impact on patient care.
- Effectively manages personal beliefs to avoid any negative impact on patient care.
- Defines and understands physician accountability to patients, society, and the profession.
- Develops an understanding of one's own beliefs and values and how they impact one's attitude and behavior; is able to understand and balance the needs of oneself and others to prioritize and provide appropriate medical care.
- Consistently recognizes limits of one's own knowledge in common and frequent clinical situations, and asks for assistance.
- Consistently recognizes limits of one's own knowledge in uncommon and complicated clinical situations; develops and implements plans for the best possible patient care.
- Recognizes the needs to develop and demonstrate leadership skills.
- Identifies basic principles of physician wellness, including rest, diet, exercise, personal health, and balance in life.
- Demonstrates adequate management of personal emotional, physical, and mental health.
- Is knowledgeable about and effectively manages the issues related to fatigue and sleep deprivation.
- Recognizes signs of physician impairment.
- Is able to assess application of principles of physician wellness, alertness, delegation, teamwork, and optimization of personal performance to the practice of medicine in one's own self and others.
- Is able to identify and manage situations in which maintaining personal emotional, physical, and mental health is challenged by common and typical clinical care solutions.
- Demonstrate respect, integrity and compassion for others
- Demonstrate responsiveness to patient needs that supersedes self interest
- Demonstrate accountability to patients, society and the profession
- Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent, and business practices.
- Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in culture, age, gender, disabilities and sexual orientation

- Demonstrate commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information, informed consent and business practice

Systems-based Practice

Goals

The orthopaedic resident must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Objectives

- Understands the need for an interdisciplinary approach to effectively coordinate care.
- Understands coordination of care between different systems.
- Transmits relevant information during transitions of care.
- Facilitates safe and effective transitions of care.
- Works with other members of the health care team to identify system errors and areas of potential quality improvement
- Works in interdisciplinary teams to identify solutions (action plans) to identified system errors.
- Is respectful of other team members and actively seeks their input to solve problems.
- Provides examples of cost and value implications of care and begins to incorporate these into patient care decisions
- Practices cost-effective care with awareness of risk-benefit considerations, and uses cost considerations in medical decision-making
- Work effectively in various health care delivery settings and systems relevant to general surgery
- Coordinate patient care within the health care system relevant to their general surgical issues
- Practice cost-effective health care and resources allocation that does not compromise quality of care.
- Advocate for quality patient care and optimal patient care systems
- Work in inter-professional teams to enhance patient safety and improve patient care quality
- Participate in identifying system errors and implementing potential system solutions

ASSESSMENT METHOD:

Direct and indirect observation by faculty with assessment on formal end of resident rotation evaluation form.

DIDACTIC CURRICULUM REQUIRED ATTENDANCE:

Ortho Monday Pre-Op Conference (Monday AM)

Wednesday Pediatric Conference (Wednesday AM)

Friday Post-Op Conference (Friday AM)

Ortho Monthly Research Meeting (Wednesday AM)

Monthly Ortho Department Meeting/Educational Grand Rounds (Monday PM)

Bi-Monthly M&M Conference (Monday PM)

Ortho Basic Surgical Skills Lab (As scheduled)