The Ohio State University

Department of Orthopaedics

Residency Curriculum

2020 - 2021

Revised 3/5/09

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Global Residency Program Goals and Objectives

I. Essential Attributes. The resident must exhibit the following:
   A. Must be honest, ethical, reliable, conscientious and responsible.
   B. Must learn from their prior experiences.
   C. Must become able to appropriately react to stressful situations.
   D. Must remain free from impairment due to abuse of alcohol or illegal substances.
   E. Must be free from cognitive, physical, sensory or motor impairments, which would preclude the ability to assume individual responsibility for the provision of any aspect of anesthesiology care.

II. Acquired Character Skills. The resident must acquire the following character skills during residency training:
   A. Must communicate effectively with patients, their families, and members of the health care team.
   B. Must be committed to continuing education.
   C. Must be adaptable and flexible
   D. Must be careful and thorough.
   E. Must keep complete and accurate anesthesia records.
   F. Must have adequate cognitive breadth and depth.
   G. Must be appropriately self-confident.

III. Knowledge. During the training period, the resident will gradually and Continuously expand their level of knowledge, such that, upon completion of residency training, the resident shall have sufficient knowledge to pass the written and oral board examinations. The educational opportunities provided in the department include, but are not limited to:
   A. In-training examinations. Residents, including PGY1's, are required to take the OITE each year they are in the residency, with no exceptions.
   B. Scientific meeting involvement. Each resident is required to present an original research project during the annual departmental research day. Residents are also encouraged, at some point during their residency, to submit a poster presentation to a national or regional orthopaedic meeting, such as the AAOS, OREF, Mid-America Orthopaedic Association, or Ohio Orthopaedic Association.
   C. Departmental education conferences. Each resident must attend all departmental lectures and conferences appropriate to their level of training. All absences must be approved by the Program Director.
   D. Journal Club. Each resident should attend departmental journal club. All absences must be approved by the Program Director.
   E. Practice management education. The resident should participate in all Introduction to the Practice of Medicine learning modules, as provided by the institution.

IV. Judgment. The resident must develop the ability to properly diagnose and understand various orthopaedic conditions, and to manage a safe and appropriate care of those conditions. The skills necessary for such performance include:

A. Proficiency in the basics of history and physical examination
B. Possession of a sound general medical and basic science background.
C. Ability to assimilate available information in order to diagnose orthopaedic conditions and develop an appropriate care plan to include pre, intra, and post-operative care, as well as non-operative care.
D. Ability to consult on the evaluation and triage of emergent orthopaedic disorders

V. Clinical Skills: The resident must develop the ability to safely and expeditiously perform necessary orthopaedic procedures in all orthopedic sub-speciality areas. The necessary skills include, but are not limited to the ability to:

A. Perform the appropriate pre-operative workup of orthopaedic patients
B. Develop an appropriate Intra-operative plan
C. Determine appropriate patient positioning/draping
D. Select appropriate anesthesia
E. Demonstrate the appropriate technical skills necessary to perform procedures in each of the orthopaedic sub-specialty area (See rotation specific goals and objectives)
F. Evaluate and determine interventions for post-operative issues that may arise

VI. Core Competencies: The resident must develop the following skills in order to become an effective orthopaedist:

A. Demonstrate professionalism in accordance with the ACGME Professionalism competency
B. Develop and maintain appropriate interpersonal skills
C. Develop effective communication skills
    1. Develop active listening skills.
    2. Provide information to patients using appropriate language.
    3. Ask questions clearly of patients and their families.
    4. Provide patients with an opportunity to provide input and questions regarding their care.
    5. Demonstrate sensitivity and responsiveness to cultural differences, including awareness of their cultural perspectives and those of the patient.
D. Maintain a professional demeanor
E. Act responsibly and with integrity
F. Maintain a commitment to ethical medical practice.
    1. Maintain patient confidentiality.
    2. Provide informed patient consent.
    3. Maintain ethical business practices
G. Demonstrate respect for patients and society.
H. Work effectively with other physicians and health care providers.
I. Establish and maintain an awareness of systems-based practice.

J. Develop and maintain an awareness of systems-based practice
    1. Develop an awareness of and responsiveness to the larger context and system of health care.
    2. Develop the skills necessary to effectively use system resources to provide care of optimal value.

VII. Overall Clinical Competence:

The resident must acquire adequate mastery of each of the six areas listed above (essential attributes, acquired character skills, knowledge, judgment, clinical skills and Professionalism) such that, upon completion of residency training, the resident may assume independent responsibility for perioperative patient care.

Revised 6/5/08

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Orthopaedic Residency Program

Goals and Objectives - Orthopaedic Years 2 – 5

PGY2

By the transition from PGY2 to PGY3 years, the orthopaedic surgery resident should have achieved the following educational goals:

1. Proficiency in the basics of history and physical examination
2. Performance and progress in the development of cognitive and interpersonal skills, ethics, manual abilities, and affective qualities
3. Knowledge of general principles of musculoskeletal diseases and their manifestation
4. Acquisition of a reasonable amount of knowledge of orthopaedic disorders in both the adult and pediatric populations.
5. Development of methods of thinking, questioning, and reading
6. Development of basics of overall patient care
7. Demonstrated skill in casting, bracing, splinting, and traction.
8. Demonstrated ability to manage emergent orthopaedic disorders in Emergency Room under supervision of senior resident
9. Demonstrated performance in all scheduled rotations
10. Exemplary attendance and participation in all conferences and educational activities

PGY3

By the transition from the PGY3 to the PGY4 level, the orthopaedic surgery resident should have achieved the following educational goals:

1. Continued progress in the development of cognitive and interpersonal skills, ethics, manual abilities, and affective qualities
2. Progressive assumption of some of the responsibility of patient care and of the decision making process
3. Demonstrated increase in knowledge base and in surgical techniques
4. Adequate performance with increases surgical experience
5. Demonstrated improvement in technical skills
6. Assumption of teaching role for non-orthopaedic residents
7. Continued excellence in management of emergent orthopaedic disorders in the Emergency Room
8. Acquisition of a thorough knowledge of orthopaedics
9. Demonstrated performance in all scheduled rotations
10. Continued exemplary attendance and participation in all conferences and educational activities

PGY4

By the transition from the PGY4 to PGY5 level, the orthopaedic surgery residents should have achieved the following educational goals:

1. Continued progress in the development of cognitive and interpersonal skills, ethics, manual abilities, and affective qualities
2. Increased responsibility for patient care
3. Demonstrated ability to cope with increased responsibility and expectation
4. Assumption of responsibility level consistent with that of a chief resident
5. Demonstrated performance in supervisory capacity of junior orthopaedic residents
6. Honing of principles for trauma management via the team approach
7. Assumption of supervisory role in care of emergent orthopaedic problems in the emergency room (back-up call)
8. Demonstrated performance in all scheduled rotations
9. Exemplary attendance and participation in all conferences and educational activities

PGY5

By the end of the final year of training, the orthopaedic surgery resident should have achieved the following educational goals:

1. Marked performance and progress in the development of cognitive and interpersonal skills, ethics, manual abilities, and affective qualities
2. Demonstrated competence in total patient management (pre-admission care, hospital care, operative care, and follow-up care, including rehabilitation)
3. Fine tuning of surgical skills
4. Effective management of chief resident clinic
5. Adequate experience in non-operative patient diagnosis
6. Full responsibility for performance and education of junior residents and interns
7. Excellence in the care of emergent orthopaedic disorders in the emergency room setting
8. Demonstrated performance in assigned administrative role
9. Complete knowledge of medical ethics
10. Excellent performance in all scheduled rotations in final year as well as all orthopaedic rotations undertaken while in program
11. Exemplary attendance and participation in all conferences and educational activities

The Ohio State University
Department of Orthopaedics

Residency Curriculum

PGY1 Rotations

Goals and Objectives
Trauma Surgery/Acute Care Surgery – PGY1

General Rotation Information:

The Acute Care Surgery rotation takes place within the Division of General Surgery. While on this rotation, the resident will learn how to develop an organized approach to the assessment, resuscitation, stabilization, and provision of definitive care for the trauma patient. The resident will also learn to recognize immediate life and limb threatening injuries.

I. Core Competency Areas

By the end of the PGY1 rotation in Trauma Surgery/Acute Care Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
1. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific General Cognitive Knowledge

By the end of the PGY1 rotation in Trauma Surgery/Acute Care Surgery, the resident should:

1. Understand the mechanism of injury, pathophysiology, course and complications of trauma
2. Understand the pathophysiology, clinical course, and complications of disorders of the appendix
3. Understand the pathophysiology, clinical course, and complications of disorders of the gall bladder
4. Understand the pathophysiology, clinical course, and complications of acute injuries to the digestive system
5. Understand the special considerations in the evaluation and management of pregnant, pediatric, and geriatric trauma patients
6. Understand the principles of disaster management and burn management
7. Learn the techniques of spine immobilization in trauma victims
8. Understand the principles involved in the diagnosis and management of compartment syndrome
9. Understand the appropriate use of analgesics and sedatives in trauma patients
10. Understand the appropriate use of antibiotics and tetanus prophylaxis in trauma patients
11. Understand the principles involved in the diagnosis and management of spinal cord injuries
12. Understand how to calculate the Glasgow Coma scale and discuss its role in the evaluation of head injured patients

III. Specialty Specific Psychomotor Skills

By the end of the PGY1 rotation in Trauma Surgery/Acute Care Surgery, the resident should be able to: :

1. Become proficient in the techniques and understand the indications for central venous access, arterial access, nasotracheal and oral tracheal intubation, mechanical ventilation, nasogastric intubation, foley catheter insertion, peritoneal lavage, trauma ultrasound, cricothyroidotomy, chest tube thoracostomy, Emergency Department thoracotomy MAST application and removal, venous cut down, rapid infusion and suture techniques.
2. Demonstrate the ability to rapidly and thoroughly assess victims of major and minor trauma.
3. Demonstrate proficiency in the management of fluid resuscitation of the trauma victim.
4. Demonstrate proficiency in pre and post operative management of disorders of the appendix
5. Demonstrate proficiency in pre and post operative management of disorders of the gall bladder
6. Demonstrate profieciency in pre and post operative management of acute injuries to the digestive system
7. Interpret radiographs in trauma patients, including chest, cervical, thoracic and lumbar spine, pelvis and extremity films.
8. Manage soft tissue injuries, including lacerations, avulsions and high pressure injection injuries.
9. Coordinate consultants involved in the care of multiple trauma patients.
10. Manage the acutely burned patient including minor and major injuries.

11. Proficiency in diagnosing and treating smoke inhalation
12. Assess and manage facial trauma.
13. Evaluate and manage anterior neck injuries both blunt and penetrating.
14. Assess and manage both penetrating and blunt chest trauma, blunt and penetrating abdominal trauma and the ability to diagnose and treat pelvic fractures.
15. Provide care of post-trauma patients throughout the entire spectrum of care from the ICU to the floor discharge.

Goals and Objectives
Emergency Medicine Rotation – PGY1

General Rotation Information:

The Emergency Medicine rotation is intended to provide the PGY1 resident with experience in management of patients with emergent surgical and/or medical problems. The resident interacts with the emergency room in several settings. During the PGY 1 year the resident is assigned to the emergency room service for a one-month period of time. During this time the resident sees patients and is supervised by the emergency medicine staff. Residents are required to see the patient and then in concert with the attending emergency room physicians make decisions concerning the diagnosis and appropriate treatment plans. The resident is required to dictate a note regarding participation with the emergency room patient.

I. Core Competency Areas

By the end of the PGY1 rotation in Emergency Medicine, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions

3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY1 rotation in Emergency Medicine, the resident should:

1. Evaluate and manage multiple patients simultaneously
2. Manage the patient throughout the entire emergency department visit and arrange for proper disposition
3. Interpret laboratory data and radiographic studies (i.e. x-rays, CT scans, MRI's)
4. Develop a differential diagnosis and order appropriate diagnostic studies
5. Maintain a clear and accurate record of the patient visit

III. Specialty Specific Psychomotor Skills

By the end of the PGY1 rotation in Emergency Medicine, the resident should be able to::

1. Demonstrate proficiency in assessing a patient in a timely fashion and develop a logical management plan
2. Demonstrate proficiency in foreign body removal from soft tissues and eyes
3. Demonstrate proficiency in fracture reduction and splint placement
4. Demonstrate proficiency in obtaining ABG's and peripheral IV access
5. Demonstrate proficiency in the management of soft tissue injuries
6. Demonstrate proficiency in the repair of simple and complex lacerations

Goals and Objectives
Adult Orthopaedics Goals - PGY1

General Rotation Information:

The Orthopaedic rotation is intended to provide the PGY1 orthopaedic resident with an introduction to the diagnosis and management of orthopaedic disorders. The focus of this rotation is on developing the proper thought processes and the basics of history and physical examination as well as the general principles of musculoskeletal diseases, pathology, and their manifestation. Residents on this rotation will spend the majority of their time on the Orthopaedic Trauma Service. Trauma was chosen because it exposes the Orthopaedic intern to a large number of patients, both inpatient and outpatient, with a wide variety of musculoskeletal problems. Emphasis will be placed on the initial history, physical examination, imaging and treatment of patients with skeletal injury. Introduction to definitive methods of care will be introduced in a graded fashion. This rotation is under the guidance of the Department of Orthopaedic Surgery, and is directed by Dr. Laura Phieffer.

I. Core Competency Areas

By the end of the PGY1 rotation in Orthopaedics, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY1 rotation in Orthopaedics, the resident should:

1. Understand the diagnosis and management of orthopaedic disorder
2. Understand the general principles of musculoskeletal disorders, pathology, and their manifestation
3. Have developed the proper thought processes

III. Specialty Specific Psychomotor Skills

By the end of the PGY1 rotation in Orthopaedics, the resident should be able to:

1. The PGY-1 will be capable of performing a thorough and accurate history.
2. The PGY-1 will be capable of performing a complete physical examination, with emphasis on the examination of the musculoskeletal system.
3. The PGY-1 will demonstrate proficiency in the initial evaluation of patients in the clinic, the emergency department, and in-patient settings.
4. The PGY-1 will be expected to demonstrate level appropriate surgical skills.
5. The PGY-1 will demonstrate effective patient management skills, in both the inpatient and outpatient settings.

Pediatric Radiology Goals and Objectives – PGY1 Level

I. Core Competency Areas

By the end of the PGY1 rotation in Pediatric Radiology, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY1 rotation in Pediatric Radiology, the resident should:

1) Understand the basic principles of reading plain radiographs of the musculoskeletal system
2) Understand the basic principles of ordering plain radiographs necessary to diagnose orthopaedic clinical problems arising in the acute care setting
3) Understand the basic principles of describing a fracture on plain radiography
4) Understand the basic principles of advanced imaging studies of the musculoskeletal system including but not limited to whole body bone scanning, MRI, CT
5) Understand the basic principles of interpretation of advanced imaging studies of the musculoskeletal system including but not limited to whole body bone scanning, MRI, CT
6) Develop beginning level competency in reading plain radiographs, whole body bone scans, MRI, and CT scans of the musculoskeletal system
7) Understand what additional imaging tests (if any) are needed after plain radiographs are performed to formulate an appropriate differential diagnosis

Goals and Objectives
Plastic Surgery/Burn Care Rotation – PGY1

General Rotation Information:

The Plastic Surgery/Burn Care rotation takes place within the Division of Plastic Surgery. This rotation focuses on the teaching of the basic principles of wound management such as skin grafts and flap construction. The majority of this rotation is outpatient in nature, but the resident will also assist in the operating room. The resident on this service will also participate in the care of the burn patient under the supervision of the critical care director and the burn service attending physicians.

I. Core Competency Areas

By the end of the PGY1 rotation in Plastic Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY1 rotation in Plastic Surgery and Burn Care, the resident should:

1. Understand the basic principles of wound management.
2. Understand the basic principles of skin grafts and flap construction
3. Understand the basic principles of burn care
4. Understand the basic principles of certain microvascular procedures

III. Specialty Specific Psychomotor Skills

By the end of the PGY1 rotation in Plastic Surgery and Burn Care, the resident should be able to:

1. Accurately perform a physical examination.
2. Write up an accurate patient history.
3. Demonstrate proficiency in patient evaluation
4. Demonstrate basic operative skills and good surgical technique
5. Demonstrate good judgement in patient management
6. Demonstrate proficiency in the provision of pre and postoperative care of patients.

Goals and Objectives
Surgical Intensive Care Rotation – PGY1

General Rotation Information:

The Surgical Intensive Care (SICU) rotation provides PGY1 residents with co-management responsibilities with the primary surgical service. This rotation is intended to provide the resident with structured education in multi-system trauma and intensive care. Specifically, it involves the management of shock, sepsis, myocardial disease, multi-organ failure, and respiratory failure. The goal of the rotation is to provide the resident with experience in the care of critically ill patients.

I. Core Competency Areas

By the end of the PGY1 rotation in SICU, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY1 rotation in SICU, the resident should:

1. Understand the management of shock, sepsis, myocardial disease, multiple organ failure and respiratory failure.
2. Understand the basic management principles of SICU patients

III. Specialty Specific Psychomotor Skills

By the end of the PGY1 rotation in SICU, the resident should be able to:

1. Accurately perform a physical examination.
2. Write up an accurate patient history.
3. Demonstrate proficiency in patient evaluation
4. Demonstrate effective patient management skills
5. Demonstrate proficiency in performing procedures such as endotracheal intubation and invasive monitoring
6. Manage ventilators

Goals and Objectives
Vascular Surgery Rotation – PGY1

General Rotation Information:

The Vascular Surgery rotation takes place in the General Vascular Surgery Division of the Department of Surgery. This rotation is intended to provide PGY1 residents with experience in patient management of common vascular problems. Residents attend the vascular surgery clinic, participate in the preoperative work-up, perform routine vascular surgery, and often participate in the long term care decision for these patients, all under the direct supervision of an attending.

I. Core Competency Areas

By the end of the PGY1 rotation in Vascular Surgery the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific General Cognitive Knowledge

By the end of the PGY1 rotation in Vascular Surgery, the resident should:

1. Understand the preoperative, intraoperative, and postoperative care of vascular patients.
2. Understand the risks and potential complications of vascular procedures
3. Understand the preoperative workup of vascular patients.
4. Have a basic understanding of surgical anesthesia principles and procedures

III. Specialty Specific Psychomotor Skills

By the end of the PGY1 rotation in Vascular Surgery, the resident should be able to:

1. Accurately perform a physical examination.
2. Write up an accurate patient history.
3. Demonstrate proficiency in patient evaluation
4. Demonstrate basic operative skills and good surgical technique
5. Demonstrate effective patient management skills in both the outpatient and inpatient settings.
6. Demonstrate proficiency in the provision of pre and postoperative care of patients.
7. Perform routine vascular surgery procedures
8. Make long term care decisions for vascular patients.

Goals and Objectives
Hand Surgery Rotation – PGY1

I. Core Competency Areas

By the end of the PGY1 rotation in Hand and Upper Extremity Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

I. Core Competency

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families.
2. Procurement of thorough, logical, and concise patient histories with emphasis on the musculoskeletal system.
3. Responsiveness to the individual needs of patients and their families.
4. Understand and be able to perform a basic examination of the upper extremity. This applies to the clinic, emergency department, and inpatient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis.
6. Evaluation of the risks, benefits, and alternative treatments for various common upper extremity problem.
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health.
10. Understanding of and performance of the medical procedures related to treatment plan.
11. Ability to work well with an entire team of health care professionals and be involved in the care of the patient.

Medical Knowledge

1. Exhibit a fund of medical knowledge that is up-to-date
2. Investigation of topics as needed for clinical assignments.
3. Understanding and use of basic science principles as related to medical practice

Practice- Based Learning

1. Assessment of one's own patient management skills
2. Integration of evidence from scientific studies in the care of patient's problems.
3. Usage of available information technology to obtain and manage information. Familiarity with and ability to record information into the electronic medical record.
4.

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families.
2. Ability to listen to patients and include them in treatment decisions.
3. Ability to listen to information provided by other members of the health care team.

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent.
2. Demonstration of an ethically sound practice of medicine.
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients.

Systems-Based Practice

1. Knowledge of how to provide cost effective care.
2. Willingness to advocate for patients within the healthcare system.

3. Referral of patient to appropriate practitioners and agencies within the healthcare system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

1. Understand the anatomy and evaluation of vascular disorders of the hand such as tumors, thrombosis, aneurysms vascular injuries etc.
2. Understand the anatomy and pathophysiology of the intrinsic muscles, digital extensor mechanism, and flexor mechanism of the hand and digit: Extrinsic extensor mechanism, interosseus muscles, lumbrical muscles, thenar muscle, hypothenar muscle.
3. Understand hand anesthesia for operative procedures including the following: anatomy and equipment needed to perform: local anesthesia and digital block anesthesia
4. Understand compression neuropathies of the upper extremity.
5. Understand the presentation and treatment of specific hand infections such as pulp abscess (felon), cellulitis, paronychia, pyogenic arthritis, web space abscess, acute suppurative flexor tenosynovitis, herpetic whitlow.
6. Understand the fracture anatomy, fracture description, pertinent classification systems, and treatment options for fractures of the hand and wrist.
7. Understand the principles and indications forreplantation surgery.
8. Understand the treatment of fractures of the wrist and ligament injuries of the wrist including fractures of the scaphoid, lunate dislocation, perilunate dislocation, Kienbock's disease, carpal instability.
9. Understand the characteristics, pathogenesis, diagnostic features, and management of osteoarthritis of the hand and wrist.
10. Understand the anatomy, goals, treatment principles, in treatment methods for skin coverage of fingertip injuries.
11. Understand the types of nail and nailbed injuries the importance of the nail in principles of treatment of these injuries.
12. Understand etiology, diagnosis, and treatment of tenosynovitis of the hand and forearm (epicondylitis, DeQuervain's tendonitis, intersection syndrome, etc.)
13. Understand the reasons for splinting, splinting principles, types of splinting, and indications for splinting.
14. Recognized the different types of benign tumors of the hand and wrist such as ganglion, lipoma, benign giant cell tumor, epidermal cyst, etc.
15. Understand the presentation, pathophysiology, and treatment of complex regional pain syndrome.

III. Specialty Specific Psychomotor Skills

1. Perform incision and draining procedures such as paronychia, felon, finger abscess, and suppurative flexor tenosynovitis.
2. Perform primary and delayed primary repair of extensor tendon laceration.
3. Determine anesthesia for finger, hand and wrist surgery.
4. Perform amputation of digit.
5. Perform open and closed treatment of intra-and extra-articular fractures of the finger and wrist and forearm.
6. Understand the concept of and perform Z-plasty closure.
7. Understand the anatomy of and perform nailbed repair and coverage of fingertip and hand wounds. Understand the principles behind the use of local flap coverage (STSG, FTSG, cross finger flap, thenar flap).
8. Understand appropriate surgical sequence of replantation of the digit and wrist and forearm along with successful completion of a microsurgical laboratory course.

ACGME MILESTONES FOR ORTHOPEDICS - Effective July 1, 2013

The milestones were designed by the ACGME for use only in evaluation of resident physicians in the context of their participation in ACGME-accredited residency or fellowship programs. The milestones provide a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Milestones were designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into residency through graduation. The Ortho RRC will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The resident demonstrates milestones expected of an incoming resident.

Level 2: The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.

Level 3: The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.

Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

Note that Level 4 is designed as the graduation *target* but does not represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the residency program director.

The milestones which will be evaluated on the Hand and Upper Extremity rotation are as listed on the following pages:

Carpal Tunnel – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Understands the anatomy of carpal tunnel/median nerve • Understands the normal physiology of the median nerve	• Demonstrates knowledge of the differential diagnosis of neuropathic surgery (e.g., pronator syndrome, cubital tunnel, thoracic outlet, cervical radiculopathy, peripheral neuropathy) • Understands risk factors associated with Carpal Tunnel Syndrome (CTS) (e.g., diabetes, inflammatory arthritis, pregnancy, hypothyroidism) • Demonstrates knowledge of median nerve motor/ sensory distribution, thumb abduction, thenar numbness, anterior interosseous nerve (AIN) weakness, cervical radiculopathy • Understands natural history of CTS • Understands the pathophysiology of nerve compression (e.g., increased carpal tunnel pressure, nerve ischemia) • Understands surgical options (e.g., open, endoscopic)	• Demonstrates knowledge of current literature and alternatives to surgery • Understands the capabilities and limitations of electrodiagnostic studies • Understands influence of comorbidities • Demonstrates knowledge of complications of surgical management (e.g., location of median nerve [MN] with respect to superficial arch, recurrent motor branch, palmar cutaneous branch, Guyon's canal)	• Understands controversies within field (e.g., endoscopic versus open, use of electrodiagnostics)	• Primary author/presenter of original work within the field
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Carpal Tunnel – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains basic history and performs basic physical exam • Lists potential surgical complications (e.g., infection, scar sensitivity, neurovascular injury)	• Obtains focused history, including identifying night pain, paresthesias • Performs median nerve motor/ sensory evaluation (e.g., MN numbness, thumb abduction) • Performs provocative maneuvers (e.g., Tinel, Phalen, MN compression test) • Appropriately considers electrodiagnostic test • Prescribes non-operative treatments (e.g., night splints, steroid injection when appropriate) • Capable of diagnosing surgical complications (e.g., injury to the median nerve or its branches and vascular injury) • Provides simple post-operative management and rehabilitation	• Evaluates other sites of MN compression (e.g., pronator syndrome, cervical radiculopathy) • Interprets electrodiagnostic tests	• Performs Carpal Tunnel Release (CTR) (e.g., open or endoscopic) • Capable of treating simple complications (e.g., infection, wound healing) • Capable of performing complex postoperative management (e.g., worsening numbness, worsening pain, additional radiating symptoms)	• Capable of surgical management of major complications (e.g., injury to superficial arch, ulnar artery, branches of median nerve, or median nerve) • Capable of opposition transfer (e.g., palmaris longus, extensor indicis pollicis [EIP], or flexor digitorum superficialis [FDS]) • Capable of performing revision carpal tunnel surgery
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Distal Radius Fracture (DRF) – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of anatomy • Understands basic imaging	• Demonstrates knowledge of fracture description and soft tissue injury: angulation, displacement, shortening, comminution, shear pattern, articular parts • Understands mechanism of injury • Understands biology of fracture healing • Understands advanced imaging • Understands surgical approaches and fixation tech: percutaneous pinning, volar plating, external fixation, dorsal plating, fragment specific, combinations	• Demonstrates knowledge of current literature, fracture classifications and therapeutic alternatives • Demonstrates knowledge of associated injuries: median nerve injury, scaphoid fracture; scapholunate (SL) ligament injury, triangular fibrocartilage complex (TFCC) injury, elbow injuries • Understands natural history of distal radius fracture • Understands biomechanics and implant choices: understand the advantage and disadvantages of different fixation techniques	• Understands controversies within field: fixation techniques and fracture pattern, correlation between radiographic and functional outcomes in elderly patient	• Participates in research in the field with publication
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Distal Radius Fracture (DRF) – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam • Orders/interprets basic imaging studies • Splints fracture appropriately • Provides basic post-operative management and rehab • Lists potential complications (e.g., infections, hardware failure tendon injury, Complex Regional Pain Syndrome [CRPS], carpal tunnel syndrome, malreduction)	• Obtains focused history and physical, recognizes implications of soft tissue injury (e.g., open fracture, median nerve dysfunction, distal radioulnar joint [DRUJ] instability) • Orders/interprets advanced imaging (e.g., CT for comminuted articular fractures) • Recognizes stable/unstable fractures (e.g., metaphyseal comminution, volar/dorsal Barton's, die-punch pattern; multiple articular parts) • Able to perform a closed reduction and splint appropriately • Recognizes surgical indications (e.g., median nerve dysfunction, instability, articular step off/gap, dorsal angulation, radius shortening) • Performs surgical exposure • Modifies and adjusts post-operative plan when indicated • Recognizes/evaluates fragility fractures (e.g., orders appropriate work-up and/or consult) • Diagnoses and provides early management of complications	• Performs pre-operative planning with appropriate instrumentation and implants • Capable of surgical reduction and fixation of extraarticular fracture • Interprets diagnostic studies for fragility fractures with appropriate management and/or referral	• Capable of surgical reduction and fixation of simple intraarticular fractures (e.g., no more than two articular fragments) • Capable of surgically treating simple complications (e.g., infections, open carpal tunnel release)	• Capable of surgical reduction and fixation of a full range of fractures and dislocations (e.g., comminuted or very distal articular fractures, dorsal and volar metaphyseal fractures, greater arc perilunate injuries, Scapholunate ligament injuries) • Capable of surgically treating complex complications (e.g., osteotomies, revision fixation)
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Compassion, integrity, and respect for others as well as sensitivity and responsiveness to diverse patient populations, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation. Knowledge about respect for and adherence to the ethical principles relevant to the practice of medicine, remembering in particular that responsiveness to patients that supersedes self-interest is an essential aspect of medical practice – Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
• Consistently demonstrates behavior that conveys caring, honesty, and genuine interest in patients and families • Recognizes the diversity of patient populations with respect to gender, age, culture, race, religion, disabilities, sexual orientation, and socioeconomic status • Recognizes the importance and priority of patient care, with an emphasis on the care that the patient wants and needs; demonstrates a commitment to this value	• Demonstrates an understanding of the importance of compassion, integrity, respect, sensitivity, and responsiveness while exhibiting these attitudes consistently in common and uncomplicated situations • Consistently recognizes ethical issues in practice; discusses, analyzes, and manages in common and frequent clinical situations including socioeconomic variances in patient care	• Exhibits these attitudes consistently in complex and complicated situations • Recognizes how own personal beliefs and values impact medical care • Knowledgeable about the beliefs, values, and practices of diverse patient populations and the potential impact on patient care • Recognizes ethical violations in professional and patient aspects of medical practice	• Develops and uses an integrated and coherent approach to understanding and effectively working with others to provide good medical care that integrates personal standards with standards of medicine • Consistently considers and manages ethical issues in practice • Consistently practices medicine as related to specialty care in a manner that upholds values and beliefs of self and medicine	• Demonstrates leadership and mentoring regarding these principles of bioethics • Manages ethical misconduct in patient management and practice
☐	☐	☐	☐	☐
Comments:				
Not yet achieved Level 1 ☐				

Accountability to patients, society, and the profession; personal responsibility to maintain emotional, physical, and mental health – Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
• Understands when assistance is needed and willing to ask for help • Exhibits basic professional responsibilities, such as timely reporting for duty, being rested and ready to work, displaying appropriate attire and grooming, and delivering patient care as a functional physician • Aware of the basic principles and aspects of the general maintenance of emotional, physical, mental health, and issues related to fatigue/sleep deprivation	• Recognizes limits of knowledge in common clinical situations and asks for assistance • Recognizes value of humility and respect towards patients and associate staff • Demonstrates adequate management of personal, emotional, physical, mental health, and fatigue	• Consistently recognizes limits of knowledge in uncommon and complicated clinical situations; develops and implements plans for the best possible patient care • Assesses application of principles of physician wellness, alertness, delegation, teamwork, and optimization of personal performance to the practice of medicine • Seeks out assistance when necessary to promote and maintain personal, emotional, physical, and mental health	• Mentors and models personal and professional responsibility to colleagues • Recognizes signs of physician impairment and demonstrates appropriate steps to address impairment in colleagues	• Develops organizational policies and education to support the application of these principles in the practice of medicine • Practices consistent with the American Academy of Orthopaedic Surgeons (AAOS) Standards of Professionalism
☐	☐	☐	☐	☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Self-Directed Learning – Practice-based Learning and Improvement

1. **Identify strengths, deficiencies, and limits in one's knowledge and expertise.**
2. **Assess patient outcomes and complications in your own practice.**
3. **Set learning and improvement goals.**
4. **Identify and perform appropriate learning activities.**
5. **Use information technology to optimize learning and improve patient outcomes.**

Level 1	Level 2	Level 3	Level 4	Level 5
• Acknowledges gaps in personal knowledge and expertise, and frequently asks for feedback from teachers and colleagues • Demonstrates computer literacy and basic computer skills in clinical practice	• Continually assesses performance by evaluating feedback and assessments • Develops a learning plan based on feedback with some external assistance • Demonstrates use of published review articles or guidelines to review common topics in practice • Uses patient care experiences to direct learning	• Accurately assesses areas of competence and deficiencies and modifies learning plan • Demonstrates the ability to select an appropriate evidence-based information tool to answer specific questions while providing care	• Performs self-directed learning without external guidance • Critically evaluates and uses patient outcomes to improve patient care	• Incorporates practice change based upon new evidence

Comments:

Not yet achieved Level 1 ☐

Locate, appraise, and assimilate evidence from scientific studies to improve patient care – Practice-based Learning and Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
• Describes basic concepts in clinical epidemiology, biostatistics, and clinical reasoning • Categorizes the study design of a research study	• Ranks study designs by their level of evidence • Identifies bias affecting study validity • Formulates a searchable question from a clinical question	• Applies a set of critical appraisal criteria to different types of research, including synopses of original research findings, systematic reviews and meta-analyses, and clinical practice guidelines • Critically evaluates information from others: colleagues, experts, industry representatives, and patient-delivered information	• Demonstrates a clinical practice that incorporates principles and basic practices of evidence-based practice and information mastery • Cites evidence supporting several common practices	• Independently teaches and assesses evidence-based medicine and information mastery techniques
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Systems thinking, including cost-effective practice – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Describes basic levels of systems of care (e.g., self-management to societal) • Understands the economic challenges of patient care in the health care system	• Gives examples of cost and value implications of care he or she provides (e.g., gives examples of alternate sites of care resulting in different costs for individual patients)	• Orders and schedules tests in appropriate systems for individual patients balancing expenses and quality • Successfully navigates the economic differences of the health care system	• Effectively manages clinic team and schedules for patient and workflow efficiency • Uses evidence-based guidelines for cost-effective care	• Leads systems change at micro and macro level (e.g., manages operating room [OR] team and patient flow in a multi-case OR day)
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Resident will work in interprofessional teams to enhance patient safety and quality care – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Recognizes importance of complete and timely documentation in teamwork and patient safety	• Uses checklists and briefings to prevent adverse events in health care	• Participates in quality improvement or patient safety program and/or project	• Maintains team situational awareness and promote "speaking up" with concerns • Incorporates clinical quality improvement and patient safety into clinical practice	• Develops and publishes quality improvement project results • Leads local or regional quality improvement project
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: **Not yet achieved Level 1** ☐				

Uses technology to accomplish safe health care delivery – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Explains the role of the Electronic Health Record (EHR) and Computerized Physician Order Entry (CPOE) in prevention of medical errors	• Appropriately and accurately enters patient data in EHR • Effectively uses electronic medical records in patient care	• Reconciles conflicting data in the medical record	• Contributes to reduction of risks of automation and computerized systems by reporting system problems	• Recommends systems re-design for faculty computerized processes
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: **Not yet achieved Level 1** ☐				

Communication – Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Communicates with patients about routine care (e.g., actively seeks and understands the patient's/family's perspective; able to focus in on the patient's chief complaint and ask pertinent questions related to that complaint)	• Communicates competently within systems and other care providers, and provides detailed information about patient care (e.g., demonstrates sensitivity to patient—and family—related information gathering/sharing to social cultural context; begins to engage patient in patient-based decision making, based on the patient's understanding and ability to carry out the proposed plan; demonstrates empathic response to patient's and family's needs; actively seeks information from multiple sources, including consultations; avoids being a source of conflict; able to obtain informed consent [risks, benefits, alternatives, and expectations])	• Communicates competently in difficult patient circumstances (e.g., able to customize emotionally difficult information, such as end-of-life or loss-of-limb discussions; supports patient and family; engages in patient-based decision making incorporating patient and family/cultural values and preferences)	• Communicates competently in complex/adversarial situations (e.g., understand a patient's secondary motivations in the treatment of his or her care—drug seeking, disability issues, and legal cases; able to sustain working relationships during complex and challenging situations, including transitions of care—treatment of a metastatic pathologic fracture; able to manage conflict with peers, subordinates, and superiors)	• Demonstrates leadership in communication activities (e.g., coaches others to improve communication skills; engages in self-reflection on how to improve communication skills
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments:				
Not yet achieved Level 1 ☐				

Teamwork (e.g., physician, nursing and allied health care providers, administrative and research staff) – Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Recognizes and communicates critical patient information in a timely and accurate manner to other members of the treatment team • Recognizes and communicates role as a team member to patients and staff • Responds to requests for information *Examples:* Lab results, accurate and timely progress notes, answers pages in a timely manner	• Supports and respects decisions made by team • Actively participates in team-based care; Supports activities of other team members, communicates their roll to the patient and family *Examples:* Hand-offs, transitions of care, communicates with other health care providers and staff members	• Able to facilitate, direct, and delegate team-based patient care activities • Understands the Operating Room team leadership role and obligations *Examples:* Leads daily rounds, communicates plan of action with OR personnel	• Leads team-based care activities and communications • Able to identify and rectify problems with team communication *Example:* Organizes and verifies hand-off rounds, coverage issues	• Seeks leadership opportunities within professional organizations • Able to lead/facilitate meetings within organization/system
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments:				Not yet achieved Level 1 ☐

Orthopaedic Surgery Minimum Numbers (effective 2012-2013)

Category	Minimum
Knee arthroscopy	**30**
Shoulder arthroscopy	**20**
ACL reconstruction	**10**
THA	**30**
TKA	**30**
Hip fractures	**30**
Carpal tunnel release	**10**
Spine decompression/posterior spine fusion	**15**
Ankle fracture fixation	**15**
Closed reduction forearm/wrist	**20**
Ankle & hind & mid-foot arthro	**5**
Supracondylar humerus perc	**5**
Femur and tibia intramedullary fixation	**25**
All pediatric procedures	**200**
All oncology procedures	**10**

CPT Codes in Each Category

Knee arthroscopy (29850, 29851, 29855, 29856, 29866, 29867, 29868, 29870, 29871, 29873, 29874, 29875, 29876, 29877, 29879, 29880, 29881, 29882, 29883, 29884, 29885, 29886, 29887)

Shoulder arthroscopy (29805, 29806, 29807, 29819, 29820, 29821, 29822, 29823, 29824, 29825, 29826, 29827, 29828)

ACL reconstruction (29888)

THA (27130, 27132, 27134, 27137, 27138)

TKA (27442, 27443, 27445, 27446, 27447, 27487)

Hip fractures (27235, 27236, 27244, 27245)

Carpal tunnel release (64721)

Spine decompression lumbar spine/posterior spine fusion thoracic or lumbar (22612, 22630, 22800, 22802, 22804, 63005, 63012, 63017, 63030, 63042, 63047)

Ankle fracture fixation (27766, 27769, 27792, 27814, 27822, 27823, 27826, 27827, 27828, 27829)

Closed reduction forearm and wrist fractures (25505, 25520, 25535, 25565, 25605, 25624, 25690, 25680, 25675)

Ankle and hind and mid-foot arthrodeses (27870, 28705, 28715, 28725, 28730, 28735, 28737)

Supracondylar humerus percutaneous treatment (24538, 24566, 24582)

Femur and tibia intramedullary fixation (27506, 27759)

Please note: manipulations must recorded with procedures in the Case Log System

The Ohio State University
Department of Orthopaedics

Residency Curriculum

Foot & Ankle

About This Curriculum

- It is the responsibility of both the resident and the attending to go over the goals and guidelines included in this handbook
    - At the beginning of the rotation
    - At the conclusion of the rotation
- Additional materials and/or service handbooks may be provided by the attendings at the beginning of the rotation

Revised 8/15/2019

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Foot and Ankle Service Information

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Schedule

During the two month rotation, the PGY-3 and PGY-4 will spend time with Dr. Groth and the OSU East Ortho Trauma Team.

Monday (PGY-4): Clinic JCSMI, beginning at 8:00am
Tuesday (PGY-4): OR UHE, beginning at 7:00am
Wednesday (PGY-3): AM: Clinic OSU Stoneridge/Dublin8-12 pm
PM: OR UHE or F&A Lectures
Thursday (PGY-4): Clinic OSU East, beginning at 8:00am (after Resident Academic requirements are complete)
Friday (PGY-3): OR JSCMI (Dr. Groth), beginning at 7:00am

Residents will also participate in morning didactic sessions with the OSU East Ortho Trauma Team.

OSU East Trauma & Foot/Ankle Rotation

Schedule

	PGY1*	PGY3	PGY4	PGY5	Julie	Matt	ED
Monday	Trauma Clinic	TR East OR Trauma Clinic (Quatman)	F&A Clinic Crane	East OR/Prison OR	Crane	East OR Trauma	PGY1*/3
Tuesday	TR or FA OR East	TR East OR Trauma Clinic (Harrison)	F&A OR East	Resident Clinic	Clinic CPE	East OR Trauma	PGY 1*/3
Wednesday	TR East	Dublin F&A Clinic/Afternoon OR	TR East	TBA	Clinic	Clinic CPE	PGY 1*/4
Thursday	FA Clinic CPE	TR East	F&A Clinic CPE	Prison Clinic	Clinic CPE	East OR Trauma	PGY 3
Friday	TR East	F&A OR Crane	TR East	TBA	F&A OR Crane	East OR Trauma	PGY 1*/4

* We do not have intern coverage at all times. When there is an intern on the service – they should be first call for the pager. When there is no intern first call will be the PGY listed for the day. Interns should see the floor/ED consults and then staff them with a more senior level resident before patients are staffed with an attending. Everyone is expected to participate in the care of patients. If an intern has not had supervision for the skill they need to do (ie. Aspiration, reduction) please supervise for first few experiences. More complex and polytrauma patients should be seen by a senior level resident.

ED Coverage

It is expected that the East ED be covered at all times. We cannot have all residents scrubbed in the OR at an offsite at the same time. We have assigned coverages for individual days. This person is responsible for ensuring that the ED is covered and make sure they are ready to present overnight patients the next morning in fracture conference. See emergent patients as soon as possible. See routine consults in a timely manner. If you are unsure of an appropriate plan, run the patient by the chief on the service to help with forming an appropriate plan. You can always feel free to consult with the trauma room attending for the day as well. We are here to help and ensure patients get appropriate and safe care. Please let next day trauma surgeon know of cases being posted to help with OR planning (text/call preferred during the day).

Patient Management

You (PGY 3 or 4) are responsible for all patients that are seen on the day you are assigned to cover the ED (see table above). The patients that come in on that day are yours until they are discharged. You should round on them every day and write their notes. You will present patient seen during the day the following morning in fracture conference.

The person in charge of the ED for a given day is responsible for communicating with the resident that was on call overnight and ensuring that patients are ready to be presented at fracture conference and are ready for the operating room if necessary.

If you operate on a patient, they are your patients and you should round on them every day and write a note. When there is an intern on the service, they can help with the work – but the PGY3/4 is ultimately

responsible for coordinating their care. The PGY5 should assist with rounds and patient care as well and will follow similar guidelines for resident clinic patients that are operated on or patients that they operate on without another resident preent.

Fracture Conference

All residents are expected to attend fracture conference and rounds every morning. Fracture conference will start at 6:15am, unless otherwise informed by the covering trauma room attending.

Clinic Coverage

When OR cases are finished or if there are no cases scheduled on a service for a given day, you should check in with your colleagues in clinic and plan to be able to go help finish up clinic. The more people that pitch in to assist with a clinic, the quicker things can go, the happier our patients will be and the happier the team will be.

Floor Coverage

All patient should be seen and a note written by a resident every day. Work with the APPs to ensure orders are completed and work as a team to make sure orders are written and discharges are completed. Procedures can be shared by the team. Please work with the APPs to ensure all patient needs are met- (ie. Labs addressed, followup xrays).

Sign Out

It is expected that patient signout be completed on IHIS to allow cross covering residents an opportunity to have important patient care information in the event of an issue overnight. Signout should be completed by email for every patient on the service over the weekends. Please make a phone call to the covering resident if you are concerned about a patient or there is an important issue that needs to be addressed. Include attendings in all email communications to ensure the most updated plans are clarified for all patients at all times. Above all else patient care is first. You are never "faulted" for over-communicating but failing to communicate can have significant consequences for patient care.

PRE-OP WORKUP

It is important to ensure that all patients have an appropriate pre-op workup. Ensure all x-rays are ordered. Remember joint above and below when appropriate. Remember traction x-rays if the fracture pattern is not clear. Ensure patients have type and cross and pregnancy test ordered if indicated. Address all labs (Hg, electrolytes as needed for OR). COMMUNICATE VIA ORDERS AND IN PERSON with nursing staff when a time sensitive task such as turning off a heparin gtt is needed to ensure appropriate readiness for OR.

WHEN MEDICAL CONSULTS ARE NECESSARY TO ENSURE PATIENT OPTIMIZATION FOR SURGERY, DO NOT RELY ON ORDERS. CALL AND COMMUNICATE WITH THE NECESSARY TEAMS TO ENSURE THE CONSULTS ARE COMPLETED IN A TIMELY MANNER.

Communicate with the trauma room attendings in a timely fashion. If the case seems complicated, please let us know what we are getting ourselves into. Planning is important and cases are much smoother when we know what we are walking into on a daily basis. Text messages are fine and encouraged for all attendings. If you are having trouble getting a response to text, please try calling. You can always call Dr. Harrison or Dr. Quatman if you need immediate help with triage if you are not able to reach the intended attending.

Please include the chief residents in pre-op planning. They can help you prepare the patient for surgery and a concise presentation to the attendings.

OR

Prepare pre-op plans and go over them with the attending for the day/bring them to the OR with you. If you come to the OR prepared and have a good plan, you will get an opportunity to operate. If you do not show up prepared, you will likely end up watching.

At the conclusion of the case, make sure you have a post-op plan discussed with the attending and know post-op orders, who is dictating and what the next steps are for the patient. Dictations should be completed within 24hours and should ideally be completed immediately after the case.

Performance Feedback

Attending staff members on the foot and ankle service are available at any time if questions or concerns arise. At the end of each rotation, each attending on the service will evaluate each resident assigned to the service. A meeting should be scheduled at the conclusion of the rotation to discuss performance and provide written feedback on the rotation.

Ankle Arthritis – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of pathophysiology related to ankle/mid-foot/hind-foot arthritis • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., osteophyte formation, joint narrowing, subchondral cysts and sclerosis) • Demonstrates basic knowledge of natural history of ankle/mid-foot/hind-foot arthritis • Demonstrates knowledge of gait mechanics (e.g., phases of gait) and normal limb alignment • Demonstrates knowledge of ankle/mid-foot/hind-foot arthritis anatomy and basic surgical approaches (e.g., anterior, lateral-transfibular) • Demonstrates knowledge of non-operative treatment options and surgical indications	• Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., bone loss, articular deformity, subluxation) • Understands the effects of intervention on natural history of ankle/mid-foot/hind-foot arthritis (e.g., effects of NSAIDs, steroid injections, brace, rocker bottom shoes) • Demonstrates knowledge of abnormal gait mechanics of ankle/mid-foot/hind-foot arthritis (e.g., antalgic gait, circumduction, decreased stance) and abnormal limb alignment and adjacent joint function • Understands alternative surgical approaches (e.g., posterior, posterolateral, posteromedial) • Understands basic pre-surgical planning and templating • Understands non-operative treatment options and surgical indications	• Demonstrates knowledge of current literature and alternative treatments (e.g., non-operative, cheilectomy, fusion, replacement, distraction) • Understands abnormal gait mechanics of ankle/mid-foot/hind-foot arthritis (e.g., identifies abnormal gait patterns in patient) • Applies general understanding of non-operative treatment options and surgical indications	• Understands controversies within the field • Applies understanding of natural history to clinical decision-making (e.g., considers patient-specific characteristics of disease to select most appropriate treatment) • Applies biomechanics to implant and procedure selection	• Primary author/presenter of original work within the field
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Ankle Arthritis – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam • Appropriately orders basic imaging studies (e.g., three weight-bearing views) • Prescribes non-operative treatments • Provides basic peri-operative management (e.g., pre- and post-operative orders, labs, consults) • Lists potential complications	• Obtains focused history and performs focused exam and gait analysis • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment (e.g., non-steroidal anti-inflammatory drugs [NSAIDs], steroid injections, brace, rocker bottom shoes) • Completes pre-operative planning with instrumentation and implants • Performs one basic surgical approach to the ankle/mid-foot/hind-foot arthritis (e.g., anterior or lateral transfibular) • Provides post-operative management and rehabilitation (e.g., prothrombin time [PT] orders with goals and restrictions) • Capable of diagnosis and early management of complications (e.g., wound healing problems, infection, deep vein thrombosis [DVT])	• Appropriately orders and interprets advanced imaging studies/lab studies • Completes comprehensive pre-operative planning with alternatives • Modifies and adjusts post-operative treatment plan as needed	• Provides patient specific non-operative treatment (e.g., diagnostic injections) • Capable of performing straight forward ankle/mid-foot/hind-foot reconstruction such as Tarsometatarsal joint arthrodesis, tarsal joint arthrodesis, triple, talonavicular or subtalar joint arthrodesis and ankle fusion (e.g., with minimal deformity or bone defect) • Capable of surgically treating simple complications (e.g., incision and drainage [I&D])	• Performs complex surgical approaches and reconstruction to the ankle/mid-foot/hind-foot arthritis (e.g., posterior, posterolateral, posteromedial) • Develops unique, complex post-operative management plans • Surgically treats complex complications (e.g., nonunion, malunion)
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Ankle Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of pathophysiology related to ankle fractures • Correlates anatomic knowledge to imaging findings on basic imaging studies • Demonstrates knowledge of non-operative treatment options and surgical indications	• Demonstrates ability to describe and classify fractures • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Demonstrates basic knowledge of natural history of ankle fractures • Demonstrates knowledge of ankle fractures anatomy and basic surgical approaches • Understands basic pre-surgical planning and templating • Understands implication of open fractures and soft tissue injury	• Demonstrates knowledge of current literature and alternative treatments • Understands the effects of intervention on natural history of ankle fractures • Understands alternative surgical approaches	• Understands controversies within the field (e.g., syndesmotic fixation, indications and options) • Applies understanding of natural history to clinical decision-making • Understanding of biomechanics and implant choices	• Primary author/presenter of original work within the field
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Ankle Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Prescribes non-operative treatments • Splints fracture appropriately • Provides basic peri-operative management • Lists potential complications	• Obtains focused history and performs focused exam; recognizes implications of soft tissue injury • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment • Performs a closed reduction • Completes pre-operative planning with instrumentation and implants • Performs surgical exposure of the lateral malleolus • Provides post-operative management and rehabilitation • Capable of diagnosis and early management of complications	• Appropriately orders and interprets advanced imaging studies (e.g., stress views, computed tomography [CT] scan) • Provides a comprehensive assessment of most fractures on imaging studies • Completes comprehensive pre-operative planning with alternatives • Performs surgical reduction and fixation of a simple fracture (e.g., lateral or bimalleolar ankle fracture) • Modifies and adjusts post-operative treatment plan as needed • Capable of treating complications both intra-operatively and post-operatively (e.g., wound breakdown following malleolar fixation)	• Provides comprehensive assessment of complex fracture patterns on imaging studies (e.g., pilon fracture) • Recognizes indications for and provides non-operative treatment of an unstable fracture (e.g., diabetes, medical comorbidities, non-compliance) • Performs surgical reduction and fixation of a moderately complex fracture (e.g., open reduction internal fixation [ORIF] trimalleolar ankle fracture or simple pilon fracture)	• Performs surgical reduction and fixation of a full range of fractures and dislocations (e.g., ORIF complex pilon fracture) • Develops unique, complex post-operative management plans • Surgically treats complex complications (e.g., revision fixation after failed ORIF)
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Diabetic Foot – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of pathophysiology related to Diabetes mellitus (e.g., neuropathy, retinopathy, renal disease, peripheral vascular disease) • Knowledge of medical management of Diabetes mellitus (e.g., glycemic control, diabetic diet) • Demonstrates some knowledge of natural history of Diabetes mellitus • Demonstrates knowledge of foot anatomy	• Understands diabetic foot conditions and staging systems (e.g., infection vs. Charcot, Eichenholz classification) • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., x-ray signs of osteomyelitis, Charcot changes) • Demonstrates some knowledge of diabetic foot conditions (neuropathic ulcer risk factors) and the effects of intervention (e.g., offloading and immobilization for Charcot, debridement and antibiotics for infection) • Demonstrates some knowledge of gait mechanics (e.g., phases of gait and normal limb alignment) • Demonstrates knowledge of basic surgical approaches (e.g., dorsomedial and dorsolateral approaches, amputations of the foot) • Understands basic pre-surgical planning • Demonstrates knowledge of non-operative treatment options and surgical indications • Understands basic science of wound healing	• Demonstrates knowledge of current literature and alternative treatments (e.g., debridement, off-loading, immobilization) • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., CT and MRI signs of osteomyelitis) • Demonstrates some knowledge of abnormal gait mechanics and limb alignment and adjacent joint function, diabetic shoe wear and orthotics (e.g., apropulsive gait, antalgic gait, loss of proprioception and balance)	• Understands controversies within the field (e.g., non-operative vs. operative management of osteomyelitis) • Applies understanding of natural history to patient-specific clinical decision-making • Understands alternative surgical approaches (e.g., Plantar approach, complex amputations of the foot)	• Primary author/presenter of original work within the field
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐

Comments:

Not yet rotated ☐

Diabetic Foot – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam • Appropriately orders basic imaging studies (e.g., three or four weight-bearing views of the foot • Provides basic peri-operative management (e.g., pre- and post-operative orders, labs, consults) • Lists potential complications	• Obtains focused history and performs focused exam • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment (e.g., wound care, antibiotics, off-loading, immobilization, depth shoes, accommodative orthotics) • Completes pre-operative planning including vascular assessment and the potential for wound healing (e.g., ankle-brachial indicis [ABIs] endovascular consultation) • Performs one basic surgical approach to the Diabetic foot (e.g., medial or lateral) • Provides post-operative management and rehabilitation (PT orders with goals and restrictions) • Capable of diagnosis and early management of complications (e.g., wound healing problems, infection, DVT)	• Appropriately orders and interprets advanced imaging studies (e.g., CT and MRI with or without contrast) • Completes comprehensive pre-operative planning with alternatives for limb salvage (e.g., revascularization combined with reconstruction) • Modifies and adjusts post-operative treatment plan as needed	• Provides complex non-operative treatment (e.g., multiple co-morbidities, non-compliant, etc.) • Capable of performing alternative surgical approaches to the Diabetic foot (e.g., multiple or plantar approaches) • Capable of treating complications, both intra- and post-operatively	• Develops unique, complex post-operative management plans • Surgically treats complex complications
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Goals and Objectives
Foot and Ankle Rotation – PGY3

I. Core Competency Areas

By the end of the PGY1 rotation in Foot and Ankle Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY3 rotation in foot and ankle surgery, the resident should:

1. Understand the gross anatomy and histology of the normal foot
2. Understand the kinematics, kinetics, and wear characteristics of adult foot and ankle biomechanics.
3. Understand neuromuscular and neurologic diseases as they apply to the foot and ankle (i.e. ALS, CP, CVA, CMT, Diabetes Mellitus, Myelodysplasia, etc).
4. Understand localized entrapment neuropathies such as anterior tarsal tunnel, digital nerve compression, Morton's neuroma, and sural nerve compression.
5. Understand circulatory disturbances such as arterial aneurysm, Distal arterial occlusive disease, lymphedema, and thrombosis.
6. Understand dermatologic and nail disorders of the nail and adjacent soft tissue
7. Understand common tumors of the foot and ankle such as giant cell tumors, fibroma, ganglion, lipoma, etc.
8. Understand infectious and noninfectious inflammatory disorders of the foot and ankle such as bursitis and plantar fascitis.
9. Understand the principles and complications of rheumatoid foot and ankle
10. Understand the examination, diagnosis, and evaluation of hallux valgus, hallux rigidus, hallux varus, and metatarsus primus varus.
11. Understand and identify the different types of forefoot and toe deformities
12. Understand gout and periarticular alterations such as calcific deposits, subtalar arthrodesis, metatarsal head resection, and ankle joint arthrodesis.
13. Understand and identify the different types of foot and ankle fractures and dislocations
14. Understand hindfoot pathology such as calcaneal spurs, fascitis, bursitis, Achilles tendonitis, varus, valgus of the heel.
15. Understand and identify stress fractures of the fibula, metatarsals, navicular, and tibia.
16. Understand the treatment of adult clubfoot.
17. Understand the etiology and treatment of cavus foot
18. Understand the classification , roentgenographic evaluation, and treatment (both operative and non operative) of flatfoot or pes planus.
19. Ligament reconstruction of the ankle.

III. Specialty Specific Psychomotor Skills

By the end of the PGY3 rotation in foot and ankle surgery, the resident should be able to:

1. Interpret plain radiographs, CAT scans, MR Imaging
2. Perform procedures related to the forefoot (i.e. partial matrixectomy, resection of tailor's bunion, bunionectomy, removal of interdigital neuroma, hallux interphalangeal fusion with tendon transfer)
3. Perform procedures related to the rearfoot (i.e. triple arthrodesis, resection of Haglund's deformity, tarsal tunnel release, plantar fascial stripping, Achilles tendon repair).
4. Perform procedures related to the ankle such as ankle arthroscopy, repair of OCD of the talus, and ankle fusion.
5. Perform amputations (i.e. digital disarticulation, Syme's amputation, Lisfranc's amputation, Chopart's amputation, below knee amputation, calcanectomy.
6. Perform trauma procedures related to the foot and ankle (i.e. ORIF of displaced phalangeal fractures, ORIF of Lisfranc fracture dislocation, ORIF of talar fractures, etc.)

Goals and Objectives
Foot and Ankle Rotation – PGY4

I. Core Competency Areas

By the end of the PGY4 rotation in Foot and Ankle Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY4 rotation in foot and ankle surgery, the resident should:

1. Understand the gross anatomy and histology of the normal foot
2. Understand adult foot and ankle biomechanics.
3. Understand plain radiographic views of the foot and ankle and the indications for CT, MRI and nuclear medicine scans and stress radiographs (as well as how to perform stress radiographs).
4. Understand neuromuscular and neurologic diseases as they apply to the foot and ankle (i.e. CP, CVA, CMT, Diabetes Mellitus, Myelodysplasia, etc).
5. Understand the musculoskeletal consequences of peripheral neuropathy, specifically the clinical signs of acute Charcot arthropathy and its immediate and definitive management.
6. Understand localized entrapment neuropathies such as tarsal tunnel, superficial peroneal nerve entrapment, and Morton's neuroma.
7. Understand circulatory disturbances such as diabetes related peripheral vascular disease, lymphedema, and venous thromboembolic disease.
8. Understand disorders of the nail and adjacent soft tissue
9. Understand be able to radiographically identify the more common foot and ankle tumors such as giant cell tumors, ganglion, synovial cell sarcoma etc.
10. Understand investigation and treatment of infectious and noninfectious inflammatory disorders of the foot and ankle.
11. Understand the principles and complications of rheumatoid foot and ankle.
12. Understand the evaluation and treatment of hallux valgus, hallux rigidus, and hallux varus.
13. Understand the evaluation and treatment of toe deformities.
14. Understand the evaluation and treatment of metatarsalgia.
15. Understand and classify the more common types of foot and ankle fractures and dislocations
16. Understand hindfoot pathology such as calcaneal spurs, fascitis, bursitis, Achilles tendinosis, varus, valgus of the heel.
17. Understand and identify stress fractures of the fibula, metatarsals, navicular, and tibia.
18. Understand the etiology and treatment of cavus foot.
19. Understand the classification, roentgenographic evaluation, and treatment (both operative and non operative) pes planus.
20. Understand the treatment of tarsal coalition and residual clubfoot deformity in adults.
21. Understand ankle ligament injuries and their reconstruction

III. Specialty Specific Psychomotor Skills

By the end of the PGY4 rotation in foot and ankle surgery, the resident should be able to:

1. Interpret plain radiographs, CAT scans, MR Imaging
2. Perform procedures related to the forefoot (i.e. partial matrixectomy, resection of tailor's bunion, hallux valgus correction, cheilectomy, first MTP arthrodesis, removal of interdigital neuroma, hallux interphalangeal fusion with tendon transfer)
3. Perform procedures related to the rearfoot (i.e. subtalar and triple arthrodesis, resection of Haglund's deformity, tarsal tunnel decompression, plantar fascia release and excision, Achilles tendon repair and reconstruction).
4. Perform procedures related to the ankle (i.e. ankle arthroscopy, treatment of OCD of the talus, and ankle fusion and ankle ligament reconstruction).
5. Perform amputations (i.e. digital disarticulation, transmetatarsal amputation, below knee amputation)

6. Perform trauma procedures related to the foot and ankle (i.e. ORIF of displaced phalangeal fractures, ORIF of Lisfranc fracture dislocation, ORIF of tarsal and ankle fractures, etc.)

Revised 6/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Physical Exam Competencies
Foot & Ankle Service: PGY3 and PGY4

□ Footwear assessment:
- Sole wear pattern

□ Complete normal physical examination of the foot and ankle, including:
- Assessment of gait
- Inspection
- Palpation
- Range of motion, including:
  - Ankle dorsiflexion/plantarflexion
  - Subtalar inversion/eversion
  - Medial column mobility
  - Great toe motion: MTP and IP
  - Interphalangeal motion
- Neurovascular assessment:
  - DP and PT pulse
  - Muscle testing as indicated

□ Identify common foot deformities:
- Bunions
- Pes planus
- Pes Cavus
- Claw toe, Hammer toe, Mallet toe, Crossover toe
- Bunionette
- Rockerbottom deformity

Special Tests:

□ "Too many toes" sign
□ Single and double limb heel rise test
□ Toe / heel walking
□ Semmes-Weinstein monofilament sensation testing
□ Percussion test for tarsal tunnel syndrome
□ Silfverskiold test (ankle dorsiflexion with knee flexed and knee extended)
□ Toe-translation test (digital drawer) test
□ Anterior drawer test
□ Talar tilt test
□ Syndesmotic squeeze test
□ External rotation stress test

- Forefoot compression (Mulder's click)
- Heel squeeze test
- Thompson test
- Coleman block test
- Homan's sign

Revised 6/10

The Ohio State University
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Orthopaedic Residency Program

Surgical Competencies
Foot & Ankle Service: PGY3

By the end of the PGY3 rotation in foot & ankle, the resident should be able to perform the following procedures:

Amputations:
- Toe amputation
- Transmetatarsal amputation
- Below knee amputation
- Above knee amputation

First ray procedures:
- Partial and total nail ablation
- IP and first MTP arthrodesis
- Chevron osteotomy
- Modified McBride procedure
- Proximal MT osteotomy for angular correction

Lesser ray procedures:
- Lesser toe IP arthrodesis
- Resection of head of proximal phalanx
- Girglestone-Taylor flexor tendon transfer
- Weil osteotomy for MT shortening
- MT head condylectomy
- 5^{th} MT osteotomy for bunionette correction
- ORIF of MT fractures

Midfoot procedures:
- LisFranc injury fixation
- ORIF of Jones fracture

Hindfoot procedures:
- Achilles tendon debridement
- Plantar fascia release
- Subtalar arthrodesis
- Gastroc slide (Strayer procedure)

Ankle procedures:
- ORIF of bimalleolar fracture
- Ankle arthroscopy for simple debridement

Brostrom ankle ligament reconstruction

Miscellaneous procedures:

Harvest of iliac crest bone graft
Harvest of proximal and distal tibial bone graft
Harvest of calcaneal bone graft

Revised 6/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Surgical Competencies
Foot & Ankle Service: PGY4

In addition to the surgical competencies indicated for the PGY3 rotation in foot & ankle, by the end of PGY4 rotation in foot & ankle, the resident should be able to perform the following procedures:

Forefoot procedures:
- Rheumatoid forefoot reconstruction
- Multiple MT osteotomies for cavus foot reconstruction

Midfoot procedures
- Midfoot arthrodesis
- ORIF of complex midfoot fractures and dislocations

Hindfoot procedures:
- ORIF of calcaneal, talar, and navicular fractures
- Naviculocuneiform, talonavicular, and triple arthrodesis
- Achilles tendon reconstruction with FHL transfer
- Correction of pes planus
- Correction of pes cavus

Ankle procedures:
- ORIF of trimalleolar and pilon fractures
- Ankle arthrodesis techniques
- Ankle arthroscopy for debridement of osteochondral lesions of the talus
- Ankle arthroscopy for debridement of tibial and talar osteophytes
- Repair for subluxating peroneal tendons
- Peroneal tendon debridement and reconstruction for tendinosis
- Tibialis posterior tendon reconstruction with FDL transfer for tendinosis
- Complex repair with tendon weave for recurrent ankle instability
- Tendon transfers for drop foot and other paralysis

Orthopaedic Surgery Minimum Numbers (effective 2012-2013)

Category	Minimum
Knee arthroscopy	**30**
Shoulder arthroscopy	**20**
ACL reconstruction	**10**
THA	**30**
TKA	**30**
Hip fractures	**30**
Carpal tunnel release	**10**
Spine decompression/posterior spine fusion	**15**
Ankle fracture fixation	**15**
Closed reduction forearm/wrist	**20**
Ankle & hind & mid-foot arthro	**5**
Supracondylar humerus perc	**5**
Femur and tibia intramedullary fixation	**25**
All pediatric procedures	**200**
All oncology procedures	**10**

CPT Codes in Each Category

Knee arthroscopy (29850, 29851, 29855, 29856, 29866, 29867, 29868, 29870, 29871, 29873, 29874, 29875, 29876, 29877, 29879, 29880, 29881, 29882, 29883, 29884, 29885, 29886, 29887)

Shoulder arthroscopy (29805, 29806, 29807, 29819, 29820, 29821, 29822, 29823, 29824, 29825, 29826, 29827, 29828)

ACL reconstruction (29888)

THA (27130, 27132, 27134, 27137, 27138)

TKA (27442, 27443, 27445, 27446, 27447, 27487)

Hip fractures (27235, 27236, 27244, 27245)

Carpal tunnel release (64721)

Spine decompression lumbar spine/posterior spine fusion thoracic or lumbar (22612, 22630, 22800, 22802, 22804, 63005, 63012, 63017, 63030, 63042, 63047)

Ankle fracture fixation (27766, 27769, 27792, 27814, 27822, 27823, 27826, 27827, 27828, 27829)

Closed reduction forearm and wrist fractures (25505, 25520, 25535, 25565, 25605, 25624, 25690, 25680, 25675)

Ankle and hind and mid-foot arthrodeses (27870, 28705, 28715, 28725, 28730, 28735, 28737)

Supracondylar humerus percutaneous treatment (24538, 24566, 24582)

Femur and tibia intramedullary fixation (27506, 27759)

Please note: manipulations must recorded with procedures in the Case Log System

The Ohio State University
Department of Orthopaedics

Residency Curriculum

Hand/Upper Extremity

About This Curriculum

- It is the responsibility of both the resident and the attending to go over the goals and guidelines included in this handbook
    - At the beginning of the rotation
    - At the conclusion of the rotation
- Additional materials and/or service handbooks may be provided by the attendings at the beginning of the rotation

The Ohio State University
Departments of Orthopaedic and Plastic Surgery
Division of Hand and Upper Extremity Surgery
Orthopaedic Residency Program

Hand and Upper Extremity Resident Rotation Information

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Schedule:
The resident will spend time with all physicians during the two month rotation. The resident schedule will be set to allow for continuity of patient care in the clinic setting and the operating room.

In addition to clinic and surgery assignments the resident will attend scheduled didactic lectures on Friday morning. The resident will attend hand clinic on some Thursdays at CMC.

There is a mandatory weekly hand didactic conference Thursdays 7:00am at the Hand Center conference room. This conference is lead by an attending hand surgeon and will review all relevant topics of hand and upper extremity over a 40 week period (see attached schedule). The resident should be familiar with the topic to be presented and will be expected to participate in the discussion.

There is a mandatory weekly hand conference Tuesday 4pm at the Hand Center. The conference is structured specifically for resident education. Weekly topics are published in advance on the monthly schedule. It is expected

the resident will be familiar with the subject. The conference will also include case presentations presented by attendings, residents and mid-level providers. Please be familiar with at least two cases that can be presented for discussion. Once monthly the Tuesday conference will be a resident presentation of a topic of interest. Please discuss the topic in advance with Dr. Awan for approval.

These two conferences are provided for the express benefit of the residents and fellows, have priority over other duties and are protected time. If there is any question about this expectation please speak with Dr. Awan.

Vacation and time off policy: Due to limited staffing in the hand center and advance planning of clinical assignments resident vacation during the two month hand rotation
will be limited and must be approved in advance by Dr. Awan and follow the resident procedure for time off. If you do not know the procedure, please contact Julia Panzo.

The physician clinic and surgery schedule is below. It is your responsibility to check your schedule, it is subject to change.

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Dr. Awan	Clinic EEI	OR EEI 1st/3rd/5th OR Same Day Surgery 2nd/4th	OR EEI 1st/3rd Crane 2nd/4th/5th	Clinic EEI, Crane 2nd/4th pm FMC Clinic am 1st	OR EEI am 1/2/3/5 OR Crane 4th
Dr. Jain	Clinic EEI	OR Crane 1st, 5th OR EEI 2nd, 4th OR East 3rd	Clinic EEI	OR EEI	Clinic EEI am OR add on pm
Dr. Goyal	OR EEI 1st/3rd/4th/5th OR East 2nd	Clinic EEI	Clinic am No clinic 3rd Wed OR Add on pm	OR Crane	Clinic EEI
Dr. Julka	OR East 1s OR Crane 2nd – 5th	Clinic EEI	Fairfield Medical Center	Clinic EEI	OR Crane
Dr. Speeckaert	Admin/OR am Clinic pm Lewis Center	OR EEI 1st/2nd/4th/5th OR Same Day 3rd	Clinic EEI	OR Crane 1st/2nd/4th/5th OR East 3rd	Clinic EEI

Goals and Objectives
Hand Surgery Rotation – PGY1

I. Core Competency Areas

By the end of the PGY1 rotation in Hand and Upper Extremity Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

I. Core Competency

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families.
2. Procurement of thorough, logical, and concise patient histories with emphasis on the musculoskeletal system.
3. Responsiveness to the individual needs of patients and their families.
4. Understand and be able to perform a basic examination of the upper extremity. This applies to the clinic, emergency department, and inpatient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis.
6. Evaluation of the risks, benefits, and alternative treatments for various common upper extremity problem.
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health.
10. Understanding of and performance of the medical procedures related to treatment plan.
11. Ability to work well with an entire team of health care professionals and be involved in the care of the patient.

Medical Knowledge

1. Exhibit a fund of medical knowledge that is up-to-date
2. Investigation of topics as needed for clinical assignments.
3. Understanding and use of basic science principles as related to medical practice

Practice- Based Learning

1. Assessment of one's own patient management skills
2. Integration of evidence from scientific studies in the care of patient's problems.
3. Usage of available information technology to obtain and manage information. Familiarity with and ability to record information into the electronic medical record.
4.

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families.
2. Ability to listen to patients and include them in treatment decisions.
3. Ability to listen to information provided by other members of the health care team.

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent.
2. Demonstration of an ethically sound practice of medicine.
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients.

Systems-Based Practice

1. Knowledge of how to provide cost effective care.
2. Willingness to advocate for patients within the healthcare system.

3. Referral of patient to appropriate practitioners and agencies within the healthcare system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

1. Understand the anatomy and evaluation of vascular disorders of the hand such as tumors, thrombosis, aneurysms vascular injuries etc.
2. Understand the anatomy and pathophysiology of the intrinsic muscles, digital extensor mechanism, and flexor mechanism of the hand and digit: Extrinsic extensor mechanism, interosseus muscles, lumbrical muscles, thenar muscle, hypothenar muscle.
3. Understand hand anesthesia for operative procedures including the following: anatomy and equipment needed to perform: local anesthesia and digital block anesthesia
4. Understand compression neuropathies of the upper extremity.
5. Understand the presentation and treatment of specific hand infections such as pulp abscess (felon), cellulitis, paronychia, pyogenic arthritis, web space abscess, acute suppurative flexor tenosynovitis, herpetic whitlow.
6. Understand the fracture anatomy, fracture description, pertinent classification systems, and treatment options for fractures of the hand and wrist.
7. Understand the principles and indications forreplantation surgery.
8. Understand the treatment of fractures of the wrist and ligament injuries of the wrist including fractures of the scaphoid, lunate dislocation, perilunate dislocation, Kienbock's disease, carpal instability.
9. Understand the characteristics, pathogenesis, diagnostic features, and management of osteoarthritis of the hand and wrist.
10. Understand the anatomy, goals, treatment principles, in treatment methods for skin coverage of fingertip injuries.
11. Understand the types of nail and nailbed injuries the importance of the nail in principles of treatment of these injuries.
12. Understand etiology, diagnosis, and treatment of tenosynovitis of the hand and forearm (epicondylitis, DeQuervain's tendonitis, intersection syndrome, etc.)
13. Understand the reasons for splinting, splinting principles, types of splinting, and indications for splinting.
14. Recognized the different types of benign tumors of the hand and wrist such as ganglion, lipoma, benign giant cell tumor, epidermal cyst, etc.
15. Understand the presentation, pathophysiology, and treatment of complex regional pain syndrome.

III. Specialty Specific Psychomotor Skills

1. Perform incision and draining procedures such as paronychia, felon, finger abscess, and suppurative flexor tenosynovitis.
2. Perform primary and delayed primary repair of extensor tendon laceration.
3. Determine anesthesia for finger, hand and wrist surgery.
4. Perform amputation of digit.
5. Perform open and closed treatment of intra-and extra-articular fractures of the finger and wrist and forearm.
6. Understand the concept of and perform Z-plasty closure.
7. Understand the anatomy of and perform nailbed repair and coverage of fingertip and hand wounds. Understand the principles behind the use of local flap coverage (STSG, FTSG, cross finger flap, thenar flap).
8. Understand appropriate surgical sequence of replantation of the digit and wrist and forearm along with successful completion of a microsurgical laboratory course.

Goals and Objectives
Hand Surgery Rotation – PGY2

I. Core Competency Areas

By the end of the PGY2 rotation in Hand Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

I. Core Competency

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families.
2. Procurement of thorough, logical, and concise patient histories with emphasis on the musculoskeletal system.
3. Responsiveness to the individual needs of patients and their families.
4. Performance of a physical examination that is accurate, comprehensive, and directed to patient problems. This applies to the clinic, emergency department, and inpatient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis.
6. Evaluation of the risks, benefits, and alternative treatments for any given clinical problem.
7. Formulation and implementation of a complete and effective treatment plan.
8. Counsel of both patient and family in treatment procedure, options, and potential outcomes.
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health.
10. Understanding of and performance of the medical procedures related to treatment plan.
11. Ability to work well with an entire team of health care professionals and be involved in the care of the patient.

Medical Knowledge

1. Exhibit a fund of medical knowledge that is up-to-date and the ability to site literature appropriately.
2. Investigation of topics as needed for clinical assignments.
3. Understanding and use of basic science principles as related to medical practice

Practice- Based Learning

1. Assessment of one's own patient management skills and ability to make appropriate changes in practice.
2. Integration of evidence from scientific studies in the care of patient's problems.
3. Demonstration of knowledge of the study designs and statistical methods in order to evaluate scientific studies.
4. Usage of available information technology to obtain and manage information. Familiarity with and ability to record information into the electronic medical record.
5. Willingness to take time to educate students and other health care professionals.

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families.
2. Ability to listen to patients and include them in treatment decisions.
3. Ability to listen to information provided by other members of the health care team.

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent.
2. Demonstration of an ethically sound practice of medicine.
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients.

Systems-Based Practice

1. Knowledge of how to provide cost effective care.
2. Willingness to advocate for patients within the healthcare system.
3. Referral of patient to appropriate practitioners and agencies within the healthcare system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

1. Understand the anatomy and evaluation of vascular disorders of the hand such as tumors, thrombosis, aneurysms vascular injuries etc.
2. Understand the anatomy and pathophysiology of the intrinsic muscles, digital extensor mechanism, and flexor mechanism of the hand and digit: Extrinsic extensor mechanism, interosseus muscles, lumbrical muscles, thenar muscle, hypothenar muscle.
3. Understand hand anesthesia for operative procedures including the following: anatomy and equipment needed to perform: metacarpal block, digital block, wrist block of the median, ulnar and radial nerves, regional anesthesia, brachial plexus block, supraclavicular block, and axillary block.
4. Understand compression neuropathies of the upper extremities including the following: median nerve compression including the pathogenesis, history and physical findings of carpal tunnel syndrome, pronator syndrome, anterior interosseous syndrome; ulnar nerve compression including the pathogenesis, history and physical findings of ulnar tunnel syndrome, cubital tunnel syndrome; radial nerve compression including the pathogenesis, history and physical findings of radial tunnel syndrome, posterior interosseous syndrome; thoracic outlet syndrome, cervical root compression and cervical radiculopathy.
5. Understand the presentation and treatment of specific hand infections such as pulp abscess (felon), cellulitis, paronychia, pyogenic arthritis, web space abscess, acute suppurative flexor tenosynovitis, herpetic whitlow.
6. Understand the fracture anatomy, fracture description, pertinent classification systems, and treatment options for fractures of the hand and wrist.
7. Understand the principles of replantation surgery including definitions, instrumentation, preparation of amputated part, indications for replantation, surgical technique, vessel repair, postoperative care, failing replant, contraindications of replantation.
8. Understand the anatomy of the wrist and wrist mechanics including both static and dynamic instability patterns of the carpus.
9. Understand the treatment of fractures of the wrist and ligament injuries of the wrist including fractures of the scaphoid, lunate dislocation, perilunate dislocation, Kienbock's disease, carpal instability.
10. Understand the characteristics, pathogenesis, diagnostic features, and management of osteoarthritis of the hand and wrist.
11. Understand etiology, pathophysiology, anatomy, treatment, surgical techniques, and diagnoses of compartment syndromes.
12. Understand the history, features, etiology, anatomy, pathology, treatment, and long-term results of the Dupuytren's disease.
13. Understand the anatomy, goals, treatment principles, in treatment methods for skin coverage of fingertip injuries.
14. Understand the types of nail and nailbed injuries the importance of the nail in principles of treatment of these injuries.
15. Understand the anatomy, physiology, classification, and nerve regeneration and repair of peripheral
16. Understand the principles, definition, indications, and prerequsites of tendon transfers of the hand.
17. Understand etiology, diagnosis, and treatment of tenosynovitis of the hand and forearm (epicondylitis, DeQuervain's tendonitis, intersection syndrome, etc.)
18. Understand the characteristics, history, pathogenesis, management, and indications for surgery of rheumatoid arthritis.
19. Understand the reasons for splinting, splinting principles, types of splinting, and indications for splinting.
20. Recognized the different types of benign tumors of the hand and wrist such as ganglion, lipoma, benign giant cell tumor, epidermal cyst, etc.
21. Understand the presentation, pathophysiology, and treatment of complex regional pain syndrome.

III. Specialty Specific Psychomotor Skills

1. Perform incision and draining procedures such as paronychia, felon, finger abscess, and suppurative flexor tenosynovitis.
2. Perform primary and delayed primary repair of extensor tendon laceration.
3. Determine anesthesia for finger, hand and wrist surgery.
4. Perform nerve decompression of the wrist, forearm and elbow(carpal tunnel release, Guyon canal release, cubital tunnel release).
5. Perform split thickness skin grafting.
6. Perform amputation of digit. Understand principles of amputation of the forearm elbow, arm, and shoulder level.
7. Perform open and closed treatment of intra-and extra-articular fractures of the finger and wrist and forearm.
8. Perform decompression and tenosynovectomy of the flexor tendon due to stenosing tenosynovitis or rheumatoid tenosynovitis.
9. Perform small joint arthrodesis techniques.
10. Perform partial or radical fasciectomy.
11. Understand the concept of and perform Z-plasty closure.
12. Understand the anatomy of and perform nailbed repair and coverage of fingertip and hand wounds. Understand the principles behind the use of local flap coverage (STSG, FTSG, cross finger flap, thenar flap).
13. Understand appropriate surgical sequence of replantation of the digit and wrist and forearm along with successful completion of a microsurgical laboratory course.

Goals and Objectives
Hand Surgery Rotation: PGY5

I. Core Competency Areas

By the end of the PGY5 rotation in Hand Surgery, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY5 rotation in Hand surgery and building upon the experiences from the PGY2 rotation, the resident should:

1. Refine the knowledge base from the PGY2 and PGY3 rotations (See PGY2 and PGY3 Goals and Objectives)

III. Specialty Specific Psychomotor Skills

By the end of the PGY5 rotation in hand surgery and building upon the experiences from the PGY2 rotation, the resident should:

1. Refine the skills acquired in PGY3 rotations (See PGY3 Goals and Objectives)

ACGME MILESTONES FOR ORTHOPEDICS - Effective July 1, 2013

The milestones were designed by the ACGME for use only in evaluation of resident physicians in the context of their participation in ACGME-accredited residency or fellowship programs. The milestones provide a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Milestones were designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into residency through graduation. The Ortho RRC will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The resident demonstrates milestones expected of an incoming resident.

Level 2: The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.

Level 3: The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.

Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

Note that Level 4 is designed as the graduation *target* but does not represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the residency program director.

The milestones which will be evaluated on the Hand and Upper Extremity rotation are as listed on the following pages:

Carpal Tunnel – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Understands the anatomy of carpal tunnel/median nerve • Understands the normal physiology of the median nerve	• Demonstrates knowledge of the differential diagnosis of neuropathic surgery (e.g., pronator syndrome, cubital tunnel, thoracic outlet, cervical radiculopathy, peripheral neuropathy) • Understands risk factors associated with Carpal Tunnel Syndrome (CTS) (e.g., diabetes, inflammatory arthritis, pregnancy, hypothyroidism) • Demonstrates knowledge of median nerve motor/ sensory distribution, thumb abduction, thenar numbness, anterior interosseous nerve (AIN) weakness, cervical radiculopathy • Understands natural history of CTS • Understands the pathophysiology of nerve compression (e.g., increased carpal tunnel pressure, nerve ischemia) • Understands surgical options (e.g., open, endoscopic)	• Demonstrates knowledge of current literature and alternatives to surgery • Understands the capabilities and limitations of electrodiagnostic studies • Understands influence of comorbidities • Demonstrates knowledge of complications of surgical management (e.g., location of median nerve [MN] with respect to superficial arch, recurrent motor branch, palmar cutaneous branch, Guyon's canal)	• Understands controversies within field (e.g., endoscopic versus open, use of electrodiagnostics)	• Primary author/presenter of original work within the field
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Carpal Tunnel – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains basic history and performs basic physical exam • Lists potential surgical complications (e.g., infection, scar sensitivity, neurovascular injury)	• Obtains focused history, including identifying night pain, paresthesias • Performs median nerve motor/ sensory evaluation (e.g., MN numbness, thumb abduction) • Performs provocative maneuvers (e.g., Tinel, Phalen, MN compression test) • Appropriately considers electrodiagnostic test • Prescribes non-operative treatments (e.g., night splints, steroid injection when appropriate) • Capable of diagnosing surgical complications (e.g., injury to the median nerve or its branches and vascular injury) • Provides simple post-operative management and rehabilitation	• Evaluates other sites of MN compression (e.g., pronator syndrome, cervical radiculopathy) • Interprets electrodiagnostic tests	• Performs Carpal Tunnel Release (CTR) (e.g., open or endoscopic) • Capable of treating simple complications (e.g., infection, wound healing) • Capable of performing complex postoperative management (e.g., worsening numbness, worsening pain, additional radiating symptoms)	• Capable of surgical management of major complications (e.g., injury to superficial arch, ulnar artery, branches of median nerve, or median nerve) • Capable of opposition transfer (e.g., palmaris longus, extensor indicis pollicis [EIP], or flexor digitorum superficialis [FDS]) • Capable of performing revision carpal tunnel surgery
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Distal Radius Fracture (DRF) – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of anatomy • Understands basic imaging	• Demonstrates knowledge of fracture description and soft tissue injury: angulation, displacement, shortening, comminution, shear pattern, articular parts • Understands mechanism of injury • Understands biology of fracture healing • Understands advanced imaging • Understands surgical approaches and fixation tech: percutaneous pinning, volar plating, external fixation, dorsal plating, fragment specific, combinations	• Demonstrates knowledge of current literature, fracture classifications and therapeutic alternatives • Demonstrates knowledge of associated injuries: median nerve injury, scaphoid fracture; scapholunate (SL) ligament injury, triangular fibrocartilage complex (TFCC) injury, elbow injuries • Understands natural history of distal radius fracture • Understands biomechanics and implant choices: understand the advantage and disadvantages of different fixation techniques	• Understands controversies within field: fixation techniques and fracture pattern, correlation between radiographic and functional outcomes in elderly patient	• Participates in research in the field with publication
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Distal Radius Fracture (DRF) – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam • Orders/interprets basic imaging studies • Splints fracture appropriately • Provides basic post-operative management and rehab • Lists potential complications (e.g., infections, hardware failure tendon injury, Complex Regional Pain Syndrome [CRPS], carpal tunnel syndrome, malreduction)	• Obtains focused history and physical, recognizes implications of soft tissue injury (e.g., open fracture, median nerve dysfunction, distal radioulnar joint [DRUJ] instability) • Orders/interprets advanced imaging (e.g., CT for comminuted articular fractures) • Recognizes stable/unstable fractures (e.g., metaphyseal comminution, volar/dorsal Barton's, die-punch pattern; multiple articular parts) • Able to perform a closed reduction and splint appropriately • Recognizes surgical indications (e.g., median nerve dysfunction, instability, articular step off/gap, dorsal angulation, radius shortening) • Performs surgical exposure • Modifies and adjusts post-operative plan when indicated • Recognizes/evaluates fragility fractures (e.g., orders appropriate work-up and/or consult) • Diagnoses and provides early management of complications	• Performs pre-operative planning with appropriate instrumentation and implants • Capable of surgical reduction and fixation of extraarticular fracture • Interprets diagnostic studies for fragility fractures with appropriate management and/or referral	• Capable of surgical reduction and fixation of simple intraarticular fractures (e.g., no more than two articular fragments) • Capable of surgically treating simple complications (e.g., infections, open carpal tunnel release)	• Capable of surgical reduction and fixation of a full range of fractures and dislocations (e.g., comminuted or very distal articular fractures, dorsal and volar metaphyseal fractures, greater arc perilunate injuries, Scapholunate ligament injuries) • Capable of surgically treating complex complications (e.g., osteotomies, revision fixation)
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Compassion, integrity, and respect for others as well as sensitivity and responsiveness to diverse patient populations, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation. Knowledge about respect for and adherence to the ethical principles relevant to the practice of medicine, remembering in particular that responsiveness to patients that supersedes self-interest is an essential aspect of medical practice – Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
• Consistently demonstrates behavior that conveys caring, honesty, and genuine interest in patients and families • Recognizes the diversity of patient populations with respect to gender, age, culture, race, religion, disabilities, sexual orientation, and socioeconomic status • Recognizes the importance and priority of patient care, with an emphasis on the care that the patient wants and needs; demonstrates a commitment to this value	• Demonstrates an understanding of the importance of compassion, integrity, respect, sensitivity, and responsiveness while exhibiting these attitudes consistently in common and uncomplicated situations • Consistently recognizes ethical issues in practice; discusses, analyzes, and manages in common and frequent clinical situations including socioeconomic variances in patient care	• Exhibits these attitudes consistently in complex and complicated situations • Recognizes how own personal beliefs and values impact medical care • Knowledgeable about the beliefs, values, and practices of diverse patient populations and the potential impact on patient care • Recognizes ethical violations in professional and patient aspects of medical practice	• Develops and uses an integrated and coherent approach to understanding and effectively working with others to provide good medical care that integrates personal standards with standards of medicine • Consistently considers and manages ethical issues in practice • Consistently practices medicine as related to specialty care in a manner that upholds values and beliefs of self and medicine	• Demonstrates leadership and mentoring regarding these principles of bioethics • Manages ethical misconduct in patient management and practice
☐	☐	☐	☐	☐
Comments:				
Not yet achieved Level 1 ☐				

Accountability to patients, society, and the profession; personal responsibility to maintain emotional, physical, and mental health – Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
• Understands when assistance is needed and willing to ask for help • Exhibits basic professional responsibilities, such as timely reporting for duty, being rested and ready to work, displaying appropriate attire and grooming, and delivering patient care as a functional physician • Aware of the basic principles and aspects of the general maintenance of emotional, physical, mental health, and issues related to fatigue/sleep deprivation	• Recognizes limits of knowledge in common clinical situations and asks for assistance • Recognizes value of humility and respect towards patients and associate staff • Demonstrates adequate management of personal, emotional, physical, mental health, and fatigue	• Consistently recognizes limits of knowledge in uncommon and complicated clinical situations; develops and implements plans for the best possible patient care • Assesses application of principles of physician wellness, alertness, delegation, teamwork, and optimization of personal performance to the practice of medicine • Seeks out assistance when necessary to promote and maintain personal, emotional, physical, and mental health	• Mentors and models personal and professional responsibility to colleagues • Recognizes signs of physician impairment and demonstrates appropriate steps to address impairment in colleagues	• Develops organizational policies and education to support the application of these principles in the practice of medicine • Practices consistent with the American Academy of Orthopaedic Surgeons (AAOS) Standards of Professionalism
☐	☐	☐	☐	☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Self-Directed Learning – Practice-based Learning and Improvement

1. **Identify strengths, deficiencies, and limits in one's knowledge and expertise.**
2. **Assess patient outcomes and complications in your own practice.**
3. **Set learning and improvement goals.**
4. **Identify and perform appropriate learning activities.**
5. **Use information technology to optimize learning and improve patient outcomes.**

Level 1	Level 2	Level 3	Level 4	Level 5
• Acknowledges gaps in personal knowledge and expertise, and frequently asks for feedback from teachers and colleagues • Demonstrates computer literacy and basic computer skills in clinical practice	• Continually assesses performance by evaluating feedback and assessments • Develops a learning plan based on feedback with some external assistance • Demonstrates use of published review articles or guidelines to review common topics in practice • Uses patient care experiences to direct learning	• Accurately assesses areas of competence and deficiencies and modifies learning plan • Demonstrates the ability to select an appropriate evidence-based information tool to answer specific questions while providing care	• Performs self-directed learning without external guidance • Critically evaluates and uses patient outcomes to improve patient care	• Incorporates practice change based upon new evidence

Comments:

Not yet achieved Level 1 ☐

Locate, appraise, and assimilate evidence from scientific studies to improve patient care – Practice-based Learning and Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
• Describes basic concepts in clinical epidemiology, biostatistics, and clinical reasoning • Categorizes the study design of a research study	• Ranks study designs by their level of evidence • Identifies bias affecting study validity • Formulates a searchable question from a clinical question	• Applies a set of critical appraisal criteria to different types of research, including synopses of original research findings, systematic reviews and meta-analyses, and clinical practice guidelines • Critically evaluates information from others: colleagues, experts, industry representatives, and patient-delivered information	• Demonstrates a clinical practice that incorporates principles and basic practices of evidence-based practice and information mastery • Cites evidence supporting several common practices	• Independently teaches and assesses evidence-based medicine and information mastery techniques
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Systems thinking, including cost-effective practice – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Describes basic levels of systems of care (e.g., self-management to societal) • Understands the economic challenges of patient care in the health care system	• Gives examples of cost and value implications of care he or she provides (e.g., gives examples of alternate sites of care resulting in different costs for individual patients)	• Orders and schedules tests in appropriate systems for individual patients balancing expenses and quality • Successfully navigates the economic differences of the health care system	• Effectively manages clinic team and schedules for patient and workflow efficiency • Uses evidence-based guidelines for cost-effective care	• Leads systems change at micro and macro level (e.g., manages operating room [OR] team and patient flow in a multi-case OR day)
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Resident will work in interprofessional teams to enhance patient safety and quality care – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Recognizes importance of complete and timely documentation in teamwork and patient safety	• Uses checklists and briefings to prevent adverse events in health care	• Participates in quality improvement or patient safety program and/or project	• Maintains team situational awareness and promote "speaking up" with concerns • Incorporates clinical quality improvement and patient safety into clinical practice	• Develops and publishes quality improvement project results • Leads local or regional quality improvement project
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: **Not yet achieved Level 1** ☐				

Uses technology to accomplish safe health care delivery – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Explains the role of the Electronic Health Record (EHR) and Computerized Physician Order Entry (CPOE) in prevention of medical errors	• Appropriately and accurately enters patient data in EHR • Effectively uses electronic medical records in patient care	• Reconciles conflicting data in the medical record	• Contributes to reduction of risks of automation and computerized systems by reporting system problems	• Recommends systems re-design for faculty computerized processes
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: **Not yet achieved Level 1** ☐				

Communication – Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Communicates with patients about routine care (e.g., actively seeks and understands the patient's/family's perspective; able to focus in on the patient's chief complaint and ask pertinent questions related to that complaint)	• Communicates competently within systems and other care providers, and provides detailed information about patient care (e.g., demonstrates sensitivity to patient—and family—related information gathering/sharing to social cultural context; begins to engage patient in patient-based decision making, based on the patient's understanding and ability to carry out the proposed plan; demonstrates empathic response to patient's and family's needs; actively seeks information from multiple sources, including consultations; avoids being a source of conflict; able to obtain informed consent [risks, benefits, alternatives, and expectations])	• Communicates competently in difficult patient circumstances (e.g., able to customize emotionally difficult information, such as end-of-life or loss-of-limb discussions; supports patient and family; engages in patient-based decision making incorporating patient and family/cultural values and preferences)	• Communicates competently in complex/adversarial situations (e.g., understand a patient's secondary motivations in the treatment of his or her care—drug seeking, disability issues, and legal cases; able to sustain working relationships during complex and challenging situations, including transitions of care—treatment of a metastatic pathologic fracture; able to manage conflict with peers, subordinates, and superiors)	• Demonstrates leadership in communication activities (e.g., coaches others to improve communication skills; engages in self-reflection on how to improve communication skills
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments:				
Not yet achieved Level 1 ☐				

Teamwork (e.g., physician, nursing and allied health care providers, administrative and research staff) – Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Recognizes and communicates critical patient information in a timely and accurate manner to other members of the treatment team • Recognizes and communicates role as a team member to patients and staff • Responds to requests for information *Examples:* Lab results, accurate and timely progress notes, answers pages in a timely manner	• Supports and respects decisions made by team • Actively participates in team-based care; Supports activities of other team members, communicates their roll to the patient and family *Examples:* Hand-offs, transitions of care, communicates with other health care providers and staff members	• Able to facilitate, direct, and delegate team-based patient care activities • Understands the Operating Room team leadership role and obligations *Examples:* Leads daily rounds, communicates plan of action with OR personnel	• Leads team-based care activities and communications • Able to identify and rectify problems with team communication *Example:* Organizes and verifies hand-off rounds, coverage issues	• Seeks leadership opportunities within professional organizations • Able to lead/facilitate meetings within organization/system
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments:				Not yet achieved Level 1 ☐

The Hand and Upper Extremity Service

BASIC CLINICAL EXAMINATION

Hand and Wrist:

- Complete normal physical examination of the hand and wrist, including:
  - Inspection:
    - Resting posture of the hand
    - Position of the fingers: Swan neck, Boutonniere, Dupuytren's
    - Skin, hair, nail changes
    - Swelling – Heberden's and Bouchard's nodes, fusiform swelling, ganglions
    - Muscle atrophy – thenar / hypothenar eminence
  - Palpation
  - Range of motion:
    - Forearm rotation
    - Wrist – flexion/extension, radial/ulnar deviation
    - Finger – MCP, DIP, PIP joints
    - Thumb – CMC, MCP, IP:
      - Radial abduction
      - Palmar abduction
      - Opposition
  - Neurovascular:
    - Sensory – radial, median, and ulnar nerves
    - Motor – radial/PIN, median/AIN, motor recurrent branch, ulnar nerve

Special Tests:

- Carpal tunnel: Tinel's test, Phalen's test, median nerve compression test
- Stability testing of IP, MCP, thumb CMC joints:
  - Assessment of gamekeeper's thumb (ulnar collateral ligament strain)
  - Shuck test for basilar joint instability
- CMC grind
- FDP/FDS flexion tests
- Watson's scaphoid shift test
- DRUJ: piano key test, DRUJ compression test
- TFCC compression test
- Murphy's sign for lunate dislocation
- Finkelstein test
- Screen for intersection syndrome

- Radial deviation with wrist extension – PIN entrapment
- Medial epicondylitis:
  - Resisted wrist flexion
  - Resisted forearm pronation
- Screen for pronator syndrome
- “OK” sign for anterior interosseous nerve syndrome
- Hand of benediction

Revised 9/10

The Ohio State University
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Orthopaedic Residency Program

Surgical Competencies
Hand & Upper Extremity: PGY3

By the end of the PGY3 rotation in Hand and Upper Extremity, the resident should be able to:

1. Perform incision and draining procedures such as paronychia, felon, finger abscess, and suppurative flexor tenosynovitis.
2. Perform primary and delayed primary repair of extensor tendon laceration.
3. Determine anesthesia for finger, hand and wrist surgery.
4. Perform nerve decompression of the wrist, forearm and elbow(carpal tunnel release, Guyon canal release, cubital tunnel release).
5. Perform split thickness skin grafting.
6. Perform amputation of digit. Understand principles of amputation of the forearm elbow, arm, and shoulder level.
7. Perform open and closed treatment of intra-and extra-articular fractures of the finger and wrist and forearm.
8. Perform decompression and tenosynovectomy of the flexor tendon due to stenosing tenosynovitis or rheumatoid tenosynovitis.
9. Perform small joint arthrodesis techniques.
10. Perform partial or radical fasciectomy.
11. Understand the concept of and perform Z-plasty closure.
12. Understand the anatomy of and perform nailbed repair and coverage of fingertip and hand wounds. Understand the principles behind the use of local flap coverage (STSG, FTSG, cross finger flap, thenar flap).
13. Understand appropriate surgical sequence of replantation of the digit and wrist and forearm along with successful completion of a microsurgical laboratory course.

Revised 7/10

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Hand & Upper Extremity Reading Lists – PGY3

Residents will use Green's Operative Hand Surgery Text as the main resource for reading for the rotation.

Each week they are expected to read the corresponding chapter in Green's to be prepared.

Revised 7/2018

The Ohio State University
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Two Year Curriculum
Hand Lecture Series and References

Lecture #1 (AWAN)
Hand Fractures/Dislocation

1. "Hand Fractures: Indications, the Tried and True and New Innovations" Cheah et al. JHandSurg Am 2016 June;41(6):712-22.
2. "Hand Fractures: A review of Current Treatment Strategies" Meals C et al. JHand Surg Am 2013 May;28(5)1021-31.

Lecture #2 (JAIN)
(Wrist Instability/Posttraumatic Arthritis)

1. Stanley JK, Trail IA. Carpal instability. J Bone Joint Surg Br. 1994 Sep
2. Cayci C, Carlsen BT. Osteoarthritis of the wrist. Plast Reconstr Surg. 2014 Mar;133(3):605-15.

Lecture #3 (GOYAL)
Fractures of the Distal Radius and Forearm

1. Distal Radius Fractures: Approaches, Indications, and Techniques. Alluri RK, Hill JR, Ghiassi A. J Hand Surg Am. 2016 Aug;41(8):845-54.
2. Management of Adult Diaphyseal Both-bone forearm fractures. Schulte LM, Meals CG, Neviaser RJ. J Am Acad Orthop Surg. 2014 Jul;22(7):437-46.

Lecture #4 (AWAN)
Ulnar Wrist Pain/TFC Pathology/Wrist Arthroscopy

1. "Ulnar-sided Wrist Pain: Evaluation and Treatment of Triangular Fibrocartilage Complex Tears, Ulnocarpal Impaction Syndrome, and Lunotriquetral Ligament Tears". Sachar K. JHandSurgAm 2012; 37(7):1489-1500.
2. "Current Innovations in Wrist Arthroscopy" Slutsky DJ. JHandSurg Am 2012; 37(9):1932-1941.

Lecture #5 (LEHRMAN)
Flexor and Extensor Tendon Injuries

1. Extensor Tendon Injuries. Jonas L. Matzon, David J. Bozentka. Journal of Hand Surgery, Vol. 35, Issue 5, p854–861, May 2010
2. Evidence-Based Medicine: Surgical Management of Flexor Tendon Lacerations Kamal, Robin N.; Yao, Jeffrey. Plastic & Reconstructive Surgery . 140(1):130e-139e, July 2017.

Lecture #6 (JAIN)
Compression Neuropathy/Nerve Injury and Repair

1. Popinchalk SP, Schaffer AA. Physical examination of upper extremity compressive neuropathies. Orthop Clin North Am. 2012 Oct;43(4):417-30
2. Griffin JW, Hogan MV, Chhabra AB, Deal DN. Peripheral nerve repair and reconstruction. J Bone Joint Surg Am. 2013 Dec 4;95(23):2144-51

Lecture #7 (GOYAL

Tendinopathy and Inflammatory Conditions

1. Tendinopathies of the Hand and Wrist. Adams JE, Habbu R. J Am Acad Orthop Surg. 2016 Feb;24(2):123.
2. Current concepts in the management of the rheumatoid hand. Chung KC, Pushman AG. J Hand Surg Am. 2011 Apr;36(4):736-47

Lecture #8 (LEHRMAN)

Traumatic Hand Injuries

1. Replantation Surgery. S. Raja Sabapathy, Hari Venkatramani, R. Ravindra Bharathi, Praveen Bhardwaj, Journal of Hand Surgery, Vol. 36, Issue 6, p1104–1110. Published in issue: June 2011
2. Soft-Tissue Injuries of the Fingertip: Methods of Evaluation and Treatment. An Algorithmic Approach. Lemmon, Joshua A.; Janis, Jeffrey E.; Rohrich, Rod J. Plastic & Reconstructive Surgery . 122(3):961, September 2008.

Lecture #9 (JAIN)

Vascular Injuries/Replantation/Microsurgery

1. Leversedge FJ, Moore TJ, Peterson BC, Seiler JG 3rd. Compartment syndrome of the upper extremity. J Hand Surg Am. 2011 Mar;36(3):544-59
2. Prucz RB, Friedrich JB. Upper extremity replantation: current concepts. Plast Reconstr Surg. 2014 Feb;133(2):333-42.

Lecture #10 (GOYAL)

Tumors of the Hand

1. Benign bony and soft tissue tumors of the hand. Payne WT[1], Merrell G. J Hand Surg Am. 2010 Nov;35(11):1901-10.
2. Malignant and metastatic tumors of the hand. Puhaindran ME[1], Athanasian EA. J Hand Surg Am. 2010 Nov;35(11):1895-900

Lecture #11 (AWAN)

Elbow Instability/Arthroscopy/Arthritis

1. "Elbow Instability: Anatomy, Biomechanics, Diagnostic Maneuvers, and Testing." Karbach et al. JHandSurg Am 2017;42(2)118-26.
2. "Elbow Arthritis: Current Concepts" Papatheodorou et al, JHandSurg Am 2013;38(3):605-613.

Lecture #12 (LEHRMAN)

Local Flaps/Skin Graft/Burn/Frostbite

1. Green's Operative Hand Surgery, 5th Edition
2. Management of Soft Tissue Defects of the Hand. Sarah M. Yannascoli, Stephanie Thibaudeau, L. Scott Levin. Journal of Hand Surgery, Vol. 40, Issue 6, p1237–1244. Published online: May 1, 2015

Lecture #13 (GOYAL)

The Rheumatoid Hand

1. Current Concepts in the Management of the Rheumatoid Hand. Chung et al. J Hand Surg 2011;36A:736–747.

2. Seven-Year Outcomes of the Silicone Arthroplasty in Rheumatoid Arthritis Prospective Cohort Study. Chung et al. Arthritis Care and Research. Vol 69. No. 7, July 2017.

Orthopaedic Surgery Minimum Numbers (effective 2012-2013)

Category	Minimum
Knee arthroscopy	**30**
Shoulder arthroscopy	**20**
ACL reconstruction	**10**
THA	**30**
TKA	**30**
Hip fractures	**30**
Carpal tunnel release	**10**
Spine decompression/posterior spine fusion	**15**
Ankle fracture fixation	**15**
Closed reduction forearm/wrist	**20**
Ankle & hind & mid-foot arthro	**5**
Supracondylar humerus perc	**5**
Femur and tibia intramedullary fixation	**25**
All pediatric procedures	**200**
All oncology procedures	**10**

CPT Codes in Each Category

Knee arthroscopy (29850, 29851, 29855, 29856, 29866, 29867, 29868, 29870, 29871, 29873, 29874, 29875, 29876, 29877, 29879, 29880, 29881, 29882, 29883, 29884, 29885, 29886, 29887)

Shoulder arthroscopy (29805, 29806, 29807, 29819, 29820, 29821, 29822, 29823, 29824, 29825, 29826, 29827, 29828)

ACL reconstruction (29888)

THA (27130, 27132, 27134, 27137, 27138)

TKA (27442, 27443, 27445, 27446, 27447, 27487)

Hip fractures (27235, 27236, 27244, 27245)

Carpal tunnel release (64721)

Spine decompression lumbar spine/posterior spine fusion thoracic or lumbar (22612, 22630, 22800, 22802, 22804, 63005, 63012, 63017, 63030, 63042, 63047)

Ankle fracture fixation (27766, 27769, 27792, 27814, 27822, 27823, 27826, 27827, 27828, 27829)

Closed reduction forearm and wrist fractures (25505, 25520, 25535, 25565, 25605, 25624, 25690, 25680, 25675)

Ankle and hind and mid-foot arthrodeses (27870, 28705, 28715, 28725, 28730, 28735, 28737)

Supracondylar humerus percutaneous treatment (24538, 24566, 24582)

Femur and tibia intramedullary fixation (27506, 27759)

Please note: manipulations must recorded with procedures in the Case Log System

The Ohio State University
Department of Orthopaedics

Residency Curriculum

Adult Reconstruction

About This Curriculum

- It is the responsibility of both the resident and the attending to go over the goals and guidelines included in this handbook
    - At the beginning of the rotation
    - At the conclusion of the rotation
- Additional materials and/or service handbooks may be provided by the attendings at the beginning of the rotation

Revised 7-31-19

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Adult Reconstruction (Joints) Service Information

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Introduction
The Ohio State University Arthroplasty Service is designed to provide Residents with a comprehensive education in clinical and research concepts related to arthroplasty of the hip and knee. Residents are assigned to one of two services: I: East Hospital Rotation; II: Brain and Spine Hospital rotation. Residents will rotate through each service covering the attending surgeons who operate at that facility for a one-month period. The weekly assignment of resident service is coordinated by our physician assistant Sarah Babka. Knowledge of the items contained herein should be helpful in providing excellent care and fulfilling your educational goals. As required by the ACGME and the Residency Review Committee, core competencies and educational requirements will be clearly delineated.

The educational goals are well defined and the surgical experience progressive. One of the goals is for the resident to attain a continuous working relationship with their assigned faculty. This facilitates a successful educational experience and allows the resident to participate in all aspects of patient care without an over-emphasis on service.

At the completion of the rotation, there is a comprehensive evaluation that includes specific comments from Faculty. Mid-rotation, a Faculty member will discuss performance and skills in order to maximize the resident's experience and education.

Specific Resident Educational Goals
PGY-2
The resident is at the entry level of adult reconstruction service. One should demonstrate basic knowledge of hip and knee implant design, as well as basic knowledge of hip and knee anatomy. One should demonstrate the knowledge of preoperative templating techniques, able to recognize diagnosis and treatment of preoperative optimization and postoperative complication and basic management rationale, developing case presentation skills. One should demonstrate basic understanding of knowledge presented through core curriculum materials and is able to effective assimilate into patient care practices. Surgical skills should include start learning proper positioning/draping, sterile technique, appropriate skin incisions, basic exposure methods, hemostasis, basic power saw and drill skills, drain management, and competent suturing techniques.
PGY-3

The resident should be comfortable with the history and physical exam of the hip and knee in the arthroplasty patient and the general indications for different surgical procedures. They should be able to recognize the usual post-op course of a "standard" joint arthroplasty procedure. In depth knowledge of surgical anatomy is important. They should be able to describe the usual surgical approaches and

recognize common complications of these procedures. This level resident should become competent with all aspects of peri-operative care including VTE and infection prophylaxis, bladder management, indications for transfusion, routine wound care, and appropriate rehabilitation. A PGY-3 should be able to give a concise and accurate case presentation both in Morning Conference and while on Walk Rounds. This level Resident should understand the basics of X-Ray templating as part of planning for hip and knee replacement. Surgical skills should include proficient in proper positioning/draping, sterile technique, appropriate skin incisions, basic exposure methods, hemostasis, basic power saw and drill skills, drain management, and competent suturing techniques.

PGY-5 (Chief)

The Chief Resident should be able to perform primary joint arthroplasty and simple to complex revisions. He/She should be able to determine the surgical approach to be used and why it should be used and to start any case independently. The PGY-5 should understand the pathogenesis of prosthetic failure including loosening, osteolysis, wear, infections and peri-prosthetic fractures and understand the choice of components used as well as basic biomaterials. This level Resident should be able to teach the specifics and concepts of X-Ray templating. Specific surgical skills should include proficiency in all aspects of cemented and cementless joint replacement, complex exposures including osteotomies, management of complex intra-operative situations including fractures, neurovascular injuries, and joint instability. The Chief Resident, in consultation with the Service Chief, is responsible all resident administrative activities on the Service.
An important principle of the Arthroplasty Service is that residents should never expect to substantially participate in surgery without thorough prior knowledge of a specific patient's history, disease, physical exam and preoperative planning. Residents should always read any prior available notes. Because of the close working relationship between faculty and residents, there is ample time to review x-rays, history and preoperative planning in advance (several days). This interaction is one of the foundations of education in Arthroplasty and will be fostered.

Scheduled Conferences
All residents are required to attend the Arthroplasty Conferences. In addition, Residents must attend Grand Rounds and the Basic Science lectures.

Morning Teaching Conferences
A combined Teaching and Pre-operative Planning conference is held on Friday morning from 6:30-7:30 am at the CarePoint East First Floor Conference Room/or through WebEx meeting . The educational portion of the conference may have one of various different formats. It may include a didactic presentation by an attending, focused upon a specific area of adult reconstructive surgery. At most meetings, 2-4 previously assigned journal articles will be discussed. The meeting may also include short presentations from the residents. The presentations could be prepared with the assistance of attending staff. Topics will rotate and include complications of total joint arthroplasty, biomechanics, osteolysis, loosening of components, peri-prosthetic fractures, avascular necrosis, developmental dysplasia of the hip, SCFE and alternatives to total joint arthroplasty including osteotomies of the hip and knee. These lectures should complement the lectures given during Core conferences.

Patient Care

Residents at PGY-2, PGY-3 and PGY-5 levels will be responsible for the comprehensive management of all patients, under the direct supervision of the attending physician(s) and with the assistance of the Physician Assistant(s), and the Orthopaedic Nurse Practitioner.

- **The Clinic**
- **Rounds**
- **Orders**
- **Discharge**
- **Documentation**
- **Daily notes**
- **Operative dictation** (at the attending's discretion)

- **Consults**:
- **H&P**
- **Emergency Situations:** In the case of large thrombi or pulmonary emboli, baseline PT, INR, PTT, and ABG values are obtained STAT and consult with attending.

If sponge or instrument count is in error, call attending immediately. DO NOT rely only on x-ray to clear the field.
In event of patient death, contact attending immediately. Always check code status on every patient pre-op.

The Ohio State University
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Orthopaedic Residency Program

Delineation of Resident Responsibilities:
Adult Reconstruction (Joints) Service: PGY5

I. Resident Responsibilities for Patient Care

A. Office/ Clinic

Resident may be asked to perform the initial patient evaluation of either established or new patients. This may include obtaining a complete history and physical with emphasis on the adult reconstructive issue(s) at hand. The resident will review available ancillary studies (radiographs, MRI's, laboratory tests). The resident will synthesize this information and present the patient to the attending physician in a succinct fashion, offer a provisional diagnosis and relevant differential diagnosis, and formulate a plan for further evaluation and/ or treatment. The resident will participate in patient education and be familiar with treatment alternatives, as well as their risks and benefits. The resident will document their historical and physical finding in the EMR. The resident may, from time to time, and with the attending's approval, write prescriptions for medications or physical therapy. The resident will work in concert with the physician's assistant where applicable, medical assistant(s) where applicable, and with the office staff. The resident will either assist in or actually perform minor office procedures such as suture/ staple removal, joint aspiration/ injection, minor wound debridement, and dressing changes.

B. Pre-operative planning conference

The resident is expected to attend pre- operative planning conferences and to be prepared to discuss planned surgeries, the planned surgical approach, the implants to be utilized, and any other adjunctive procedures that may be anticipated. The resident will understand the indications and contraindications for various arthroplasty procedures. The resident will become proficient at pre-operative templating, using both hard copy radiographs and digital templating techniques. The resident will learn to assess implant fixation and degrees of bone stock damage when planning revision surgery. The resident will understand the implications of pertinent co-morbidities in pre-operative planning. The resident will be aware of the pre-operative patient's social history and any special needs or requirement that may be anticipated at the time of discharge.

C. Surgery

Whenever possible, the resident is expected to be present thirty minutes prior to the scheduled start time of any surgical procedure. If necessary, the patient's history and physical as well as the pre-operative radiographs and the surgical plan will be discussed with the attending physician. The resident will introduce themselves to the patient if they have not already done so in clinic. The resident will explain that they will be participating in the operative procedure as well as in the patient's post- operative care. The resident will be an active participant in the "time out" procedure. The resident will participate in and become proficient as positioning the patient, prepping, and draping. The resident will

demonstrate a thorough understanding of meticulous sterile technique and the measures necessary to minimize the risk of post-operative infection. The resident will, depending upon their level of training and the circumstances of the particular case, be prepared to perform certain portions of the operative procedure including the surgical exposure, the preparation of the bone, the removal of existing implant materials when necessary, implantation of the prostheses, and wound closure. The resident will demonstrate familiarity with a variety of surgical approaches to the hip and knee for primary, conversion, and revision arthroplasty, including their indications, technical details, advantages disadvantages, and potential complications. The resident will write post-operative orders.

D. Hospital rounds

The resident will, depending upon the circumstances and discussions with the attending physician, conduct daily post-operative rounds on all joint replacement patients, either in the accompaniment of the attending physician, the other resident(s), fellow, or students, or from time to time independently. The resident will document pertinent subjective and objective findings, including, but not limited to the patient's level of pain and the effectiveness/ side effect of their post-operative pain management regimen, their vital signs, urine output, wound drainage, neurovascular status, and be able to clinically assess the patient for signs of thromboembolic disease. When appropriate, the resident will communicate and collaborate with the medical service following the patient. The resident will be familiar with the patient's post-operative physical therapy protocol, including any restrictions. The resident will obtain and record daily laboratory and other test results. The resident will document their findings in the daily progress notes, discuss the findings with the attending physician and assist in formulating any changes in the patient's treatment. Any proposed changes will be discussed with the attending physician prior to their implementation. The resident will assist in the formulation of a discharge plan with the attending physician, nursing, physical/ occupational therapy, case management, the patient, and their family. The resident will assist in the completion of the discharge documentation and prescription writing. From time to time, and depending upon the attending physician's preference, the resident may be asked to dictate a discharge summary.

E. Education

The resident is expected to attend reading conferences and lectures prepared by the attending physician. From time to time, the resident may be asked to give a brief presentation regarding a particular topic relevant to adult reconstructive surgery. At the beginning of the rotation, the resident will identify an area of general interest and prepare a grand rounds quality presentation of 15-20 minutes duration to be presented to the attendings, residents, fellow, and medical students on the service. The resident will actively participate in the education of less senior residents, interns, and medical students.

II. Resident Level of Responsibility for Patient Care

Resident rotations are structured so that the residents have a one-on-one relationship with attendings. The level of responsibility given by the attending to the resident is determined by that attending, depending on the attending's assessment of the resident's knowledge

and skills, and the complexity of the procedure.

III. Resident Supervision

Attendings are responsible for the direct supervision of residents in both the clinic and the operating room, as well as in on-call situations. Attending physicians are available for consultation at all times.

Senior residents (PGY4 and above) are also directly responsible for the supervision of junior residents (PGY1, PGY2, and PGY3). This applies to all of the above situations (i.e. on-call, in clinic, in the OR). Senior residents must be available for consultation at all times. Ultimately, chief residents (all PGY5's) are responsible for the supervision of all residents, regardless of PGY year.

IV. Performance Feedback

Both attending staff members are available at any time if questions or concerns arise. At the end of each rotation, each attending on the service will evaluate each resident assigned to the service. A meeting should be scheduled at the conclusion of the rotation to discuss performance and provide written feedback on the rotation.

Goals and Objectives
Adult Reconstruction Rotation – PGY2

I. Core Competency Areas

By the end of the PGY2 rotation in Joints, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

- Ability to obtain a full history of the involved joint - Competency with the physical exam of the patient including specialized tests to evaluate for subtle hip and knee pathology.
- Ability to use appropriate terms during interpretation of basic x-ray findings found in arthritic joints.
- Mastery of the anatomy and approaches used for THA and TKA.
- Understanding of the basics of limb alignment for a well done total hip or knee arthroplasty as it affects the joint reaction forces.
- Recognition of the signs and symptoms of a periprosthetic infection.
- Mastery of basic surgical skills including soft tissue dissection, assessing for hemostasis, protection of critical structures as it relates to anatomy, and mastery of wound closure.
- Efficiency with the diagnosis and management of inpatient arthroplasty complications including infection, DVT, PE, and instability.

II. Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient that are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of healthcare professionals and be involved in care of the patient

III. Medical Knowledge

1. Demonstration of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice
4. Practice-Based Learning
    A. Assessment of ones own patient management skills and ability to make appropriate changes in practice
    B. Integration of evidence from scientific studies in the care of patient's problems
    C. Demonstration of knowledge of study designs and statistical methods in order to evaluate

scientific studies

D. Usage of available information technology to obtain and manage information
E. Willingness to take time to educate students and other health care professionals

IV. Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

V. Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

VI. Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

VII. Specialty Specific Knowledge

By the end of the PGY2 rotation in Joints, the resident should:

1. Based on a careful history and physical exam, be able to propose a rational approach to the evaluation of patients with pain at various intervals after a total hip replacement.
2. Be able to differentiate the bursal and soft tissue diseases about the hip/knee and then outline a treatment plan during office sessions, clinic and rounds.
3. Be able to distinguish other diseases predisposing to arthritis (Paget's Disease, AVN, Charcot arthropathy, ochronosis) - optional.
4. Be able to obtain an accurate history and perform a thorough physical exam on patients with an inflamed hip or knee. They will be able to generate differential diagnosis of this condition with the pertinent positives and negatives of these disorders: rheumatoid arthritis, septic arthritis, acute/chronic osteomyelitis, primary/post traumatic, osteoarthritis, gout, pseudogout, SLE, Reiter's disease, ankylosing spondylitis, PVNS, hemophilia, osteonecrosis. Must be able to formulate a plan for the work-up of these patients including laboratory and radiographic evaluation.
5. Be able to explain preoperative planning of standard total hip/knee replacement.
6. Understand the general principles and surgical technique for the cemented/cementless femoral and acetabular components.
7. Understand the classification of acetabular and femoral deficiencies
8. Understand the classification of tibial and femoral deficiencies about the TKA
9. Based on a careful history and physical examination, the resident will be able to formulate an approach to the evaluation of patients with pain at various intervals after a total hip and knee replacement.
10. Be able to explain the rationale for implant selection (type, size, configuration) for primary and revision THA/TKA cases
11. Understand basic biomaterials issues in total joint arthroplasty. Discuss the following materials and their use in orthopaedic implants: Ceramics, polyethylene, metals, and methylmethacrylate.
12. Understand the perioperative considerations for THA and TKA including: Preoperative medical evaluation; blood conservation; DVT prophylaxis; and rehabilitation **13.** Understand the

principles of femoral and pelvic osteotomies and be able to draw accurate preoperative plans for the procedure

VIII. Specialty Specific Psychomotor Skills

By the end of the PGY2 rotation in Joints, the resident should be able to:

1. Remove complex hardware around the hip and knee
2. Evaluate the painful total hip arthroplasty
3. Summarize the indications for hip/knee arthrodesis and illustrate the techniques commonly used.
4. Describe the indications for a resection arthroplasty, and for synovectomy of the hip

Goals and Objectives
Adult Reconstruction Rotation – PGY4

I. Patient Care

- Possesses patient care competencies associated with history, physical examination, diagnosis, treatment, and postoperative management plans above and beyond that of the junior resident(s).
- Effectively supervises postoperative patient care and manages postoperative complications of primary and revision total hip and total knee arthroplasty.
- Ability to evaluate and recommend basic treatment for painful total joint replacements.
- Demonstrates competency in primary and some revision total joint arthroplasty techniques.

II. Medical Knowledge

- Demonstrates knowledge of primary and some revision surgical approaches and procedures.
- Demonstrates knowledge of diagnosis and treatment of hip pain in symptomatic total hip replacements.
- Reads and understands material from core curriculum and weekly assigned articles of Hip and Knee Arthroplasty Reconstruction.

III. Practice-based Learning and Improvement

- Able to effectively teach general concepts and core curriculum to medical students.
- Able to identify, locate, and utilize case-specific articles to enhance learning and teaching.
- Possesses ability to effectively teach preoperative templating and surgical approaches to junior residents.
- Ability to analyze effectively his or her interpretative, problem solving and surgical skills.
- Able to locate, appraise, and assimilate evidence from past and ongoing scientific studies to patient pathologies.
- Able to use information technology to manage information access on-line medical information and support his/her own education.
- Teaches and mentors junior residents and medical students on the service.
- Prepare for and participate in the Adult Reconstruction Journal Clubs.

IV. Interpersonal and Communication Skills

- Able to create and sustain therapeutic and ethically sound relationships with patients and their families.
- Able to work effectively with others as a member of a health care team.
- Able to effectively provide information via various communication mediums.
- Able to effectively use listening skills.

V. Professionalism

- Exhibits a commitment to sound ethical principle in all aspects of patient care.
- Interacts with patient's family in a respectful, ethical, and compassionate manner.
- Develops and exhibits sensitivity to diverse patient and work force population with respect to age, culture, and gender.
- Demonstrates ethical principles pertaining to confidentiality issues.

VI. Systems-based Practice

- Demonstrate awareness of economic issues of total joint arthroplasty.
- Demonstrates awareness of health care workers involvement in integrated care of the total joint arthroplasty patient.
- Practices cost-effective medical care within the system or practice model without compromising quality care.
- Has understanding of various health funding systems including private insurance, Medicare, Medicaid, Workers Compensation, and Vocational Rehabilitation.
- Start learning of correct coding during patient office visits and surgery.

VII. Outpatient Clinic

- The resident will attend outpatient clinics devoted to adult reconstruction.
- They will obtain a history, review of systems, and perform a physical examination.
- The patients will be presented to the attending orthopaedic surgeon who will review the physical examination, radiographs, differential diagnosis and treatment plan with the resident.
- The resident will dictate/write notes on certain new patients to gain experience and adequately document the new patient evaluation.
- The resident will also be introduced to basic outpatient procedures such as aspiration and injections of the knee under the attending orthopaedic surgeon's supervision.
- The Resident will assist the junior resident(s) in inpatient rounds and will report and coordinate with the junior resident(s) to the attending orthopaedic surgeon.
- The actual performance of all or part of the operative procedure will be accomplished either under direct supervision or semi-independently in those situations deemed appropriate by the attending orthopaedic surgeon.

VII. Specialty Specific Knowledge

Building upon the knowledge and skills acquired in the PGY2 Joint Replacement rotation, the resident at the end of the PGY4 rotation, should now be able to perform all of the Goals and Objectives for the both the PGY2 rotation, in addition to the following advanced Goals and Objectives:

1. Based on information, the orthopaedic resident will be able to formulate a differential diagnosis and propose a treatment plan for these disorders: osteoarthritis (1^o and 2^o), rheumatoid arthritis, seronegative arthritis (AS, Reiters, psoriatic, IB related), septic arthritis, osteomyelitis, hemophilic arthropathy, osteonecrosis and Charcot arthropathy.

2. Be able to distinguish non-suppurative joint infections (fungal, tuberculosis, viral) and to recognize less common forms of secondary osteoarthritis (post-septic, Paget's Disease, hemochromatosis)
3. Understand bone remodeling and its implications about the THA (eg. calcar resorption - cementless stem ingrowth) and TKA
4. Understand the biologic response to wear debris and be able to differentiate these from bone response to implants (osteolysis vs resorption)
5. Understand the tribology (wear issues) associated with total joint arthroplasty
6. Understand the design rational for THA and TKA implants as pertains to common complications (PF groove, elevated lip liners, etc)
7. Understand the biomechanics of a TKA.
8. Be able to describe the pathogenesis of implant loosening (osteolysis, membrane formation, enzyme elevation) at the cement-bone and metal- cement interfaces.
9. Be able to evaluate and propose treatment for patients with anterior knee pain.
10. Understand preoperative planning for revision total hip arthroplasty
11. Know how to evaluate patients with painful THA's and make appropriate judgments based on data obtained from ancillary studies. The Senior Resident will be expected to present the problem, analyze the data and select a plan of action for these patients at grand rounds conferences.
12. Have a thorough understanding of the use and indications of the primary cementless femoral component including: cementless femoral components (modular); cementless femoral component (extensively coated); hydroxyapatite coated implants; proximal fixation of the noncemented stem; and the tapered femoral component.
13. Know the early and late complications after THA/TKA and their management.
14. Understand the treatment options for the infected THA/TKA including two-stage reconstruction.
15. Understand and be able to do parts of removal of failed hip and knee components and retained cement mantel
16. Understand the principles of THA including: offset, leg length, range of motion, stability, and templating
17. Understand the indications and techniques for the adjunct procedures used to treat AVN (eg. bone graft, vascularized bone graft).
18. Understand the management and surgical approach to periprosthetic fractures about THA and TKA.
19. Understand the techniques for the surgical treatment of osteolysis about the primary THA and TKA and understand the application of allografts for THA/TKA surgery

VIII. Specialty Specific Psychomotor Skills

Building upon the knowledge and skills acquired in the PGY2 Joint Replacement rotation, the resident at the end of the PGY4 rotation, should now be able to perform all of the Goals and Objectives for the both the PGY2 rotation, in addition to the following advanced Goals and Objectives:

1. Preoperatively plan for a cemented or cementless THA/TKA, and be able to competently perform *uncomplicated* THA/TKA surgery under direct supervision.
2. Participate in femoral allografting (intercalary or interpositional).

3. Reduce a dislocated hip and should know how to manipulate a hip under anesthesia to determine the stable range of motion.
4. Formulate an operative and non-operative plan of action to address the unstable THA.
5. Learn how to approach a complicated synovectomy about the THA/TKA.
6. Perform soft tissue releases about the knee to correct severe varus deformities with TKA.
7. Have the surgical skill to balance the flexion and extension gaps during primary uncomplicated TKA.
8. Plan the approach for excision of heterotopic bone and carry out the procedure.
9. Recognize the scenario when to utilize flap to deal with soft tissue problems (eg. delayed healing, infection) after TKA.

Goals and Objectives
Adult Reconstruction Rotation – PGY5

I. Core Competency Areas

By the end of the PGY5 rotation in Joints, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

- Understanding of the relationship of the pathology of inflammatory arthritis as it relates to the history and physical exam findings.
- Understanding of the relationship of spine disease to hip and knee symptoms. -Mastery of templating of a primary THA or TKA.
- Basic understanding of implant selection for a case as it affects the reconstruction of a hip or knee
- Mastery of the basic biomechanics behind the designs of various hips and knees
- Identification of the potential problems involved with revision THA or TKA
- Basic templating and implant selection for a revision THA or TKA
- Proficiency with the steps involved in a primary THA or TKA case with attending supervision.
- Understanding of the management of bony defects found in revision THA or TKA

II. Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and execution of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
11. Understanding of and performance of medical procedures related to treatment plan
12. Ability to work well with entire team of health care professionals and be involved in care of the patient

III. Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

4. Practice-Based Learning
   A. Assessment of ones own patient management skills and ability to make appropriate changes in practice
   B. Integration of evidence from scientific studies in the care of patient's problems
   C. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
   D. Usage of available information technology to obtain and manage information
   E. Willingness to take time to educate students and other health care professionals

IV. Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

V. Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

VI. Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

VII. Specialty Specific Knowledge

Building upon the knowledge and skills acquired in the PGY2 Joint Replacement rotation, the resident at the end of the PGY5 rotation, should now be able to perform all of the Goals and Objectives for the both the PGY2 rotation, in addition to the following advanced Goals and Objectives:

1. Be able to organize a systematic evaluation of these disorders including radiographic, laboratory tests and appropriate ancillary studies. Based on information, the orthopaedic resident will be able to formulate a differential diagnosis and propose a treatment plan for these disorders: osteoarthritis (1° and 2°), rheumatoid arthritis, seronegative arthritis (AS, Reiters, psoriatic, IB related), septic arthritis, osteomyelitis, PVNS, hemophilic arthropathy, osteonecrosis and Charcot arthropathy
2. Be able to explain the indications for knee fusion and be familiar with various methods of fusion.
3. Be able to distinguish non-suppurative joint infections (fungal, tuberculosis, viral) and to recognize less common forms of secondary osteoarthritis (post-septic, Paget's Disease, hemochromatosis)
4. Be able to describe the diagnostic criteria for Reflex Sympathetic Dystrophy Syndrome and plan appropriate treatment for each stage of the disorder.
5. Understand bone remodeling and its implications about the THA (eg. calcar resorption - cementless stem ingrowth) and TKA
6. Understand the biologic response to wear debris and be able to differentiate these from bone response to implants (osteolysis vs resorption)

7. Understand the tribology (wear issues) associated with total joint arthroplasty
8. Understand the design rational for THA and TKA implants as pertains to common complications (PF groove, elevated lip liners, anatomic vs straight stems, etc)
9. Understand the biomechanics of a TKA and osteotomy about the knee.
10. Be able to describe the pathogenesis of implant loosening (osteolysis, membrane formation, enzyme elevation) at the cement-bone and metal- cement interfaces.
11. Be able to evaluate and propose treatment for patients with anterior knee pain.
12. Be able to discuss the principles and biomechanics of osteotomies about the hip/knee.
13. Understand preoperative planning for revision total hip arthroplasty
14. Know how to evaluate patients with painful THA's and make appropriate judgments based on data obtained from ancillary studies. The Senior Resident will be expected to present the problem, analyze the data and select a plan of action for these patients at grand rounds conferences.
15. Have a thorough understanding of the design rational for THA and TKA implants
16. Have a thorough understanding of the use and indications of the primary cementless femoral component including: cementless femoral components (modular); cementless femoral component (extensively coated); hydroxyapatite coated implants; proximal fixation of the noncemented stem; and the tapered femoral component.
17. Know the early complications after THA/TKA and their management.
18. Know the late Complications after THA/TKA and their management.
19. Be able to evaluate patients with painful total joint arthroplasty and make appropriate judgments based on history, physical exam and ancillary studies. The Senior Resident will be expected to be able to present the problem, analyze the data, and select a plan of action for these patients at Quality Assurance Conferences.
20. Understand the treatment options for the infected THA/TKA including two-stage reconstruction.
21. Understand and be able to do parts of removal of failed hip and knee components and retained cement mantel
22. Understand the application of allografts for THA/TKA surgery
23. Thoroughly comprehend the principles of THA including: offset, leg length, range of motion, stability, and templating
24. Understand the principles, exposure and techniques of complex THA/TKA reconstructions
25. Understand the indications and techniques for the adjunct procedures used to treat AVN (eg. bone graft, vascularized bone graft).
26. Know the indications for, and the techniques of, soft tissue releases and neurectomy about the hip.
27. Know the principles and the application of using autografts and allografts for the defects associated with THA/TKA.
28. Thoroughly comprehend arthroplasty complications and be able to formulate an approach to the treatment (and prevention) of these problems.
29. Understand the management and surgical approach to periprosthetic fractures about THA and TKA.
30. Understand the techniques for the surgical treatment of osteolysis about the primary THA and TKA.
31. Be able to state the principles of osteotomy for medial and lateral compartment arthritis. Should be competent in planning these cases and demonstrate proficiency in performing distal femoral or upper tibial osteotomies.
32. Should understand the principles of amputation surgery (perform parts of amputations) about the pelvis and hip and understand the concept and technique of internal hemipelvectomy

VIII. Specialty Specific Psychomotor Skills

Building upon the knowledge and skills acquired in the PGY3 Joint Replacement rotation, the resident at the end of the PGY5 rotation, should now be able to perform all of the Goals and Objectives for the both the PGY3 rotation, in addition to the following advanced Goals and Objectives:

1. Preoperatively plan for a cemented or cementless THA/TKA, and be able to competently perform *uncomplicated* THA/TKA surgery.
2. Perform amputations about the knee pre and post arthroplasty.
3. Perform various parts of standard revision THA/TKA, complex THA/TKA, and revision of the septic THA/TKA procedures
4. Perform femoral allografting (intercalary or interpositional).
5. Reduce a dislocated hip and should know how to manipulate a hip under anesthesia to determine the stable range of motion.
6. Formulate an operative and non-operative plan of action to address the unstable THA.
7. Perform a complicated synovectomy about the THA/TKA.
8. Plan and carry out a successful cemented, hybrid, and cementless standard primary THA.
9. Preoperatively plan for and competently perform *complicated* THA surgery including: THA in the posttraumatic patient; complex primary acetabular replacement; complex primary femoral replacement; and hip fractures treated by arthroplasty.
10. Preoperatively plan for and competently perform *complicated* TKA surgery including: RA, flexion contractures, varus or valgus deformities
11. Perform soft tissue releases about the knee to correct severe varus/valgus deformities with TKA.
12. Have the surgical skill to balance the flexion and extension gaps during TKA.
13. Plan for revision THA/TKA (including 2 stage for sepsis) and should be able to perform parts of this surgery
14. Plan for and perform parts of revision of the femoral THA component utilizing cemented, uncemented, and extensively coated modular implants with or without bulk allografts and struts or impaction grafting techniques.
15. Plan for and perform parts of revision of the acetabulum by cementless acetabular reconstruction, structural grafting, bone packing and using cement with all polyethylene components and acetabular cages.
16. Perform a complete synovectomy in the revision THA/TKA.
17. Plan the approach for excision of heterotopic bone and carry out the procedure.
18. Plan for a femoral or pelvic osteotomy and be able to understand the approach and technique of this surgery.
19. Perform most of a hip/knee fusion.
20. Have developed not only competence in amputation surgery about the knee but also be able to discuss the rationale for amputation at various levels and the prosthetic options for this level.
21. Have and select the optimal flap to deal with soft tissue problems (eg. delayed healing, infection) after TKA.

ACGME MILESTONES FOR ORTHOPEDICS - Effective July 1, 2013

The milestones were designed by the ACGME for use only in evaluation of resident physicians in the context of their participation in ACGME-accredited residency or fellowship programs. The milestones provide a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Milestones were designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into residency through graduation. The Ortho RRC will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The resident demonstrates milestones expected of an incoming resident.

Level 2: The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.

Level 3: The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.

Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

Note that Level 4 is designed as the graduation *target* but does not represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the residency program director.

The milestones which will be evaluated on the Adult Reconstruction rotation are as listed on the following pages:

Hip and Knee Osteo Arthritis (OA) – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of pathophysiology related to hip and knee arthritis • Correlates anatomic knowledge to imaging findings on basic imaging studies • Demonstrates some knowledge of natural history of hip and knee arthritis • Demonstrates knowledge of hip and knee arthritis anatomy and basic surgical approaches • Demonstrates knowledge of non-operative treatment options and surgical indications	• Able to classify disease stage/severity and recognizes implications of disease processes (OA, Femoroacetabular impingement [FAI], inflammatory arthritis, osteonecrosis) • Understands the importance of comorbidities, thromboembolic prophylaxis, infection prevention and diagnosis • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Understands the effects of intervention on natural history of hip and knee arthritis • Understands basic pre-surgical planning and templating • Understands basic implant choices (e.g., cement and uncemented fixation, levels of constraint)	• Demonstrates knowledge of current literature and alternative treatments • Understands biomechanics • Understands alternative surgical approaches (e.g., non-arthroplasty: arthroscopy, osteotomy) • Understands alternative implant choices/biomaterials (e.g., alternative bearings, unicompartmental approaches)	• Understands controversies within the field • Applies understanding of natural history to clinical decision-making • Understands principles of failure mechanism of total hip replacement (THR) and total knee replacement (TKR) (e.g., loosening, fracture, infection, osteolysis, instability) • Understands basic principles of revision THR and TKR	• Primary author/presenter of original work within the field • Understands revision THR and TKR implants (e.g., metaphyseal vs. diaphyseal fixation, tapered vs. fully-porous implants)
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Hip and Knee Osteo Arthritis (OA) – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Prescribes non-operative treatments (e.g., NSAIDs, physical therapy, assistive devices) • Provides basic peri-operative management (e.g., pre- and post-operative assessment) • Lists potential complications (e.g., infections, dislocations, thromboembolic disease, peri-prosthetic fracture, neurovascular compromise)	• Obtains focused history and performs focused exam • Appropriately interprets basic imaging studies • Manages non-operative treatment (e.g., NSAIDs, physical therapy, assistive devices, injections) • Completes pre-operative planning with instrumentation and implants (e.g., implant templating, instruments needed) • Capable of performing one basic surgical approach to the hip and knee • Provides post-operative management and rehabilitation (e.g., orders appropriate peri-operative medications and mobilization) • Capable of diagnosis and early management of complications (e.g., infections, dislocations) • Assesses for risk of thromboembolic disease	• Appropriately orders and interprets advanced imaging studies (e.g., MRI, CT, nuclear medicine imaging, and advanced radiographs views) • Appropriately recommends surgical intervention • Completes comprehensive pre-operative planning with alternatives • Modifies and adjusts post-operative treatment plan as needed • Capable of surgically treating simple complications (e.g., closed reduction, irrigation, and debridement) • Provides prophylaxis and manages thromboembolic disease	• Capable of performing alternative surgical approaches to the hip and knee arthritis • Capable of performing primary THR and TKR • Capable of treating complications both intra- and post-operatively (e.g., peri-prosthetic fractures, infections, instability)	• Competently performs two or more approaches to the hip and knee • Capable of performing complex primary and simple revision THR and TKR (e.g., hip dysplasia, hip protrusio, valgus knee, loose components, uniarthroplasty) • Develops unique, complex post-operative management plans (e.g., infections, dislocations, neurovascular compromise) • Surgically treats complex complications (e.g., peri-prosthetic fractures, knee instability)
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Compassion, integrity, and respect for others as well as sensitivity and responsiveness to diverse patient populations, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation. Knowledge about respect for and adherence to the ethical principles relevant to the practice of medicine, remembering in particular that responsiveness to patients that supersedes self-interest is an essential aspect of medical practice – Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
• Consistently demonstrates behavior that conveys caring, honesty, and genuine interest in patients and families • Recognizes the diversity of patient populations with respect to gender, age, culture, race, religion, disabilities, sexual orientation, and socioeconomic status • Recognizes the importance and priority of patient care, with an emphasis on the care that the patient wants and needs; demonstrates a commitment to this value	• Demonstrates an understanding of the importance of compassion, integrity, respect, sensitivity, and responsiveness while exhibiting these attitudes consistently in common and uncomplicated situations • Consistently recognizes ethical issues in practice; discusses, analyzes, and manages in common and frequent clinical situations including socioeconomic variances in patient care	• Exhibits these attitudes consistently in complex and complicated situations • Recognizes how own personal beliefs and values impact medical care • Knowledgeable about the beliefs, values, and practices of diverse patient populations and the potential impact on patient care • Recognizes ethical violations in professional and patient aspects of medical practice	• Develops and uses an integrated and coherent approach to understanding and effectively working with others to provide good medical care that integrates personal standards with standards of medicine • Consistently considers and manages ethical issues in practice • Consistently practices medicine as related to specialty care in a manner that upholds values and beliefs of self and medicine	• Demonstrates leadership and mentoring regarding these principles of bioethics • Manages ethical misconduct in patient management and practice
☐	☐	☐	☐	☐
Comments:				
Not yet achieved Level 1 ☐				

Accountability to patients, society, and the profession; personal responsibility to maintain emotional, physical, and mental health – Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
• Understands when assistance is needed and willing to ask for help • Exhibits basic professional responsibilities, such as timely reporting for duty, being rested and ready to work, displaying appropriate attire and grooming, and delivering patient care as a functional physician • Aware of the basic principles and aspects of the general maintenance of emotional, physical, mental health, and issues related to fatigue/sleep deprivation	• Recognizes limits of knowledge in common clinical situations and asks for assistance • Recognizes value of humility and respect towards patients and associate staff • Demonstrates adequate management of personal, emotional, physical, mental health, and fatigue	• Consistently recognizes limits of knowledge in uncommon and complicated clinical situations; develops and implements plans for the best possible patient care • Assesses application of principles of physician wellness, alertness, delegation, teamwork, and optimization of personal performance to the practice of medicine • Seeks out assistance when necessary to promote and maintain personal, emotional, physical, and mental health	• Mentors and models personal and professional responsibility to colleagues • Recognizes signs of physician impairment and demonstrates appropriate steps to address impairment in colleagues	• Develops organizational policies and education to support the application of these principles in the practice of medicine • Practices consistent with the American Academy of Orthopaedic Surgeons (AAOS) Standards of Professionalism
☐	☐	☐	☐	☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Self-Directed Learning – Practice-based Learning and Improvement

1. **Identify strengths, deficiencies, and limits in one's knowledge and expertise.**
2. **Assess patient outcomes and complications in your own practice.**
3. **Set learning and improvement goals.**
4. **Identify and perform appropriate learning activities.**
5. **Use information technology to optimize learning and improve patient outcomes.**

Level 1	Level 2	Level 3	Level 4	Level 5
• Acknowledges gaps in personal knowledge and expertise, and frequently asks for feedback from teachers and colleagues • Demonstrates computer literacy and basic computer skills in clinical practice	• Continually assesses performance by evaluating feedback and assessments • Develops a learning plan based on feedback with some external assistance • Demonstrates use of published review articles or guidelines to review common topics in practice • Uses patient care experiences to direct learning	• Accurately assesses areas of competence and deficiencies and modifies learning plan • Demonstrates the ability to select an appropriate evidence-based information tool to answer specific questions while providing care	• Performs self-directed learning without external guidance • Critically evaluates and uses patient outcomes to improve patient care	• Incorporates practice change based upon new evidence

Comments:

Not yet achieved Level 1 ☐

Locate, appraise, and assimilate evidence from scientific studies to improve patient care – Practice-based Learning and Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
• Describes basic concepts in clinical epidemiology, biostatistics, and clinical reasoning • Categorizes the study design of a research study	• Ranks study designs by their level of evidence • Identifies bias affecting study validity • Formulates a searchable question from a clinical question	• Applies a set of critical appraisal criteria to different types of research, including synopses of original research findings, systematic reviews and meta-analyses, and clinical practice guidelines • Critically evaluates information from others: colleagues, experts, industry representatives, and patient-delivered information	• Demonstrates a clinical practice that incorporates principles and basic practices of evidence-based practice and information mastery • Cites evidence supporting several common practices	• Independently teaches and assesses evidence-based medicine and information mastery techniques
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Systems thinking, including cost-effective practice – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Describes basic levels of systems of care (e.g., self-management to societal) • Understands the economic challenges of patient care in the health care system	• Gives examples of cost and value implications of care he or she provides (e.g., gives examples of alternate sites of care resulting in different costs for individual patients)	• Orders and schedules tests in appropriate systems for individual patients balancing expenses and quality • Successfully navigates the economic differences of the health care system	• Effectively manages clinic team and schedules for patient and workflow efficiency • Uses evidence-based guidelines for cost-effective care	• Leads systems change at micro and macro level (e.g., manages operating room [OR] team and patient flow in a multi-case OR day)
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Resident will work in interprofessional teams to enhance patient safety and quality care – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Recognizes importance of complete and timely documentation in teamwork and patient safety	• Uses checklists and briefings to prevent adverse events in health care	• Participates in quality improvement or patient safety program and/or project	• Maintains team situational awareness and promote "speaking up" with concerns • Incorporates clinical quality improvement and patient safety into clinical practice	• Develops and publishes quality improvement project results • Leads local or regional quality improvement project
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: **Not yet achieved Level 1** ☐				

Uses technology to accomplish safe health care delivery – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Explains the role of the Electronic Health Record (EHR) and Computerized Physician Order Entry (CPOE) in prevention of medical errors	• Appropriately and accurately enters patient data in EHR • Effectively uses electronic medical records in patient care	• Reconciles conflicting data in the medical record	• Contributes to reduction of risks of automation and computerized systems by reporting system problems	• Recommends systems re-design for faculty computerized processes
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: **Not yet achieved Level 1** ☐				

Communication – Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Communicates with patients about routine care (e.g., actively seeks and understands the patient's/family's perspective; able to focus in on the patient's chief complaint and ask pertinent questions related to that complaint)	• Communicates competently within systems and other care providers, and provides detailed information about patient care (e.g., demonstrates sensitivity to patient—and family—related information gathering/sharing to social cultural context; begins to engage patient in patient-based decision making, based on the patient's understanding and ability to carry out the proposed plan; demonstrates empathic response to patient's and family's needs; actively seeks information from multiple sources, including consultations; avoids being a source of conflict; able to obtain informed consent [risks, benefits, alternatives, and expectations])	• Communicates competently in difficult patient circumstances (e.g., able to customize emotionally difficult information, such as end-of-life or loss-of-limb discussions; supports patient and family; engages in patient-based decision making incorporating patient and family/cultural values and preferences)	• Communicates competently in complex/adversarial situations (e.g., understand a patient's secondary motivations in the treatment of his or her care—drug seeking, disability issues, and legal cases; able to sustain working relationships during complex and challenging situations, including transitions of care—treatment of a metastatic pathologic fracture; able to manage conflict with peers, subordinates, and superiors)	• Demonstrates leadership in communication activities (e.g., coaches others to improve communication skills; engages in self-reflection on how to improve communication skills
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments:				
Not yet achieved Level 1 ☐				

Teamwork (e.g., physician, nursing and allied health care providers, administrative and research staff) – Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Recognizes and communicates critical patient information in a timely and accurate manner to other members of the treatment team • Recognizes and communicates role as a team member to patients and staff • Responds to requests for information *Examples:* Lab results, accurate and timely progress notes, answers pages in a timely manner	• Supports and respects decisions made by team • Actively participates in team-based care; Supports activities of other team members, communicates their roll to the patient and family *Examples:* Hand-offs, transitions of care, communicates with other health care providers and staff members	• Able to facilitate, direct, and delegate team-based patient care activities • Understands the Operating Room team leadership role and obligations *Examples:* Leads daily rounds, communicates plan of action with OR personnel	• Leads team-based care activities and communications • Able to identify and rectify problems with team communication *Example:* Organizes and verifies hand-off rounds, coverage issues	• Seeks leadership opportunities within professional organizations • Able to lead/facilitate meetings within organization/system
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments:				Not yet achieved Level 1 ☐

Revised 6/10

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Orthopaedic Residency Program

Physical Exam Competencies
Adult Reconstruction (Joints) Service: PGY3 and PGY5

By the end of the PGY3 rotation on the Adult Reconstruction service, the resident should be able to demonstrate proficiency in the key physical exam tests. The PGY5 rotation is an opportunity to polish these physical examination skills.

- Normal examination of hip and knee, including: Gait assessment
- Inspection
- Palpation:
  - o Bony prominences
  - o Muscles o Bursa
- Range of motion: active vs. passive
- Strength/neurovascular testing
- Limb Length Assessment:
  - o True vs. apparent LLD
  - o Pelvic obliquity
- Trendelenburg Test (Single-Leg Stance)
- Trendelenburg gait pattern
- Log Roll (Passive Supine Rotation)
- Straight Leg Raise (w/ and w/out resistance)
- Ober Test
- Piriformis Test
- FABER Test
- Impingement Test (FADIR test)
- McCarthy Test
- Thomas Test
- Homan's sign

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Surgical Competencies
Adult Reconstruction (Joints) Service: PGY3

Core Surgical Competencies:

- Identification of bony landmarks for placement of incision
- Management of soft tissues/planes of dissection
- Understanding of limb alignment to adjust bone cuts
- Correct placement of bone cutting jigs for primary THA/TKA
- Safe use of saw/drill with respect to anatomy at risk
- Independent with repair of arthrotomy/skin closure/suturing

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Surgical Competencies
Adult Reconstruction (Joints) Service: PGY5

Core Surgical Competencies:

- Independent with multiple approaches to the hip and knee
- Placement of bone cutting jigs with minimal attending intervention
- Understanding of the placement of revision instruments for bone cuts
- Proficient at placement of augments/cages/cemented components
- Proficient with techniques for extensile approaches to the hip and knee
- Basic understanding of advanced soft tissue management including muscle flaps, STSG, and complex wound closures.

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Adult Reconstruction Reading Lists

1. Salvati, EA. Preoperative planning for primary total hip arthroplasty. *J Am Acad Orthop Surg* 2005;13:455-462.
2. Wasielewski RC, Galat DD, Sheridan KC, Rubash HE. Acetabular anatomy and transacetabular screw fixation at the high hip center. *Clin Orthop Rel Research* 2005:438:171-6.
3. Harris, W. H., McCarthy, J. C., Jr., & O'Neill, D. A. (1982). Femoral component loosening using contemporary techniques of femoral cement fixation. J Bone Joint Surg [Am], 64(7), 1063-7.
4. Crowe JF, Mani VJ, and Ranawat CS. Total replacement in congenital dislocation and of the . J. Bone Joint Surg. Am., Jan 1979; 61: 15 - 23.
5. Clohisy JC, Barrett SE, Gordon JE, Delgado ED, and Schoenecker PL. Periacetabular Osteotomy for the Treatment of Severe Acetabular . J. Bone Joint Surg. Am., Feb 2005; 87: 254 - 259.
6. JE Johansson, R McBroom, TW Barrington and GA Hunter. in wih replacement. J. Bone Joint Surg. Am, Vol 63, Issue 9 -1442.
7. Maloney WJ, Jasty M, Rosenberg A. Bone lysis in well-fixed cemented femoral components. J Bone Joint Surg (Br) 1990;72:966-70.
8. Della Valle CJ, Paprosky WG. Classification and an algorithmic approach to the reconstruction of femoral deficiency in revision total hip arthroplasty. *JBJS* 2003; 85-A Suppl. 4: 1-6.
9. Paprosky WG, Sporer SM. Revision total hip arthroplasty: The limits of fully coated stems. *CORR* 2003; 417: 203-209.
10. Hanssen AD, Spangehl MJ. Practical applications of antibiotic-loaded bone cement for treatment of infected joint replacements. *Clin Orthop Relat Res*. 2004 Oct;(427):79-85.
11. Maloney WJ, Herzwurm P, Paprosky W, Rubash HE, Engh CA. Treatment of Pelvic Osteolysis Associated with a Stable Acetabular Component Inserted without Cement as Part of a Total Hip Replacement. J Bone Joint Surg Am. 1997; 1628.
12. T. M. Seyler, D. R. Marker, H. S. Boyd, M. G. Zywiel, M. S. McGrath, and M. A. Mont. Preoperative Evaluation to Determine Candidates for Metal-on-Metal Hip Resurfacing. *J. Bone Joint Surg. Am.*, November 1, 2009; 91(Supplement_6): 32 - 41.

Knee:

1. P.L. Poilvache, J.N. Insall, G.R. Scuderi and D.E. Font-Rodriguez, Rotational landmarks and sizing of the distal femur in total knee arthroplasty. *Clin Orthop* **331** (1996), p. 35.
2. M.W. Pagnano, A.D. Hanssen, D.G. Lewallen and M.J. Stuart, Flexion instability after primary posterior cruciate retaining total knee arthroplasty. *Clin Orthop* **356** (1998), p. 39.
3. Berger RA, Crossett LS, Jacobs JJ, Rubash HE. Malrotation causing patellofemoral

complications after total knee arthroplasty. *Clin Ortho*1998;356:144-53.
4. Easley ME, Insall JN, Scuderi GR, Bullek DD. Primary constrained condylar knee arthroplasty for the arthritic valgus knee. *Clin Orthop*. 2000;380:58-64.
5. Dennis DA, Berry DJ, Engh G, Fehring T, MacDonald SJ, Rosenberg AG, Scuderi G. Revision total knee arthroplasty. *J Am Acad Ortho Surg* 2008:16 (8):442.
6. Hofmann AA, Goldberg T, Tanner AM, Kurtin SM. Treatment of infected total knee arthroplasty using an articulating spacer: 2- to 12-year experience. Clin Orthop Relat Res.2005; 430:125 -31.
7. Healy WL, Siliski JM, Incaro SJ (1993). Operative treatment of distal femoral fractures proximal to the total knee replacement. *J Bone Joint Surg Am* 75:27-34.
8. Ritter MA, Faris PM, Thong AE, Davis KE, Meding JB, Berend ME: Intra-operative findings in varus osteoarthritis of the knee: An analysis of preoperative alignment in potential candidates for unicompartmental arthroplasty. *J Bone Joint Surg Br* 2004; 86:43-47.
9. Borus T, Thornhill T. Unicompartmental knee arthroplasty. *J Am Acad Ortho Surg*. 2008;16 (1):9.
10. Lonner JH: Patellofemoral arthroplasty: Pros, cons, and design considerations. *Clin Orthop Relat Res* 2004; 428: 158-165.

General:

Johanson NA, Lachiewicz PF, Lieberman JR, Lotke PA, Parvizi J, Pellegrini V, Stringer TA, Tornetta P, Haralson RH, Watters WC. Prevention of Symptomatic Embolism in Patients Undergoing Total Hip or Knee Arthroplasty. *J. Am. Acad. Ortho. Surg.*, March 2009; 17: 183 - 196.

Pellegrini VD Jr, Donaldson CT, Farber DC, Lehman EB, Evarts CM: The John Charnley Award: Prevention of readmission for venous thromboembolic disease after total hip Arthroplasty. *Clin Orthop Relat Res* 2005;441:56-62

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Lecture Readings – Required

Lecture #1: Implant Materials/Biologic Fixation

A. Bobyn JD, Pilliar RM, Cameron HU, Weatherly GC.: The optimum pore size for the fixation of porous-surfaced implants. Clin Orthop 150:263-270, 1980.
B. Jasty M, Bragdon C, Burke D, O'Connor D, Lowenstein J, Harris WH. In vivo skeletal responses to porous-surfaced implants subjected to small induced motions. J Bone Joint Surg Am. 1997 May;79(5):707-14.

Lecture #2: Thromboembolic disease/Osteolysis

A. Johanson NA, Lachiewicz PF, Lieberman JR, Lotke PA, Parvizi J, Pellegrini V, Stringer TA, Tornetta P, Haralson RH, Watters WC. Prevention of Symptomatic Pulmonary Embolism in Patients Undergoing Total Hip or Knee Arthroplasty. *J. Am. Acad. Ortho. Surg.,* March 2009; 17: 183 - 196.
B. Jacobs JJ, Roebuck KA, Archibeck M, Hallab NJ, Glant TT: Osteolysis: Basic science. *Clin Orthop Relat Res* 2001;393:71-77.

Lecture #3: Preop planning/Implant design

A. Della Valle AG, Padgett DE, Salvati, EA. Preoperative planning for primary total hip arthroplasty. *J Am Acad Orthop Surg* 2005;13:455-462.
B. Engh CA, Bobyn JD, Glassman AH. Porous-coated hip replacement. The factors governing bone ingrowth, stress shielding, and clinical results. J Bone Joint Surg Br. 1987 Jan;69(1):45-55.

Lecture #4 : Surgical approaches to primary THA

A. Barnett SL, Peters DJ, Hamilton WG, Ziran NM, Gorab RS, **Matta** JM. Is the **Anterior** Approach Safe? Early Complication Rate Associated With 5090 Consecutive Primary Total **Hip** Arthroplasty Procedures Performed Using the **Anterior** Approach. J Arthroplasty. 2016 Oct;31(10):2291-4. doi: 10.1016/j.arth.2015.07.008. Epub 2015 Jul 11.
B. Petis S, Howard JL, Lanting BL, Vasarhelyi EM. Surgical approach in primary total hip arthroplasty: anatomy, technique and clinical outcomes. Can J Surg. 2015 Apr;58(2):128-39. Review.

Lecture #5: Techniques for THA (simple and complex)

A. Krych AJ, Howard JL, Trousdale RT, Cabanela ME, Berry DJ. Total hip arthroplasty with shortening subtrochanteric osteotomy in Crowe type-IV

developmental dysplasia: surgical technique. J Bone Joint Surg Am. 2010 Sep;92 Suppl 1 Pt 2:176-87. doi: 10.2106/JBJS.J.00061.

B. Glassman AH, Engh CA, Bobyn JD. A technique of extensile exposure for total hip arthroplasty. J Arthroplasty 2:11, 1987.

Lecture #6 : Revision THA

A. Della Valle CJ, Paprosky WG. Classification and an algorithmic approach to the reconstruction of femoral deficiency in revision total hip arthroplasty. *JBJS* 2003; 85-A Suppl. 4: 1-6.

B. Baauw M, van Hooff ML, Spruit M. Current Construct Options for Revision of Large Acetabular Defects: A Systematic Review. JBJS Rev. 2016 Nov 8;4(11).

Lecture #7: Complications of THA

A. Telleria JJ, Gee AO Classifications in brief: Paprosky classification of acetabular bone loss. Clin Orthop Relat Res. 2013 Nov;471(11):3725-30.

B. Brady OH, Garbuz DS, Masri BA, Duncan CP. The reliability and validity of the Vancouver classification of femoral fractures after hip replacement. J Arthroplasty. 2000 Jan;15(1):59-62.

Lecture #8: Preop planning/Implant design (TKA)

A. Lombardi AV Jr, Berend KR. Posterior cruciate ligament-retaining, posterior stabilized, and varus/valgus posterior stabilized constrained articulations in total knee arthroplasty. Instr Course Lect. 2006;55:419-27. Review.

B. Voigt J, Mosier M. Cemented all-polyethylene and metal-backed polyethylene tibial components used for primary total knee arthroplasty: a systematic review of the literature and meta-analysis of randomized controlled trials involving 1798 primary total knee implants. J Bone Joint Surg Am. 2011 Oct 5;93(19):1790-8. doi: 10.2106/JBJS.J.01303. Review.

Lecture #9: Surgical approaches to primary TKA

A. Scott RD. Femoral and tibial component rotation in total knee arthroplasty: methods and consequences. Bone Joint J. 2013 Nov;95-B(11 Suppl A):140-3. doi: 10.1302/0301-620X.95B11.32765.

B. Lombardi AV Jr, Dodds KL, Berend KR, Mallory TH, Adams JB. An algorithmic approach to total knee arthroplasty in the valgus knee. J Bone Joint Surg Am. 2004;86-A Suppl 2:62-71.

Lecture #10: Alternatives to TKA

A. Borus T, Thornhill T. Unicompartmental knee arthroplasty. *J Am Acad Ortho Surg*. 2008;16 (1):9

B. Lonner JH. Patellofemoral Arthroplasty. J Am Acad Orthop Surg, Vol 15, No 8, August 2007, 495-506.

Lecture #11: Revision TKA

A. Dennis DA, Berry DJ, Engh G, Fehring T, MacDonald SJ, Rosenberg AG, Scuderi G. Revision total knee arthroplasty. *J Am Acad Ortho Surg* 2008:16 (8):442.
B. Vince KG and Oakes DA: Three-step technique for revision total knee arthroplasty. Chapter 51, pp 384-389. In: Surgical Techniques in Total Knee Arthroplasty. Giles R. Scuderi and Alfred J. Tria, Jr., eds. Springer-Verlag, New York, 2002.

Lecture #12: Complications of TKA

A. Hofmann AA, Goldberg T, Tanner AM, Kurtin SM. Treatment of infected total knee arthroplasty using an articulating spacer: 2- to 12-year experience. Clin Orthop Relat Res.2005; 430:125 -31.
B. Berger RA, Crossett LS, Jacobs JJ, Rubash HE. Malrotation causing patellofemoral complications after total knee arthroplasty. *Clin Ortho*1998;356:144-53.

Lecture Readings – Optional/Suggested

Lecture #1: Implant Materials/Biologic Fixation

Optional/Suggested

A. Jasty M, Maloney WJ, Bragdon CR, Haire T, Harris WH: Histomorphological studies of the long-term skeletal responses to well fixed cemented femoral components. J Bone Joint Surg 72A, 1220-1229, 1990.
B. Capello WN, D'Antonio JA, Feinberg JR, Manley MT: Alternative bearing surfaces: Alumina ceramic bearings for total hip arthroplasty. AAOS Instructional Course lectures 54: 171-176, 2005.
C. Pilliar RM, Lee JM, Maniatopoulos C. Observations on the effect of movement on bone ingrowth into porous-surfaced implants. Clin Orthop Relat Res. 1986 Jul;(208):108-13.
D. Dion NT, Bragdon C, Muratoglu O, Freiberg AA. **Durability** of **highly cross-linked** polyethylene in total hip and total knee arthroplasty. Orthop Clin North Am. 2015 Jul;46(3):321-7, ix. doi: 10.1016/j.ocl.2015.02.001. Epub 2015 Mar 14. Review.

Lecture #2: Thromboembolic disease/Osteolysis

Optional/Suggested

A. Bracco P, Bellare A, Bistolfi A, Affatato S.Ultra-High Molecular Weight Polyethylene: Influence of the Chemical, Physical and Mechanical Properties on the Wear Behavior. A Review. Materials (Basel). 2017 Jul 13;10(7). pii: E791. doi: 10.3390/ma10070791. Review.

B. Collier JP, Sutula LC, Currier BH, Currier JH, Wooding RE, Williams IR, Farber KB, Mayor MB. Overview of polyethylene as a bearing material: comparison of sterilization methods. Clin Orthop Relat Res. 1996 Dec;(333):76-86.

C. Pellegrini VD Jr, Donaldson CT, Farber DC, Lehman EB, Evarts CM: The John Charnley Award: Prevention of readmission for venous thromboembolic disease after total hip arthroplasty. *Clin Orthop Relat Res* 2005;441:56-62.

D. Athanasou N. Cellular biology of bone resorbing cells. JBJS Vol 78-A. 1996. p 1096-1112.

E. Marshall A, Ries MD, and Paprosky W. How prevalent are implant wear and osteolysis, and how has the scope of osteolysis changed since 2000**?** J. Am. Acad. Ortho. Surg., July 2008; 16: S1 - S6.

F. Goldhaber SZ, Bounameaux H. Pulmonary embolism and deep vein thrombosis. Lancet. 2012 May 12;379(9828):1835-46. doi: 10.1016/S0140-6736(11)61904-1. Epub 2012 Apr 10. Review.

Lecture #3: Preop planning/Implant design

Optional/Suggested

A. Callaghan JJ, Bracha P, Liu SS, Piyaworakhun S, Goetz DD, Johnston RC. Survivorship of a Charnley total hip arthroplasty. A concise follow-up, at a minimum of thirty-five years, of previous reports. J Bone Joint Surg Am. 2009 Nov;91(11):2617-21. doi: 10.2106/JBJS.H.01201.

B. Ceramics in total hip replacement. Hannouche D, Hamadouche M, Nizard R, Bizot P, Meunier A, Sedel L.Clin Orthop Relat Res. 2005 Jan;(430):62-71. Review.

C. Charley J. The long-term results of low-friction arthroplasty of the hip performed as a primary intervention. 1970.Clin Orthop Relat Res. 2005 Jan;(430):3-11; discussion 2.

D. Della Valle CJ, Kaplan K, Jazrawi A, Ahmed S, Jaffe WL.Primary total hip arthroplasty with a flanged, cemented all-polyethylene acetabular component: evaluation at a minimum of 20 years.J Arthroplasty. 2004 Jan;19(1):23-6.

E. Madey SM, Callaghan JJ, Olejniczak JP, Goetz DD, Johnston RC. Charnley total hip arthroplasty with use of improved techniques of cementing. The results after a minimum of fifteen years of follow-up. J Bone Joint Surg Am. 1997 Jan;79(1):53-64. Erratum in: J Bone Joint Surg Am 1997 Apr;79(4):635.

F. Camazzola D, Hammond T, Gandhi R, Davey JR. A randomized trial of hydroxyapatite-coated femoral stems in total hip arthroplasty: a 13-year follow-up. J Arthroplasty. 2009 Jan;24(1):33-7. doi: 10.1016/j.arth.2008.01.129. Epub 2008 Apr 10.

G. Engh CA, O'Connor D, Jasty M, McGovern TF, Bobyn JD, Harris WH. Quantification of implant micromotion, strain shielding, and bone resorption with porous-coated anatomic medullary locking femoral prostheses. Clin Orthop Relat Res. 1992 Dec;(285):13-29.

Lecture #4 : Surgical approaches to primary THA

Optional/Suggested

A. McGann WA. Surgical approaches. Chapter 42. *In* The Adult Hip. Lippencott-Raven, Philadelphia, 1998, JJ Callaghan, AG Rosenberg, HE Rubash eds.
B. Lee GC, Marconi D. Complications Following **Direct Anterior Hip** Procedures: Costs to Both Patients and Surgeons. J Arthroplasty. 2015 Sep;30(9 Suppl):98-101. doi: 10.1016/j.arth.2015.03.043. Epub 2015 Jun 3. Review.
C. Hardinge K. The direct lateral approach to the hip.J Bone Joint Surg Br. 1982;64(1):17-9.

Lecture #5: Techniques for THA (simple and complex)

Optional/Suggested

A. Crowe JF, Mani VJ, and Ranawat CS. Total hip replacement in congenital dislocation and dysplasia of the hip. J. Bone Joint Surg. Am., Jan 1979; 61: 15 - 23.
B. Wasielewski RC, Galat DD, Sheridan KC, Rubash HE. Acetabular anatomy and transacetabular screw fixation at the high hip center. *Clin Orthop Rel Research* 2005:438:171-6.
C. Archbold HA, Mockford B, Molloy D, McConway J, Ogonda L, Beverland D. The **transverse acetabular ligament**: an aid to orientation of the **acetabular** component during primary total **hip replacement**: a preliminary study of 1000 cases investigating postoperative stability. J Bone Joint Surg Br. 2006 Jul;88(7):883-6.

Lecture #6 : Revision THA

Optional/Suggested

A. Glassman, A.H. and Engh, C.A.: The removal of porous-coated femoral hip stems. Clin. Orthop.285:164, 1992.
B. Springer BD, Berry DJ, and Lewallen DG. Treatment of Periprosthetic Femoral Fractures Following Total Hip Arthroplasty with Femoral Component Revision. J. Bone Joint Surg. Am., Nov 2003; 85: 2156 – 2162.
C. Sporer SM, Paprosky WG. The use of a trabecular metal acetabular component for severe acetabular bone loss associated with a pelvic discontinuity. *J Arthoplasty*. 2006;21:6:87-90.
D. Gross AE, Goodman S. The current role of structural grafts and cages in revision arthroplasty of the hip. Clin Orthop Relat Res. 2004 Dec;(429):193-200. Review.
E. Barlow BT, Oi KK, Lee YY, Carli AV, Choi DS, Bostrom MP. Outcomes of Custom Flange Acetabular Components in Revision Total Hip Arthroplasty and Predictors of Failure. J Arthroplasty. 2016 May;31(5):1057-64. doi: 10.1016/j.arth.2015.11.016. Epub 2015 Nov 26.

Lecture #7: Complications of THA

Optional/Suggested

A. Pivec R, Meneghini RM, Hozack WJ, Westrich GH, Mont MA. Modular taper junction corrosion and failure: how to approach a recalled total hip arthroplasty implant. J Arthroplasty. 2014 Jan;29(1):1-6. doi: 10.1016/j.arth.2013.08.026. Epub 2013 Sep 30. Review.

B. Berend KR, Lombardi AV, Mallory TH, Adams JB, Russell JH, Groseth KL. The long-term outcome of 755 consecutive constrained acetabular components in total hip arthroplasty. Examining the successes and failures. J Arthroplasty 20, Suppl 3: 93-102, 2005.

C. Mahoney CR, Pellicci PM. Complications in primary total hip arthroplasty: avoidance and management of dislocations. Instr Course Lect. 2003;52:247-55. Review.

D. Whiteside LA, Roy ME. One-stage Revision With Catheter Infusion of Intraarticular Antibiotics Successfully Treats Infected THA. Clin Orthop Relat Res. 2017 Feb;475(2):419-429. doi: 10.1007/s11999-016-4977-y.

E. von Knoch M, Berry DJ, Harmsen WS, Morrey BF. Late dislocation after total hip arthroplasty. J Bone Joint Surg Am. 2002 Nov;84-A(11):1949-53.

F. Cancienne JM, Werner BC, Bolarinwa SA, Browne JA. Removal of an Infected Total Hip Arthroplasty: Risk Factors for Repeat Debridement, Long-term Spacer Retention, and Mortality. J Arthroplasty. 2017 Aug;32(8):2519-2522. doi: 10.1016/j.arth.2017.03.018. Epub 2017 Mar 30.

G. Browne JA, Cancienne JM, Novicoff WM, Werner BC. Removal of an Infected Hip Arthroplasty Is a High-Risk Surgery: Putting Morbidity Into Context With Other Major Nonorthopedic Operations. J Arthroplasty. 2017 Apr 6. pii: S0883-5403(17)30298-X. doi: 10.1016/j.arth.2017.03.061

Lecture #8: Preop planning/Implant design (TKA)

Optional/Suggested

A. MacDonald SJ, Charron KD, Bourne RB, Naudie DD, McCalden RW, Rorabeck CH. The John Insall Award: gender-specific total knee replacement: prospectively collected clinical outcomes. Clin Orthop Relat Res. 2008 Nov;466(11):2612-6. doi: 10.1007/s11999-008-0430-1.

B.

Lecture #9: Surgical approaches to primary TKA

Optional/Suggested

A. P.L. Poilvache, J.N. Insall, G.R. Scuderi and D.E. Font-Rodriguez, Rotational landmarks and sizing of the distal femur in total knee arthroplasty. *Clin Orthop* **331** (1996), p. 35

B. Bedi A, Haidukewych GJ. Management of the posttraumatic arthritic knee. *J Am Acad Ortho Surg*. 2009:17(2):88.

C. Easley ME, Insall JN, Scuderi GR, Bullek DD. Primary constrained condylar knee arthroplasty for the arthritic valgus knee. *Clin Orthop*. 2000;380:58-64.
D. Meftah M, Blum YC, Raja D, Ranawat AS, Ranawat CS Correcting fixed varus deformity with flexion contracture during total knee arthroplasty: the "inside-out" technique: AAOS exhibit selection. J Bone Joint Surg Am. 2012 May 16;94(10):e66. doi: 10.2106/JBJS.K.01444.
E. Yasgur D, Scuderi GR, Insall JN: Medial release for fixed-varus deformity. Chapter 25, pp 189-196. In: Giles R Scuderi and Alfred J Tria, Jr. Surgical Techniques in Total Knee Arthroplasty, Springer, New York, 2002

Lecture #10: Alternatives to TKA

Optional/Suggested

A. A. Suggs J F, Li G, Park S E, Steffensmeier S, Rubash H E, Freiberg A A. Function of the anterior cruciate ligament after unicompartmental knee arthroplasty: an in vitro robotic study. *J Arthroplasty*:. Feb 2004;19 (2): 224 –229.
B. Engh GA, Ammeen D. Is an intact anterior cruciate ligament needed in order to have a well-functioning unicondylar knee replacement? Clin Orthop Relat Res. 2004 Nov;(428):170-3. Review.
C. Chawla H, van der List JP, Christ AB, Sobrero MR, Zuiderbaan HA, Pearle AD. Annual revision rates of partial versus total knee arthroplasty: A comparative meta-analysis. Knee. 2017 Mar;24(2):179-190. doi: 10.1016/j.knee.2016.11.006. Review.

Lecture #11: Revision TKA

Optional/Suggested

A. Engh GA, Herzwurm PJ, Parks NL: Treatment of major defects of bone with bulk allografts and stemmed components during total knee arthroplasty. *J Bone Joint Surg Am* 1997;79:1030-1039.
B. Mabry T, Hanssen A. The Role of Stems and Augments for Bone Loss in Revision Knee Arthroplasty. J Arthroplasty. 2007 Jun;22(4 Suppl 1):56-60..
C. Radnay CS, Scuderi GR. Management of bone loss: augments, cones, offset stems. Clin Orthop Relat Res. 2006 May;446:83-92. Review.

Lecture #12: Complications of TKA

Optional/Suggested

A. Konan S, Sandiford N, Unno F, Masri BS, Garbuz DS, Duncan CP. Periprosthetic fractures associated with total knee arthroplasty: an update. Bone Joint J. 2016 Nov;98-B(11):1489-1496. Review.
B. Fehring KA, Abdel MP, Ollivier M, Mabry TM, Hanssen AD. Repeat Two-Stage Exchange Arthroplasty for Periprosthetic Knee Infection Is Dependent on Host Grade. J Bone Joint Surg Am. 2017 Jan 4;99(1):19-24. doi: 10.2106/JBJS.16.00075.

C. Bonnin M, Lustig S, Huten D. Extensor tendon ruptures after total knee arthroplasty. Orthop Traumatol Surg Res. 2016 Feb;102(1 Suppl):S21-31. doi: 10.1016/j.otsr.2015.06.025. Epub 2016 Jan 18. Review.
D. Pivec R, Naziri Q, Issa K, Banerjee S, Mont MA. Systematic review comparing static and articulating spacers used for revision of infected total knee arthroplasty. J Arthroplasty. 2014 Mar;29(3):553-7.e1. doi: 10.1016/j.arth.2013.07.041. Epub 2013 Sep 5. Review.
E. Abdel MP, Ledford CK, Kobic A, Taunton MJ, Hanssen AD. Contemporary failure aetiologies of the primary, posterior-stabilised total knee arthroplasty. Bone Joint J. 2017 May;99-B(5):647-652. doi: 10.1302/0301-620X.99B5.BJJ-2016-0617.R3.

Orthopaedic Surgery Minimum Numbers (effective 2012-2013)

Category	Minimum
Knee arthroscopy	**30**
Shoulder arthroscopy	**20**
ACL reconstruction	**10**
THA	**30**
TKA	**30**
Hip fractures	**30**
Carpal tunnel release	**10**
Spine decompression/posterior spine fusion	**15**
Ankle fracture fixation	**15**
Closed reduction forearm/wrist	**20**
Ankle & hind & mid-foot arthro	**5**
Supracondylar humerus perc	**5**
Femur and tibia intramedullary fixation	**25**
All pediatric procedures	**200**
All oncology procedures	**10**

CPT Codes in Each Category

Knee arthroscopy (29850, 29851, 29855, 29856, 29866, 29867, 29868, 29870, 29871, 29873, 29874, 29875, 29876, 29877, 29879, 29880, 29881, 29882, 29883, 29884, 29885, 29886, 29887)

Shoulder arthroscopy (29805, 29806, 29807, 29819, 29820, 29821, 29822, 29823, 29824, 29825, 29826, 29827, 29828)

ACL reconstruction (29888)

THA (27130, 27132, 27134, 27137, 27138)

TKA (27442, 27443, 27445, 27446, 27447, 27487)

Hip fractures (27235, 27236, 27244, 27245)

Carpal tunnel release (64721)

Spine decompression lumbar spine/posterior spine fusion thoracic or lumbar (22612, 22630, 22800, 22802, 22804, 63005, 63012, 63017, 63030, 63042, 63047)

Ankle fracture fixation (27766, 27769, 27792, 27814, 27822, 27823, 27826, 27827, 27828, 27829)

Closed reduction forearm and wrist fractures (25505, 25520, 25535, 25565, 25605, 25624, 25690, 25680, 25675)

Ankle and hind and mid-foot arthrodeses (27870, 28705, 28715, 28725, 28730, 28735, 28737)

Supracondylar humerus percutaneous treatment (24538, 24566, 24582)

Femur and tibia intramedullary fixation (27506, 27759)

Please note: manipulations must recorded with procedures in the Case Log System

The Ohio State University
Department of Orthopaedics

Residency Curriculum

Orthopaedic Oncology

About This Curriculum

- It is the responsibility of both the resident and the attending to go over the goals and guidelines included in this handbook
    - At the beginning of the rotation
    - At the conclusion of the rotation
- Additional materials and/or service handbooks may be provided by the attendings at the beginning of the rotation

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Musculoskeletal Oncology Service Information

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Schedule

During the two month rotation, both the PGY-2 and PGY-4 will spend one month each with Dr Mayerson and Dr Scharschmidt. They will switch attendings after the first month.

Dr Mayerson

Monday:	Indications Conference at 6:15 am in B541 James 5th OR, beginning at 7:30am
Tuesday:	Clinic at the James, beginning at 8:00 am
Wednesday:	Pathology conference at 6:30 am, 2nd Floor D200A James OR, beginning at 7:30am
Thursday:	Clinic at The James beginning at 8:00am or 9:00 am, depending upon the week
Friday:	Arranged

Dr Scharschmidt

Monday:	Indications Conference at 6:15 am in B541 James, 5th floor Clinic at The James, beginning at 7:30am
Tuesday:	OR, beginning at 7:30am
Wednesday:	Pathology conference at 6:30 am, 2nd Floor D200A James NCH clinic, 8:00 am
Thursday:	Indications conference at 6:15am in B541 James 5th Floor OR following conference
Friday:	2nd and 4th Friday will be OR at Children's. The oncology resident is encouraged to assist.

Revised 5/19/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Delineation of Resident Responsibilities:
Orthopaedic Oncology Service: PGY2 and PGY4

I. Resident Responsibilities for Patient Care

- Rounding Residents are expected to have seen and written a complete detailed note on each patient prior to going the OR or clinic for the day. Consult patients will be followed based on acuity to be decided upon discussion between the attending staff and resident. Attending rounds will be done daily at a time to be discussed between the resident and attending staff. Communication is mandatory with the inpatient and outpatient PCRM's as needed. The P.A. will be used as needed to assist the resident staff with patient care.

- Orders All orders will be done via the CAPI order entry system. There is a specific order set for the oncology service. Please use this set as it has been standardized for most of the post-operative needs for the oncology patients.

- Preferences All dressings should be changed on POD 2 and daily thereafter unless otherwise specified. Drains are left in place and the patient kept on IV antibiotics until output is less then 30cc per 24 hour shift. Weight bearing status and physical therapy orders should be discussed on a case-by-case basis.

- Discharge The standard OSU mechanism of electronic discharge instructions is to be used at all times. This should be a detailed account of the patient's care so the primary care physician who receives a faxed copy upon the patient's discharge will understand the plan of care. If you don't know the detailed plan, please ask. DO NOT DISCHARGE a patient without reviewing all laboratory values and radiographic studies first!

  The discharge summary should be done as close as possible to the discharge date. This allows for easier recollection on the part of the resident for complicated patients. The discharge summary must include a complete history, pertinent physical exam, summary of care and reason for hospital admission. Use the EDI for specific follow-up information. This is the only way that rehabilitation hospitals sometimes are able to discern follow-up care.

  Please try to have discharge orders written prior to 10 am whenever possible so we can comply with the James Administrative Policy of completing all inpatient discharges prior to noon.

In general most patients are seen post-operatively 10 to 14 days after surgery unless you are told otherwise. Pain medication is unique to each patient and should be discussed with the attending staff if you are unsure. Pain medications should be sufficient for 3-4 weeks.

- Documentation Please make sure daily notes are legible and the detailed care plan for the day is outlined. This will save you many phone calls and will allow the ancillary caregivers to provide better care for the patient as well. Check all laboratory values daily and document the abnormal labs that need addressed in the care of the patient.

  Residents are responsible for a thorough pre-operative history and physical exam and as well as a brief OP note describing the procedure. Before the patient leaves the OR, a decision will be made on who will dictate the operative note. Any questions should be directed toward the attending staff.

  All consults must document a COMPLETE history including a review of systems, past medical and surgical history, family history, allergies, medicines, and social history. Oncology patients are very complex and this is an important aspect of their evaluation. The attending staffing the consult must be documented and a specific plan generated after discussion with the attending staff.

  Many other questions will arise on an as needed basis. Constant communication between all members of the team is the best way to get an optimal educational experience and provide the best care possible for each patient.

II. Resident Level of Responsibility for Patient Care

Resident rotations are structured so that the residents have a one-on-one relationship with attendings. The level of responsibility given by the attending to the resident is determined by that attending, depending on the attendings' assessment of the resident's knowledge and skills, and the complexity of the procedure.

III. Resident Supervision

Attendings are responsible for the direct supervision of residents in both the clinic and the operating room, as well as in on-call situations. Attending physicians are available for consultation at all times.

Senior residents (PGY4 and above) are also directly responsible for the supervision of junior residents (PGY1, PGY2, and PGY3). This applies to all of the above situations (i.e. on-call, in clinic, in the OR). Senior residents must be available for consultation at all times. Ultimately, chief residents (all PGY5's) are responsible for the supervision of all residents, regardless of PGY year.

IV. Performance Feedback

Both attending staff members are available at any time if questions or concerns arise. At the end of each rotation, each attending on the service will evaluate each resident assigned to the service. A meeting should be scheduled at the conclusion of the rotation to discuss performance and provide written feedback on the rotation.

Goals and Objectives
Musculoskeletal Oncology Rotation – PGY2

I. Core Competency Areas

By the end of the PGY2 rotation in Musculoskeletal Oncology, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY2 rotation in Musculoskeletal Oncology, the resident should:

1. Understand the natural history, cellular biology, diagnostic imaging modalities utilized in the evaluation, biopsy technique involved in diagnosis and surgical treatment, surgical options available for the palliative treatment of primary bone and soft tissue neoplasms, both benign and malignant.
2. Know the spectrum of begign and malignant neoplastic disease entities and tumor-like conditions encountered in musculoskeletal oncology
3. Know the important aspects of clinical diagnosis used in the evaluation of soft tissue and bone neoplasms
4. Understand the staging systems and the classification of surgical procedures utilized by musculoskeletal oncologists
5. Understand the management of surgical specimens and the approach to their interpretation through light microscopy, immunohistiochemistry, and cytogenics.
6. Know the general principles for using adjuvant treatment modalities (radiation therapy and chemotherapy) and the surgical options available for palliative treatment of metastic malignancies to including the evaluation and treatment of pending and overt pathologic fractures.
7. Understand the psychological aspects of patient management and the techniques for pain management in orhtopaedic oncology patients.
8. Know the surgical options available for the palliative treatment of metastatic malignancies to bone including the evaluation and treatment of pending and overt pathologic fractures
9. Identify patient position, surgical approach, and pertinent anatomy for each tumor location
10. Know general surgical technique for bone and soft tissue resections and appropriate margin status
11. Design and implement the appropriate diagnostic approach to bone and soft tissue lesions from the initial office based clinical evaluation of the patient through a utilization of the entire spectrum of diagnostic modalities.
12. Synthesize clinical, radiographic, and pathologic diagnostic information into an appropriate differential diagnosis and a final definitive diagnosis for musculoskeletal lesions

III. Specialty Specific Psychomotor Skills

By the end of the PGY2 rotation in Musculoskeletal Oncology, the resident should be able to:

1. Assist in planning of fine needle aspiration, true-cut needle biopsy, and open surgical biopsy in the management of soft tissue sarcoma. Know how and when each method is optimally utilized.
2. Plan and assist in performing core needle biopsy of bone lesions with fluoroscopic control and open biopsies of both soft tissue and bone tumors in the operating room when appropriate to stage of training.
3. Perform surgical procedures for the treatment of benign bone tumors, benign soft tissue tumors and metastatic disease.

Goals and Objectives
Musculoskeletal Oncology Rotation: PGY4

I. Core Competency Areas

By the end of the PGY4 rotation in Musculoskeletal Oncology, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

Basic:

1. Understand the natural history, cellular biology, diagnostic imaging modalities utilized in the evaluation, biopsy technique involved in diagnosis and surgical treatment, surgical options available for the palliative treatment of primary bone and soft tissue neoplasms, both benign and malignant.
2. Know the spectrum of begign and malignant neoplastic disease entities and tumor-like conditions encountered in musculoskeletal oncology
3. Know the important aspects of clinical diagnosis used in the evaluation of soft tissue and bone neoplasms
4. Understand the staging systems and the classification of surgical procedures utilized by musculoskeletal oncologists
5. Understand the management of surgical specimens and the approach to their interpretation through light microscopy, immunohistiochemistry, and cytogenics.
6. Know the general principles for using adjuvant treatment modalities (radiation therapy and chemotherapy) and the surgical options available for palliative treatment of metastic malignancies to including the evaluation and treatment of pending and overt pathologic fractures.
7. Understand the psychological aspects of patient management and the techniques for pain management in orhtopaedic oncology patients.
8. Know the surgical options available for the palliative treatment of metastatic malignancies to bone including the evaluation and treatment of pending and overt pathologic fractures
9. Identify patient position, surgical approach, and pertinent anatomy for each tumor location
10. Know general surgical technique for bone and soft tissue resections and appropriate margin status
11. Design and implement the appropriate diagnostic approach to bone and soft tissue lesions from the initial office based clinical evaluation of the patient through a utilization of the entire spectrum of diagnostic modalities.
12. Synthesize clinical, radiographic, and pathologic diagnostic information into an appropriate differential diagnosis and a final definitive diagnosis for musculoskeletal lesions

Advanced: By the end of the PGY4 rotation in Musculoskeletal Oncology and building upon the experiences from the PGY2 rotation, the resident should:

1. Know the reconstructive options for use following treatment of benign bone tumors (i.e. cementation, internal fixation, bone grafting, and the use of graft alternatives)
2. Know the reconstructive options used in the treatment of malignant bone tumors (i.e. allografting, autografting, arthrodesis, total joint arthroplasties, and composite arthroplasties).
3. Know the reconstructive options utilized following the treatment of malignant soft tissue tumors (i.e. split thickness skin grafting, local rotational flaps, and amputation.
4. Understand the advantages and disadvantages of limb salvage vs. amputation in the management of bone and soft tissue tumors

III. Specialty Specific Psychomotor Skills

Basic:

1. Assist in planning of fine needle aspiration, true-cut needle biopsy, and open surgical biopsy in the management of soft tissue sarcoma. Know how and when each method is optimally utilized.
2. Plan and assist in performing core needle biopsy of bone lesions with fluoroscopic control and open biopsies of both soft tissue and bone tumors in the operating room when appropriate to stage of training.
3. Perform surgical procedures for the treatment of benign bone tumors, benign soft tissue tumors and metastatic disease.

<u>Advanced:</u> By the end of the PGY4 rotation in Musculoskeletal Oncology and building upon the experiences from the PGY2 rotation, the resident should:

4. Design and implement the appropriate diagnostic approach to bone and soft tissue lesions from the initial office based clinical evaluation of the patient through a utilization of the entire spectrum of diagnostic modalities
5. Plan and perform optimal biopsy procedures utilizing core needle biopsy of soft tissue masses as an office based procedure.
6. Plan and perform core needle biopsy of bone lesions with fluoroscopic control and open biopsies of both soft tissue and bone tumors in the operating room.
7. Synthesize clinical, radiographic, and pathologic diagnostic information into an appropriate differential diagnosis and a final definitive diagnosis for musculoskeletal lesions
8. Formulate a specific treatment plan for a wide spectrum of orthopaedic oncology conditions both benign and malignant involving bone and soft tissue tumors and tumor like conditions.
9. Perform surgical procedures for the treatment of benign bone tumors, benign soft tissue tumors and metastatic disease

ACGME MILESTONES FOR ORTHOPEDICS - Effective July 1, 2013

The milestones were designed by the ACGME for use only in evaluation of resident physicians in the context of their participation in ACGME-accredited residency or fellowship programs. The milestones provide a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Milestones were designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into residency through graduation. The Ortho RRC will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The resident demonstrates milestones expected of an incoming resident.

Level 2: The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.

Level 3: The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.

Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

Note that Level 4 is designed as the graduation *target* but does not represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the residency program director.

The milestones which will be evaluated on the Orthopaedic Oncology rotation are as listed on the following pages:

Metastatic Bone Lesion – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of normal bone development • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., plain radiographs) • Demonstrates knowledge of most common sites of metastatic disease and primary sites of disease (e.g., primary sites breast, prostate, lung, kidney, thyroid)	• Demonstrates knowledge of pathophysiology related to destructive bone lesion (e.g., understands the function of receptor activator of nuclear factor kappa-B ligand [RANKL], osteoprotegerin [OPG] and osteoclasts in the bone turnover in skeletal metastasis) • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., CT scan of chest/abdomen/ pelvis, MRI of spine) • Demonstrates some knowledge of natural history of destructive bone lesion (e.g., understands behavior of various histologies [i.e., lung vs. breast cancer]; understands the different behavior of primary bone sarcoma vs. bone metastasis) • Demonstrates knowledge of destructive bone lesion anatomy and basic surgical approaches (e.g., understands the location of neurovascular	• Demonstrates knowledge of current literature and alternative treatments (e.g., alternative treatments, including external beam radiation, radiofrequency ablation, cryoablation, bisphosphonate use) • Understands indications for prophylactic fixation (e.g., be aware of at least one scoring system [Mirels, Beals] as well as more nuanced factors [histology, response to treatment, etc.]) • Understands the effects of intervention on natural history of destructive bone lesion • Understands alternative surgical approaches (e.g., understands the role of resection/prosthetic replacement vs. intramedullary stabilization depending on location of lesion) • Understands role of radiation or medical therapy (vs. surgical options; their use post-operatively; specific role of chemotherapy,	• Understands controversies within the field (e.g., resection/prosthetic reconstruction vs. intramedullary fixation; short vs. long stem hip reconstruction; bipolar vs. total hip arthroplasty (THA) for hip lesions; resection of solitary bone metastasis) • Formulates differential diagnosis based on imaging studies • Able to perform risk assessment of operative vs. non-operative care (e.g., understands concepts of nutritional status, current function/ activity, medical comorbidities/American Society of Anesthesiologists [ASA] level) • Applies understanding of natural history to clinical decision making (e.g., understands balance of expected lifespan to planned intervention [i.e., complex acetabular reconstruction for patient with widespread lung metastasis and six weeks to live]; develop	• Primary author/presenter of original work within the field

	structures in upper/lower extremities and pelvis; understand basic surgical approach to humeral and femoral nails) • Understands basic pre-surgical planning and templating • Demonstrates knowledge of non-operative treatment options and surgical indications (e.g., understands non-operative options, including protected weight-bearing/radiation of lower extremity lesions, as well as bracing of upper extremity lesion)	hormonal therapy, bisphosphonates for common primary cancers that spread to bone) • Demonstrates knowledge of alternatives for primary sarcoma of bone (e.g., understand role of resection vs. palliative care; understands role of limb salvage vs. amputation)	shared-decision making skills for patient discussions/interactions) • Understands biomechanics and implant choices (e.g., understands concepts of failure in compression vs. tension; understands the benefit of supplemental methylmethacrylate; understands the pros/cons of plate vs. rod fixation)	
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: **Not yet rotated** ☐				

Metastatic Bone Lesion – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam (e.g., pain, function, past medical/surgical/social/ family history, review of systems, heart, lungs, extremity exam, including range of motion, strength, sensation, skin changes, tenderness) • Appropriately orders basic imaging studies (e.g., plain radiographs, including AP/lateral of the lesion Joint above and below the lesion) • Prescribes non-operative treatments (e.g., including protected weight-bearing bracing, no intervention) • Provides basic peri-operative management (e.g., intravenous [IV] antibiotics, IV fluids, DVT prophylaxis, pain control, nutrition) • Lists potential complications (e.g., including Infection, wound complications, neurovascular compromise, tumor	• Obtains focused history and performs focused exam (e.g., history: specific questions re: past history of cancer or radiation, prior treatments, pre-existing pain, smoking or chemical exposure, constitutional symptoms such as fever; physical exam: notes lymph node involvement, lumps/nodules) • Appropriately interprets basic imaging studies (e.g., able to describe the radiographic appearance [osteolytic, osteoblastic, etc.]) • Prescribes and manages non-operative treatment (e.g., understands when to have the patient back to clinic for follow-up; understands when to order new radiographic imaging studies) • Completes pre-operative planning with instrumentation and implants • Performs one basic surgical approach to the destructive bone lesion • Provides post-operative management and rehabilitation (e.g., understands weight-bearing issues and role of physical/occupational therapy [PT/OT]) • Capable of diagnosis and early management of complications	• Appropriately orders and interprets advanced imaging studies/lab studies (e.g., 3D radiographic studies to include CT and MRI, lab studies including role of serum protein electrophoresis [SPEP]/urine protein electrophoresis [UPEP], prostate specific antigen [PSA], other tumor markers) • Recommends complex non-operative treatment (radiofrequency ablation [RFA] or cryoablation, bisphosphonates kyphoplasty or vertebroplasty) • Completes comprehensive pre-operative planning with alternatives • Completes pre-operative preparation and consultation (e.g., oncology, radiation oncology, counseling • Modifies and adjusts post-operative treatment plan as needed	• Recommends appropriate biopsy, including biopsy alternatives and appropriate techniques (e.g., understands role of open biopsy vs. needle biopsy) • Capable of performing prophylactic fixation based on diagnosis and risk (e.g., able to perform prophylactic intramedullary stabilization of femur, prophylactic bipolar hemiarthroplasty of the hip) • Capable of performing internal fixation on impending or actual pathologic fractures (e.g., able to perform intramedullary stabilization of pathologic femoral or humeral fracture, bipolar hip hemiarthroplasty for pathologic femoral neck fracture) • Capable of performing alternative surgical approaches to the destructive bone lesion (e.g., understands approaches to the hip	• Discusses prognosis and end-of-life care with patients and family • Independently performs open biopsy • Performs endoprosthetic reconstruction for periarticular lesions (options include: megaprosthesis of proximal humerus, proximal femur, distal femur, proximal tibia) • Develops unique, complex post-operative management plans • Surgically treats complex complications (e.g., surgical treatment of hardware failure, periprosthetic fracture, progression of disease)

progression, prosthetic hip dislocation, DVT/ pulmonary embolism [PE], pneumonia)	(e.g., able to diagnose: infection, DVT/PE, wound breakdown, neurovascular compromise, hardware failure)	• Capable of treating post-operative complications (e.g., non-operative treatment of: infection, wound breakdown, DVT/PE)	for prosthetic reconstruction; understands approaches for resection of proximal humerus, distal femur and proximal tibia) • Capable of surgical treatment of infection or wound breakdown	
☐	☐	☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐

Comments:

Not yet rotated ☐

Compassion, integrity, and respect for others as well as sensitivity and responsiveness to diverse patient populations, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation. Knowledge about respect for and adherence to the ethical principles relevant to the practice of medicine, remembering in particular that responsiveness to patients that supersedes self-interest is an essential aspect of medical practice – Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
• Consistently demonstrates behavior that conveys caring, honesty, and genuine interest in patients and families • Recognizes the diversity of patient populations with respect to gender, age, culture, race, religion, disabilities, sexual orientation, and socioeconomic status • Recognizes the importance and priority of patient care, with an emphasis on the care that the patient wants and needs; demonstrates a commitment to this value	• Demonstrates an understanding of the importance of compassion, integrity, respect, sensitivity, and responsiveness while exhibiting these attitudes consistently in common and uncomplicated situations • Consistently recognizes ethical issues in practice; discusses, analyzes, and manages in common and frequent clinical situations including socioeconomic variances in patient care	• Exhibits these attitudes consistently in complex and complicated situations • Recognizes how own personal beliefs and values impact medical care • Knowledgeable about the beliefs, values, and practices of diverse patient populations and the potential impact on patient care • Recognizes ethical violations in professional and patient aspects of medical practice	• Develops and uses an integrated and coherent approach to understanding and effectively working with others to provide good medical care that integrates personal standards with standards of medicine • Consistently considers and manages ethical issues in practice • Consistently practices medicine as related to specialty care in a manner that upholds values and beliefs of self and medicine	• Demonstrates leadership and mentoring regarding these principles of bioethics • Manages ethical misconduct in patient management and practice
☐	☐	☐	☐	☐
Comments:				
Not yet achieved Level 1 ☐				

Accountability to patients, society, and the profession; personal responsibility to maintain emotional, physical, and mental health – Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
• Understands when assistance is needed and willing to ask for help • Exhibits basic professional responsibilities, such as timely reporting for duty, being rested and ready to work, displaying appropriate attire and grooming, and delivering patient care as a functional physician • Aware of the basic principles and aspects of the general maintenance of emotional, physical, mental health, and issues related to fatigue/sleep deprivation	• Recognizes limits of knowledge in common clinical situations and asks for assistance • Recognizes value of humility and respect towards patients and associate staff • Demonstrates adequate management of personal, emotional, physical, mental health, and fatigue	• Consistently recognizes limits of knowledge in uncommon and complicated clinical situations; develops and implements plans for the best possible patient care • Assesses application of principles of physician wellness, alertness, delegation, teamwork, and optimization of personal performance to the practice of medicine • Seeks out assistance when necessary to promote and maintain personal, emotional, physical, and mental health	• Mentors and models personal and professional responsibility to colleagues • Recognizes signs of physician impairment and demonstrates appropriate steps to address impairment in colleagues	• Develops organizational policies and education to support the application of these principles in the practice of medicine • Practices consistent with the American Academy of Orthopaedic Surgeons (AAOS) Standards of Professionalism
☐	☐	☐	☐	☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Self-Directed Learning – Practice-based Learning and Improvement

1. **Identify strengths, deficiencies, and limits in one's knowledge and expertise.**
2. **Assess patient outcomes and complications in your own practice.**
3. **Set learning and improvement goals.**
4. **Identify and perform appropriate learning activities.**
5. **Use information technology to optimize learning and improve patient outcomes.**

Level 1	Level 2	Level 3	Level 4	Level 5
• Acknowledges gaps in personal knowledge and expertise, and frequently asks for feedback from teachers and colleagues • Demonstrates computer literacy and basic computer skills in clinical practice	• Continually assesses performance by evaluating feedback and assessments • Develops a learning plan based on feedback with some external assistance • Demonstrates use of published review articles or guidelines to review common topics in practice • Uses patient care experiences to direct learning	• Accurately assesses areas of competence and deficiencies and modifies learning plan • Demonstrates the ability to select an appropriate evidence-based information tool to answer specific questions while providing care	• Performs self-directed learning without external guidance • Critically evaluates and uses patient outcomes to improve patient care	• Incorporates practice change based upon new evidence

Comments:

Not yet achieved Level 1 ☐

Locate, appraise, and assimilate evidence from scientific studies to improve patient care – Practice-based Learning and Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
• Describes basic concepts in clinical epidemiology, biostatistics, and clinical reasoning • Categorizes the study design of a research study	• Ranks study designs by their level of evidence • Identifies bias affecting study validity • Formulates a searchable question from a clinical question	• Applies a set of critical appraisal criteria to different types of research, including synopses of original research findings, systematic reviews and meta-analyses, and clinical practice guidelines • Critically evaluates information from others: colleagues, experts, industry representatives, and patient-delivered information	• Demonstrates a clinical practice that incorporates principles and basic practices of evidence-based practice and information mastery • Cites evidence supporting several common practices	• Independently teaches and assesses evidence-based medicine and information mastery techniques
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Systems thinking, including cost-effective practice – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Describes basic levels of systems of care (e.g., self-management to societal) • Understands the economic challenges of patient care in the health care system	• Gives examples of cost and value implications of care he or she provides (e.g., gives examples of alternate sites of care resulting in different costs for individual patients)	• Orders and schedules tests in appropriate systems for individual patients balancing expenses and quality • Successfully navigates the economic differences of the health care system	• Effectively manages clinic team and schedules for patient and workflow efficiency • Uses evidence-based guidelines for cost-effective care	• Leads systems change at micro and macro level (e.g., manages operating room [OR] team and patient flow in a multi-case OR day)
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: **Not yet achieved Level 1** ☐				

Resident will work in interprofessional teams to enhance patient safety and quality care – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Recognizes importance of complete and timely documentation in teamwork and patient safety	• Uses checklists and briefings to prevent adverse events in health care	• Participates in quality improvement or patient safety program and/or project	• Maintains team situational awareness and promote "speaking up" with concerns • Incorporates clinical quality improvement and patient safety into clinical practice	• Develops and publishes quality improvement project results • Leads local or regional quality improvement project
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: **Not yet achieved Level 1** ☐				

Uses technology to accomplish safe health care delivery – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
• Explains the role of the Electronic Health Record (EHR) and Computerized Physician Order Entry (CPOE) in prevention of medical errors	• Appropriately and accurately enters patient data in EHR • Effectively uses electronic medical records in patient care	• Reconciles conflicting data in the medical record	• Contributes to reduction of risks of automation and computerized systems by reporting system problems	• Recommends systems re-design for faculty computerized processes
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: **Not yet achieved Level 1** ☐				

Communication – Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Communicates with patients about routine care (e.g., actively seeks and understands the patient's/family's perspective; able to focus in on the patient's chief complaint and ask pertinent questions related to that complaint)	• Communicates competently within systems and other care providers, and provides detailed information about patient care (e.g., demonstrates sensitivity to patient—and family—related information gathering/sharing to social cultural context; begins to engage patient in patient-based decision making, based on the patient's understanding and ability to carry out the proposed plan; demonstrates empathic response to patient's and family's needs; actively seeks information from multiple sources, including consultations; avoids being a source of conflict; able to obtain informed consent [risks, benefits, alternatives, and expectations])	• Communicates competently in difficult patient circumstances (e.g., able to customize emotionally difficult information, such as end-of-life or loss-of-limb discussions; supports patient and family; engages in patient-based decision making incorporating patient and family/cultural values and preferences)	• Communicates competently in complex/adversarial situations (e.g., understand a patient's secondary motivations in the treatment of his or her care—drug seeking, disability issues, and legal cases; able to sustain working relationships during complex and challenging situations, including transitions of care—treatment of a metastatic pathologic fracture; able to manage conflict with peers, subordinates, and superiors)	• Demonstrates leadership in communication activities (e.g., coaches others to improve communication skills; engages in self-reflection on how to improve communication skills
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments:				
Not yet achieved Level 1 ☐				

Teamwork (e.g., physician, nursing and allied health care providers, administrative and research staff) – Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
• Recognizes and communicates critical patient information in a timely and accurate manner to other members of the treatment team • Recognizes and communicates role as a team member to patients and staff • Responds to requests for information *Examples:* Lab results, accurate and timely progress notes, answers pages in a timely manner	• Supports and respects decisions made by team • Actively participates in team-based care; Supports activities of other team members, communicates their roll to the patient and family *Examples:* Hand-offs, transitions of care, communicates with other health care providers and staff members	• Able to facilitate, direct, and delegate team-based patient care activities • Understands the Operating Room team leadership role and obligations *Examples:* Leads daily rounds, communicates plan of action with OR personnel	• Leads team-based care activities and communications • Able to identify and rectify problems with team communication *Example:* Organizes and verifies hand-off rounds, coverage issues	• Seeks leadership opportunities within professional organizations • Able to lead/facilitate meetings within organization/system
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments:				Not yet achieved Level 1 ☐

Revised 6/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Physical Exam Competencies
Oncology Service: PGY2 and PGY4

By the end of the PGY2 rotation on the Orthopaedic Oncology service, the resident should be able to demonstrate proficiency in the key physical exam tests. The PGY4 rotation is an opportunity to polish these physical examination skills.

History:

□ When did you first notice mass? How was it discovered?
□ Where is the mass located?
□ Is the mass getting bigger? Does it change in size?
□ Is the mass painful? Aggravating/alleviating factors? Night pain?
□ Systemic signs or symptoms?
□ Personal or family history of malignancy?

Complete general examination: skin, heart, lungs, abdomen, lymph nodes

Examination of a mass:

□ Size and location (superficial or deep)
□ Nature of the mass (soft, firm, rocklike; soft tissue vs. bony origin)
□ Freely mobile or fixed to the underlying tissues
□ Tender to palpation
□ Warmth

Special Tests:

□ Tinels sign
□ Transillumination

Revised 8/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Surgical Competencies
Oncology Rotation – PGY2 at OSU

- Open bone and soft tissue biopsies
- IM nail placement of femur
- Small soft tissue mass resections such as lipoma
- Excisions of small benign bone tumors such as osteochondroma

Revised 8/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Surgical Competencies
Oncology Rotation – PGY4 at OSU

- IM nail placement of humerus
- Larger benign soft tissue mass resections
- Curettage and bone grafting of benign bone tumors
- Use of adjuvant therapies of benign bone tumors such as cementation and cryosurgery

Revised 6/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Oncology Reading List – PGY2 and PGY4

1) OKU musculoskeletal Tumors 2
2) Tumor Service Manual (handed out to residents at beginning of rotation. Also available in ortho library and on department website).

Revised 8/20/17

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Two Year Curriculum
Orthopaedic Oncology Lecture Series and References

Lecture #1
Biopsy and Staging of tumors

1) OKU Tumor 3 Chapter 3. Biopsy
2) OKU Tumor 3 Chapter 1. Clinical Presentation and Staging of Bone Tumors

Lecture #2
Basic Bone Tumor radiology

1) OKU Tumor 3 Chapter 2 Imaging of Musculoskeletal Tumors: Updates and Current Practice

2) "Jamie T. Caracciolo MD, MBA, G. Douglas Letson MD Radiologic Approach to Bone and Soft Tissue Sarcomas Surgical Clinics of North America, The, 2016-10-01, Volume 96, Issue 5, Pages 963-976,

Lecture #3
The principles of tumor surgery

1) OKU Tumor 3 Chapter 20. Surgical Management of Malignant Primary Bone Tumors
2) OKU Tumor 3 Chapter 30 Surgical Management of Soft Tissue Sarcomas

Lecture #4
Postradiation sarcomas and pseudotumors/tumor-like conditions

1) OKU Tumor 3 Chapter 27. Synovial Chondromatosis and Pigmented Villonodular Synovitis
2) OKU Tumor 3 Chapter 5. Pseudotumors and Tumor-Like Lesions
3) OKU Tumor 2 Chapter 6. Postradiation Sarcomas

Lecture #5
Histology and Pathology

- 1) Julie Gibbs MD, Evita Henderson-Jackson MDand Marilyn M. Bui MD, PhD; **Bone and Soft Tissue Pathology**, Surgical Clinics of North America, The, 2016-10-01, Volume 96, Issue 5, Pages 915-962

Lecture #6
Benign bone tumors

1) Cancer Treat Res. 2014;162:31-63. **Benign bone tumors.**
Steffner R[1].

Lecture #7

Malignant bone tumors

1) OKU Tumor 3 Chapter 15. Osteosarcoma of bone
2) OKU Tumor 3 Chapter 16. Ewings Sarcoma
3) OKU Tumor 3 Chapter 17. Chondrosarcoma of Bone

Lecture #8

Metastatic carcinoma to bone, myeloma, lymphoma

1) Kristy L. Weber Evaluation of the Adult Patient (Aged >40 Years) With a Destructive Bone Lesion J. Am. Acad. Ortho. Surg., March 2010; 18: 169 - 179.
2) Scolaro, John Alan MD; Lackman, Richard D. MD **Surgical Management of Metastatic Long Bone Fractures: Principles and Techniques** Journal of the American Academy of Orthopaedic Surgeons: February 2014 - Volume 22 - Issue 2 - p 90–100

Lecture #9

Advances in Orthopaedic Oncology and Case Vignettes

1) Dustin Volkmer, Michael Sichlau, and Timothy B. Rapp
The Use of Radiofrequency Ablation in the Treatment of Musculoskeletal Tumors J. Am. Acad. Ortho. Surg., December 2009; 17: 737 - 743.
2) What's New in Orthopaedic Oncology
J. Bone Joint Surg. Am., 2015; 97: 2061-67

Lecture #10

Benign soft tissue lesions

1) OKU Tumor 3 Chapter 21. Evaluation and Diagnosis of Soft-Tissue Masses.
2) Mayerson, Joel L.; Scharschmidt, Thomas J.; Lewis, Valerae O **Diagnosis and Management of Soft-tissue Masses** Journal of the American Academy of Orthopaedic Surgeons: November 2014 - Volume 22 - Issue 11 - p 742–750

Lecture #11

Malignant soft tissue lesions

1) Mayerson, Joel L.; Scharschmidt, Thomas J.; Lewis, Valerae O **Diagnosis and Management of Soft-tissue Masses** Journal of the American Academy of Orthopaedic Surgeons: November 2014 - Volume 22 - Issue 11 - p 742–750
2) Cancer Treat Res. 2014;203-223.**Soft Tissue Sarcoma.** Andre Spiguel.

Lecture #12

Paget's disease

1) Gregg R. Klein and Javad Parvizi Surgical Manifestations of Paget's Disease
J. Am. Acad. Ortho. Surg., October 2006; 14: 577 - 586.

2) N. Alonso,[1] I. Calero-Paniagua,[2] and J. del Pino-Montes[3], **Clinical and Genetic Advances in Paget's Disease of Bone: a Review,** Clin Rev Bone Miner Metab. 2017; 15(1): 37–48.

References: OKU Musculoskeletal Tumors 3 and Tumor Service Manual that is given to each resident at start of rotation

Lecture Readings - Optional/Suggested Reading:

Lecture #1
None

Lecture #2
None

Lecture #3
The principles of tumor surgery

1) OKU Tumor 3 Chapter 14. Surgical Treatment of Benign Bone Tumors
2) Levin, Adam S. MD; Arkader, Alexandre MD; Morris, Carol D. MD **Reconstruction Following Tumor Resections in Skeletally Immature Patients** Journal of the American Academy of Orthopaedic Surgeons: March 2017 - Volume 25 - Issue 3 - p 204–213
5) Matthew R. DiCaprio and Gary E. Friedlaender Malignant Bone Tumors: Limb Sparing Versus Amputation J. Am. Acad. Ortho. Surg., January/February 2003; 11: 25 - 37.
6) Tedesco, Nicholas S. DO; Henshaw, Robert M. MD Unplanned Resection of Sarcoma Journal of the American Academy of Orthopaedic Surgeons: March 2016 - Volume 24 - Issue 3 - p 150–159

Lecture #4
None

Lecture #5
None

Lecture #6
Benign bone tumors

1) AJ Aboulafia, RE Kennon, and JS Jelinek. Begnign bone tumors of childhood J. Am. Acad. Ortho. Surg., Nov 1999; 7: 377 - 388.
2) OKU Tumor 3 Chapter 9. Cystic and Radiolucent Lesions of Bone
3) OKU Tumor 3 Chapter 10. Benign Cartilage Tumors
4) OKU Tumor 3 Chapter 11 Benign Bone Forming Tumors
5) OKU Tumor 3 Chapter 12. Benign Fibrous and Histiocytic Lesions of Bone
6) OKU Tumor 3 Chapter 13. Giant Cell Tumor of Bone

Lecture #7
Malignant bone tumors

4) OKU Tumor 3 Chapter 18. Miscellaneous Primary Malignant Tumors of Bone
5) Gutowski, Christina J., MD, Basu-Mallick, Atrayee, MD, and Abraham, John A.,**Managmement of Bone Sarcoma**, Surgical Clinics of North America, The, 2016-10-01, Volume 96, Issue 5, Pages 1077-1106
6) Aditya V. Maheshwari and Edward Y. Cheng. Ewing Sarcoma Family of Tumors. J. Am. Acad. Ortho. Surg., February 2010; 18: 94 – 107

7) Patrick J. Messerschmitt, Ryan M. Garcia, Fadi W. Abdul-Karim, Edward M. Greenfield, and Patrick J. Getty. Osteosarcoma. J. Am. Acad. Ortho. Surg., August 2009; 17: 515 - 527.

8) Levin, Adam S. MD; Arkader, Alexandre MD; Morris, Carol D. MD **Reconstruction Following Tumor Resections in Skeletally Immature Patients** Journal of the American Academy of Orthopaedic Surgeons: March 2017 - Volume 25 - Issue 3 - p 204–213

Lecture #8

Metastatic carcinoma to bone, myeloma, lymphoma

1) Rose, Peter S. MD; Buchowski, Jacob M. MD **Metastatic Disease in the Thoracic and Lumbar Spine: Evaluation and Management** Journal of the American Academy of Orthopaedic Surgeons: January 2011 - Volume 19 - Issue 1 - p 37–48

2) Scharschmidt, Thomas J. MD; Lindsey, Joshua D. MD; Becker, Pamela S. MD, PhD; Conrad, Ernest U. MD **Multiple Myeloma: Diagnosis and Orthopaedic Implications** Journal of the American Academy of Orthopaedic Surgeons: July 2011 - Volume 19 - Issue 7 - p 410–419

5) OKU Tumor 3 Chapter 31. Pathophysiology of Bone Metastasis
6) OKU Tumor 3 Chapter 32. Prediction of Impend ng Pathologic Fracture and Treatment Considerations in Patients With Metastatic Bone Disease
7) OKU Tumor 3 Chapter 33. Surgical Management of Upper Extremity Bone Metastasis: A Treatment Algorithm
8) OKU Tumor 3 Chapter 34. Surgical Management of Lower Extremity Metastatic Disease
9) OKU Tumor 3 Chapter 35. Evaluation and Treatment of Spine Metastasis

Lecture #9

Advances in Orthopaedic Oncology and Case Vignettes

1) Shiels, W, Mayerson J; Percutaneous Doxycycline Treatment of ABC's, Clinical Orthopedics and Related Research; (2013) 471:2675–2683

Lecture #10

None

Lecture #11

Malignant soft tissue lesions

1) Nathan F. Gilbert, Christopher P. Cannon, Patrick P. Lin, and Valerae O. Lewis Soft-tissue Sarcoma J. Am. Acad. Ortho. Surg., January 2009; 17: 40 - 47.
2) OKU Tumor 3 Chapter 29. Soft-Tissue Sarcomas
3) OKU Tumor 3 Chapter 30. Surgical Management of Soft Tissue Sarcomas
4) OKU Tumor 3 Chapter 8 Radiation Therapy.
5) OKU Tumor 3 Chapter 7 Targeted Therapy for Soft Tissue and Bone Sarcomas

Lecture #12

None

Orthopaedic Surgery Minimum Numbers (effective 2012-2013)

Category	Minimum
Knee arthroscopy	**30**
Shoulder arthroscopy	**20**
ACL reconstruction	**10**
THA	**30**
TKA	**30**
Hip fractures	**30**
Carpal tunnel release	**10**
Spine decompression/posterior spine fusion	**15**
Ankle fracture fixation	**15**
Closed reduction forearm/wrist	**20**
Ankle & hind & mid-foot arthro	**5**
Supracondylar humerus perc	**5**
Femur and tibia intramedullary fixation	**25**
All pediatric procedures	**200**
All oncology procedures	**10**

CPT Codes in Each Category

Knee arthroscopy (29850, 29851, 29855, 29856, 29866, 29867, 29868, 29870, 29871, 29873, 29874, 29875, 29876, 29877, 29879, 29880, 29881, 29882, 29883, 29884, 29885, 29886, 29887)

Shoulder arthroscopy (29805, 29806, 29807, 29819, 29820, 29821, 29822, 29823, 29824, 29825, 29826, 29827, 29828)

ACL reconstruction (29888)

THA (27130, 27132, 27134, 27137, 27138)

TKA (27442, 27443, 27445, 27446, 27447, 27487)

Hip fractures (27235, 27236, 27244, 27245)

Carpal tunnel release (64721)

Spine decompression lumbar spine/posterior spine fusion thoracic or lumbar (22612, 22630, 22800, 22802, 22804, 63005, 63012, 63017, 63030, 63042, 63047)

Ankle fracture fixation (27766, 27769, 27792, 27814, 27822, 27823, 27826, 27827, 27828, 27829)

Closed reduction forearm and wrist fractures (25505, 25520, 25535, 25565, 25605, 25624, 25690, 25680, 25675)

Ankle and hind and mid-foot arthrodeses (27870, 28705, 28715, 28725, 28730, 28735, 28737)

Supracondylar humerus percutaneous treatment (24538, 24566, 24582)

Femur and tibia intramedullary fixation (27506, 27759)

Please note: manipulations must recorded with procedures in the Case Log System

The Ohio State University
Department of Orthopaedics

Residency Curriculum

Shoulder

About This Curriculum

- It is the responsibility of both the resident and the attending to go over the goals and guidelines included in this handbook
    - At the beginning of the rotation
    - At the conclusion of the rotation
- Additional materials and/or service handbooks may be provided by the attendings at the beginning of the rotation

Revised 08/02/2019
The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Shoulder Service Guidelines – OSU

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Schedules
During the 2 month rotation, the PGY 3 shoulder resident will rotate with Dr Jones, Dr Bishop, Dr. Neviaser, and Dr Cvetanovich. Typically either Dr Jones or Dr Bishop will have a sports fellow with them and hence, the shoulder resident will rotate with the other 2 shoulder attendings. Our goal is to avoid both Dr. Jones and Dr. Bishop having a sports fellow at the same time. You will be assigned your weekly and monthly schedules at the beginning of each rotation. You will contact Dr. Bishop the week prior to the start of your rotation and find time to meet to discuss the logistics and review the expectations/objectives.

Dr. Bishop
Monday: Clinic at Crane, 9:00 am – 4pm
Tuesday: OR at OSU east, 7am
Wednesday: Clinic at Crane, 8 am – 1pm (typically rounding at 7am at east)
Thursday: OR-1st Thursday at OSU East, all other Thursdays at Crane

Friday: academic time/meetings etc. OR block time at Crane every 3rd Friday

Dr Jones
Monday: OR at Crane
Tuesday: Clinic at Crane 8am – 415pm
Wednesday: Clinic at Crane 8am-3:45pm
Thursday: 2nd Thursday at OSU East, all other Thursdays at Jameson Crane
Friday: academic time/occasional clinic etc.

Dr. Neviaser
Monday: Clinic at Lewis Center 8am – 12pm
***Starting 10/7/2019*: Clinic at Lewis Center 8am-11am & Clinic at New Albany 1pm-3pm**
Tuesday: OR at Crane
Wednesday: OR at OSU East
Thursday: Clinic at Crane 8am-3:50pm
Friday: Clinic at Crane 10am – 2:50pm

Dr. Cvetanovich
Monday: Clinic at Stoneridge 8am – 4:10pm
***Starting 10/7/2019*: Clinic at Stoneridge 8am-11am & Clinic at Lewis Center 1pm-4pm**
Tuesday: Clinic at Crane 8am – 4:10pm
Wednesday: OR at East
Thursday: Clinic at Crane 8am – 11:40
Friday: OR at Crane

Rae Bunyak
Monday: OR with Dr. Jones
Tuesday: Clinic at Crane
Wednesday: Clinic at Crane
Thursday: OR with Dr. Jones
Friday: Clinic at Crane

Sean Collins
Monday: Clinic at Crane
Tuesday: OR with Dr. Neviaser
Wednesday: OR with Dr. Cvetanovich
Thursday: OR with Dr. Bishop
Friday: OR/Admin day

Monica Cheesman
Monday: Clinic at Crane
Tuesday: Clinic at Crane
Wednesday: Clinic at Crane
Thursday: Clinic at Crane: covering walk-in clinic
Friday: OR with Dr. Cvetanovich

Revised 5/19/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Dileneation of Resident Responsibilities:
Shoulder Service

I. Resident Responsibilities for Patient Care

- Rounding: During the course of your rotation, patients will be admitted before and or after surgery. The expectation is for the resident to know about and round on all inpatient surgical patients, first thing in the morning, even if you were not involved in the case. You will call or text the attending surgeon after you round to discuss the patients. Rounding is particularly important on the weekends. As of now, there is a rotating senior resident rounding on the weekends at OSU East. If you are not rounding for the weekend, please sign out all Shoulder Service patients to the resident rounding. Please have the resident call the attending after rounds to discuss issues and management. IF you go out of town, please arrange coverage for the rounding of inpatients. DO NOT make the attending find someone to round on their patients – take care of this prior to leaving.
- Orders: Orders will be done via the current order entry system. There are order sets for UE post-op orders - you will check this order set. Consult MMT on all patients that were admitted. MMT manages the inpatient pain medications and does prefer to write the inpatient pain med orders. Order X-rays in the PACU on all patients that underwent any type of fixation or implant. Order in-patient PT (but not OT) on all patients. The orders will vary based on the type of surgery performed – you are expected to discuss this with the attending prior to putting in the orders.

- Dictations: Most of the shoulder attendings will dictate their own operative notes. However, there will be times when you are responsible for the dictation. Before the patient leaves the OR, the decision should be made as to who will be responsible for the dictation. You will be expected to dictate at least one operative report and review this with the attending prior to the conclusion of the service.
- Post-Op Radiographs: As above – all patients that undergo any type of hardware fixation or implant will get radiographs in the PACU. If it is the last case of the day – DO NOT LEAVE – until you see the x-rays were completed and you view them.
- Dressings/drains: If the patients are still in the hospital – all dressings are changed on POD 2 – you do the dressing change and look at the wound – NOT the nurse. If there is a drain – check with that individual attending for when to pull the drain.
- Discharge: Many of the shoulder surgeries will be outpatient surgeries. You will be responsible to coordinate with the PA's filling out the discharge paperwork, instruction sheets, rehab orders and pain medication scripts. Pain medication is unique to each attending and should be discussed with the attending staff for preferences. Discharge paperwork is unique to each attending and you should discuss with the respective attending how they approach this. If there are any inpatients for the service – you will be responsible for the discharge summaries for all inpatients, whether or not you participated in their surgery. Please do this on the day of discharge. You are responsible for knowing the plan of care when the patient leaves the hospital, in particular whether they are going to rehab or home.

- Communication: Many questions will certainly arise and should be addressed on an as needed basis. Constant communication between all members of the health care team is the best way to get an optimal educational experience and provide the best care possible for each patient.
- Clinic Notes: Resident should be able to create appropriate notes in EPIC for each patient encounter. They should discuss with each attending how to include the pertinent smart sets/phrases to help.

JJ. Resident Level of Responsibility for Patient Care

- Please understand that patients are real people whom have developed a relationship with the attending physician. Please give the patient and your attending respect by your professionalism, preparation, and diligent hard work. You will in turn learn more and provide confidence in your attending physicians.

- Resident rotations are structured so that the residents have a one-on-one relationship with the attending. The level of responsibility given by the attending to the resident is determined by that attending, depending on the attendings' assessment of the resident's knowledge and skills, and the complexity of the procedure.

- Residents will be expected to be prepared for clinic and OR

- Thorough knowledge of the surgery, surgical approach, and the reasoning, biomechanics, placement, and technique of the surgical reconstuctions/repair and implants used is expected.

- Questions related to any case should be discussed with the attending prior to the case (preferably the day before)

- Residents should see and exam the patient prior to surgery and are EXPECTED to have reviewed all the patient office notes and radiographic studies. All notes are now in EPIC and most studies are in RadWeb. If you do not see the studies in RadWeb – often patients come with outside studies. You should recognize this and ask to see and review these studies ahead of time.

- Lack of preparation will prevent participation

III. Resident Supervision

Attendings are responsible for the direct supervision of residents in both the clinic and the operating room, as well as in on-call situations. Attending physicians are available for consultation at all times.

Senior residents (PGY4 and above) are also directly responsible for the supervision of junior residents (PGY1, PGY2, and PGY3). This applies to all of the above situations (i.e. on-call, in clinic, in the OR). Senior residents must be available for consultation at all times. Ultimately, chief residents (all PGY5's) are responsible for the supervision of all residents, regardless of PGY year.

IV. Performance Feedback

Both attending staff members are available at any time if questions or concerns arise. At the end of each rotation, each attending on the service will evaluate each resident assigned to the service. A meeting should be scheduled at the conclusion of the rotation to discuss performance and provide written feedback on the rotation.

- Resident should arrange a mid-rotation meeting with Dr Bishop to assure that all goals and objectives are being met and also to assure there is ample time to correct any deficiency that may exist.

ACGME MILESTONES FOR ORTHOPEDICS - Effective July 1, 2013

The milestones were designed by the ACGME for use only in evaluation of resident physicians in the context of their participation in ACGME-accredited residency or fellowship programs. The milestones provide a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Milestones were designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into residency through graduation. The Ortho RRC will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The resident demonstrates milestones expected of an incoming resident.

Level 2: The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.

Level 3: The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.

Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

Note that Level 4 is designed as the graduation *target* but does not represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the residency program director.

The milestones which will be evaluated on the Orthopaedic Oncology rotation are as listed on the following pages:

Adult Elbow Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of fractures (e.g., olecranon, radial head, coronoid fracture, terrible triad fracture, distal humerus fracture, fracture dislocation) • Demonstrates knowledge of anatomy (e.g., elbow joint, radial head, coronoid, olecranon, distal humerus, elbow ligaments) • Understands basic imaging studies	• Understands mechanism of injury and knowledge of fracture classification and soft tissue injury (e.g., olecranon, radial head, coronoid fracture, terrible triad fracture, distal humerus fracture, fracture dislocation) • Demonstrates knowledge of imaging studies/lab studies (e.g., radiographs anteroposterior [AP]/lateral/oblique/axial) • Understands surgical approaches (e.g., soft tissue envelope, cutaneous nerves, ulnar nerve treatment) • Understands biology of fracture healing • Understands advanced imaging studies (e.g., post-operative x-rays, CT scans for fracture healing)	• Demonstrates knowledge of current literature and alternatives (e.g., fracture repair vs. replacement, post-operative stiffness concepts) • Understands rehabilitation mechanics (e.g., range of motion therapy, dynamic/static stretch splinting) • Understands biomechanics and implant choices (e.g., radial head replacement, compression headless screws, elbow replacement types)	• Understands controversies within field (e.g., tension band vs. plating olecranon fractures, elbow replacement for elderly distal humerus fractures; radial head repair vs. replacement) • Understands how to avoid/prevent potential complications • Demonstrates knowledge of pathophysiology of elbow stiffness (e.g., intrinsic, extrinsic, hardware placement) • Understands post-operative imaging studies/implant positioning	• Participates in research in the field with publication
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Adult Elbow Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and basic physical (e.g., age, gender, mechanism of injury, deformity, skin integrity, open/closed injury) • Splints fracture appropriately • Provides basic peri-operative management (e.g., post-operative orders, ice, elevation, compression) • Lists potential complications (e.g., infection, hardware failure, stiffness, reflex sympathetic dystrophy [RSD], neurovascular injury, posttraumatic arthritis)	• Obtains focused history and physical, recognizes implications of soft tissue injury (e.g., open fracture, compartment syndrome, ligamentous injury) • Able to order appropriate imaging studies (e.g., radiographs, CT scan/3D reconstruction) • Performs basic surgical approach to elbow fractures • Reduces fracture if necessary (e.g., provisional fixation, fluoroscopic checks) • Recognizes surgical indications (e.g., fracture displacement, elbow instability, transolecranon injury • Provides post-operative management and rehabilitation (e.g., splinting and ROM therapy) • Capable of diagnosis and early management of complications (e.g., diagnosis from peri-operative x-rays, recognize infection, recognize fracture displacement/dislocation)	• Performs pre-operative planning with instrumentation and implants (e.g., patient positioning, plates/screws, fluoroscopy) • Capable of surgical reduction and fixation of a simple fracture (e.g., olecranon fracture) • Provides post-operative management and rehabilitation (e.g., increase ROM as healing progresses, adequate/proper post-operative x-rays)	• Performs comprehensive pre-operative planning/alternatives (e.g., use of external fixation, radial head replacement, elbow arthroplasty) • Capable of surgical reduction and fixation of moderately complex fractures (extraarticular and simple intraarticular distal humerus fracture) • Modifies and adjusts post-operative plan as needed (e.g., dynamic/static stretch splinting, revise therapy) • Treat simple complications both intra- and post-operatively (e.g., revise hardware placement, recognize improper hardware position)	• Capable of surgical reduction and fixation of a full range of fractures and dislocations • Understands how to avoid/prevent potential complications • Surgically treats complex complications (e.g., elbow release for stiffness, ID infection, revision hardware failure, nonunion treatment)
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Rotator Cuff Injury – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Understands surgical anatomy (e.g., rotator cuff muscles/tendons, deltoid, axillary nerve position, acromion, biceps, labrum) • Demonstrates knowledge of basic imaging studies: radiographs (e.g., true AP, axillary, supraspinatus outlet)	• Demonstrates knowledge of surgical indications (e.g., non-operative management, therapy, injections, rotator cuff repair, subacromial decompression) • Demonstrates knowledge of basic surgical approaches and portal placement (e.g., anterior, subacromial, posterior, accessory posterior) • Understands pathophysiology related to rotator cuff injury (e.g., impingement, partial thickness cuff tears, extrinsic versus intrinsic theory of cuff tearing) • Understands biology of soft tissue tendon healing • Demonstrates knowledge of advanced imaging studies/lab studies (e.g., MRI, ultrasound, CT arthrogram)	• Demonstrates knowledge of current literature and alternatives • Understands pathophysiology of concomitant injuries (e.g., biceps tendinitis, acromioclavicular joint disease, labral pathology, arthritis) • Understands rehabilitation mechanics (e.g., Neer Phase 1-3) • Understands biomechanics and implant choices • Understands natural history of rotator cuff disease (e.g., symptomatic vs. asymptomatic cuff tears, impingement, intrinsic versus extrinsic mechanisms)	• Understands controversies within field. Examples: single vs. double row repairs, partial repair of massive tears, suprascapular nerve dysfunction • Understands end stage rotator cuff tear arthropathy and treatment options • Understands tear pattern, appropriate repair, biceps tenodesis (e.g., L-shaped, concentric, U-shaped, tissue quality, biceps subluxation) • Understands pathophysiology of failed rotator cuff repair (e.g., biology, implant failure, stiffness, infection, smoking, tendon quality, vascularity)	• Participates in research in the field with publication cites/teaches junior residents appropriate outcomes studies • Understands treatment for massive/irreparable tears • Understands treatments of intra-operative complications (e.g., misalignment of suture anchor, poor exposure, hemostatis, tuberosity fracture, and anchor breakage)
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Rotator Cuff Injury – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical examination (e.g., age, gender, smoker, trauma, night pain, weakness, inspection for atrophy, ROM) • Lists surgical complications (e.g., infection, stiffness, RSD, retear)	• Obtains focused history and performs physical examination (e.g., provocative tests, Neer/Hawkins, O'Briens, lag signs, pseudoparalysis, lift-off, belly press, scapular dyskinesia) • Orders basic imaging studies • Performs basic surgical approaches and portal placement (e.g., anterior, subacromial, posterior, accessory posterior) • Performs simple shoulder procedures (e.g., subacromial injection) • Prescribes non-operative treatment • Provides basic post-operative management (e.g., phases of cuff repair rehab, Phase 1-3) • Diagnoses surgical complications	• Interprets basic imaging studies (e.g., rotator cuff tear on MRI, muscle atrophy on MRI, proximal humeral migration on x-ray) • Completes pre-operative planning with instrumentation and implants (e.g., patient positioning, arthroscopic equipment, anchors) • Capable of performing diagnostic arthroscopy, subacromial decompression, distal clavicle resection, biceps tenotomy	• Able to order and interpret advanced imaging studies (e.g., tear size, muscle atrophy, labral tears, arthritis, subscapularis tears) • Completes comprehensive pre-operative planning and alternatives • Capable of performing rotator cuff repair • Appropriately interprets post-operative imaging studies/implant positioning • Modifies and adjusts post-operative rehabilitation plan as needed (e.g., modify for massive cuff repairs, post-operative stiffness) • Treats complications both intra- and post-operatively (e.g., irrigation/debridement for infections, proper infection treatment protocol, infectious disease consultation)	• Capable of performing complex arthroscopic rotator cuff repairs, revision rotator cuff repair, tendon transfers • Surgically treats complex complications (e.g., revision rotator cuff repair with tendon transfer, reverse shoulder replacement for anterosuperior escape)
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: **Not yet rotated** ☐				

Goals and Objectives
Shoulder Rotation – PGY3

I. Core Competency Areas

By the end of the PGY3 rotation on the shoulder service, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY3 rotation on the Shoulder Service and building upon experiences from the PGY2 year of didactics/prison service and trauma service, the resident should:

Have a detailed knowledge of the anatomical structures of the shoulder and know all surgical approaches to the shoulder

Understand anatomy, physiology, and biomechanics of the shoulder as they relate to patients with injuries and disease

Understanding of the incidence, natural history, cause, presentation, exam findings, classification, non-operative and the operative indications of the following key shoulder conditions:

- AC sprains and injuries and conditions
- Sternoclavicular injuries
- Anterior instability
- Posterior instability
- Multidirectional instability
- Voluntary instability
- Rotator cuff pathology and tears
- Disorders of the biceps tendon
- Shoulder fractures:
  - Clavicle
  - Distal clavicle
  - Scapula and glenoid
  - Proximal humerus fractures: GT, LT, Surgical neck, head split, 3-part, 4-part, valgus impacted 4-part, fx-dislocation
- Arthritic conditions of the shoulder:
  - Osteoarthritis
  - Rheumatoid arthritis
  - Avascular necrosis
  - Traumatic arthritis/arthritis of instability
  - Rotator cuff arthropathy
- Locked dislocations/instability with bone loss

- Disorders of the scapula
- Nerve compression disorders about the shoulder
- Frozen shoulder
- Calcific tendonitis

5. Know the appropriate shoulder radiographs and further imaging studies that should be ordered and evaluated in all of the above conditions.
6. Understand the post-operative protocols/decision making for the postoperative care of rotator cuff, instability, fracture and shoulder replacement surgeries
7. Understand the presentation, evaluation, and treatment of common post-op complications such as arthrofibrosis, recurrent instability and re-tear of the rotator cuff.
8. Resident should be able to take a detailed and appropriate injury specific history and formulate a differential of pathology, appropriate tests to order, and present this patient to the attending.

III. Specialty Specific Psychomotor Skills

By the end of the PGY3 rotation in Shoulder Surgery, the resident should:

1. Have a thorough knowledge of the surgery, surgical approach, and the reasoning, biomechanics, placement, and technique of the surgical reconstuctions/repair and implants used.
2. Interpret and synthesize patient history, clinical exam, and diagnostic tests into coherent diagnoses for each condition
3. Be able to appropriately set the patient up in the correct position for surgery
4. Understand how and be able to perform a closed reduction of an anterior or a posterior shoulder dislocation
5. Understand the anatomy/pathoanatomy of why and how to appropriately reduce a displaced proximal humerus fracture
6. In particular, the resident should feel confident in their ability to perform the following at the conclusion of their rotation:
    - Perform a diagnostic shoulder arthroscopy
        - Gain entry to the joint
        - Establish the anterior portal
        - Probe all structures
    - Perform a biceps tenotomy
    - Appropriately place the scope in the SA space
    - Perform a subacromial decompression
    - Perform a mumford
    - Understand suture management in rotator cuff and instability surgery
    - First assist and anticipate all steps of an arthroscopic RCR/instability surgery
    - Understand the approaches to open shoulder surgery and when to use each
    - Know the appropriate retractors and when to use each for open shoulder surgery
    - Perform a deltopectoral approach down to the subscapularis
    - Take down the subscapularis
    - Understand/anticipate and know how to assist for fracture fixation, HHR, TSA
    - Understand the steps to expose the glenoid and know how to retract/assist this aspect
    - Understand the steps, concepts, approaches to bone loss instability cases
    - Expose, reduce with assistance, and plate a clavicle fracture

Goals and Objectives
Shoulder Rotation – PGY5

I. Core Competency Areas

By the end of the PGY 5 rotation on the shoulder service, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions

3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY 5 rotation on the Shoulder Service and building upon experiences from the PGY 3 year, the resident should first know and review the basics:

Basic:

1. Have a detailed knowledge of the anatomical structures of the shoulder and know all surgical approaches to the shoulder
2. Understand anatomy, physiology, and biomechanics of the shoulder as they relate to patients with injuries and disease
3. Understanding of the incidence, natural history, cause, presentation, exam findings, classification, non-operative and the operative indications of the following key shoulder conditions:
   - AC sprains and injuries and conditions
   - Sternoclavicular injuries
   - Anterior instability
   - Posterior instability
   - Multidirectional instability
   - Voluntary instability
   - Rotator cuff pathology and tears
   - Disorders of the biceps tendon
   - Shoulder fractures:
     - Clavicle
     - Distal clavicle
     - Scapula and glenoid
     - Proximal humerus fractures: GT, LT, Surgical neck, head split, 3-part, 4-part, valgus impacted 4-part, fx-dislocation
   - Arthritic conditions of the shoulder:
     - Osteoarthritis

- Rheumatoid arthritis
- Avascular necrosis
- Traumatic arthritis/arthritis of instability
- Rotator cuff arthropathy

- Locked dislocations/instability with bone loss
- Disorders of the scapula
- Nerve compression disorders about the shoulder
- Frozen shoulder
- Calcific tendonitis

4. Know the appropriate shoulder radiographs and further imaging studies that should be ordered and evaluated in all of the above conditions.
5. Understand the post-operative protocols/decision making for the postoperative care of rotator cuff, instability, fracture and shoulder replacement surgeries
6. Understand the presentation, evaluation, and treatment of common post-op complications such as arthrofibrosis, recurrent instability and re-tear of the rotator cuff.
7. Resident should be able to take a detailed and appropriate injury specific history and formulate a differential of pathology, appropriate tests to order, and present this patient to the attending.

Advanced:

1. Be able to discuss and know the non-operative treatment options for all of the above listed shoulder conditions.
2. Know the reconstructive options used in the treatment of AC instability; anterior/posterior/Multidirectional instability; rotator cuff tears; biceps pathology
3. Understand the influence of bone loss in instability cases and how that effects the surgical decision making
4. Know the fixation options and be able to discuss the reasoning on how to treat fractures of the proximal humerus, clavicle, distal clavicle, glenoid and scapula.
5. Know the reconstructive options that are available for the treatment of shoulder arthritis, as well as cuff arthropathy, and understand the different indications for TSA versus HHR versus reverse TSA.
6. Understand and be able to discuss the thought process and work-up in the treatment of the more complex shoulder problems, in particular revision shoulder surgeries and the failed surgery with complications.

III. Specialty Specific Psychomotor Skills

By the end of the PGY 5 rotation in Shoulder Surgery and building upon the experience from the PGY 3 rotation, the resident should:

Basics:

1. Have a thorough knowledge of the surgery, surgical approach, and the reasoning, biomechanics, placement, and technique of the surgical reconstuctions/repair and implants used.
2. Interpret and synthesize patient history, clinical exam, and diagnostic tests into coherent diagnoses for each condition

3. Be able to appropriately set the patient up in the correct position for surgery
4. Understand how and be able to perform a closed reduction of an anterior or a posterior shoulder dislocation
5. Understand the anatomy/pathoanatomy of why and how to appropriately reduce a displaced proximal humerus fracture
6. In particular, the resident should feel confident in their ability to perform the following at the conclusion of their rotation:
    - Perform a diagnostic shoulder arthroscopy
        - Gain entry to the joint
        - Establish the anterior portal
        - Probe all structures
    - Perform a biceps tenotomy
    - Appropriately place the scope in the SA space
    - Perform a subacromial decompression
    - Perform a mumford
    - Understand suture management in rotator cuff and instability surgery
    - First assist and anticipate all steps of an arthroscopic RCR/instability surgery
    - Understand the approaches to open shoulder surgery and when to use each
    - Know the appropriate retractors and when to use each for open shoulder surgery
    - Perform a deltopectoral approach down to the subscapularis
    - Take down the subscapularis
    - Understand/anticipate and know how to assist for fracture fixation, HHR, TSA
    - Understand the steps to expose the glenoid and know how to retract/assist this aspect
    - Understand the steps, concepts, approaches to bone loss instability cases
    - Expose, reduce with assistance, and plate a clavicle fracture

Advanced:

- Placement of suture anchors in instability or SLAP lesions
- Passage of suture through the capsule and or labrum
- Tying arthroscopic suture knot
- Placement of suture anchors in Rotator cuff tears
- Understand rotator cuff repair suture management
- First assist and anticipate all steps of an arthroscopic RCR
- Pass suture through the rotator cuff arthroscopically
- Perform the osteotomy and placement of the humeral component in a TSA
- Understand and know how to perform the releases to expose the glenoid
- Perform the reduce maneuver and plating of proximal humerus and clavicle fractures
- Understand tuberosity reconstruction in a 4-part proximal humerus fracture

Revised 6/19/10

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Orthopaedic Residency Program

Physical Exam Competencies
Shoulder Service: PGY3 at OSU

By the end of the PGY 3 rotation on the Shoulder Service, the resident should be able to demonstrate proficiency in the key physical examination tests; The PGY 5 rotation is an opportunity to polish these physical examination skills.

Shoulder exam:

Normal examination of the shoulder, including:
- Inspection: atrophy, deformity, skin changes, prior scars, etc.
- Palpation:
  - AC joint
  - Greater tuberosity
  - Bicipital groove
  - Coracoid process
- Range of motion:
  - Internal/external rotation
  - Forward elevation
  - Abduction/adduction
- Neurovascular testing

Special Tests:

Instability Testing:
- Load and shift test
- Apprehension test
- Relocation sign
- Posterior apprehension sign
- Circumduction test
- Sulcus sign (with and without external rotation)
- Generalized ligamentous laxity

Rotator Cuff Testing:
- Jobe test (empty can test)
- External rotation "lag" sign
- Hornblower's sign
- Resisted external rotation at the side and at 90° abduction
- Lift off
- Belly press
- Drop arm

Impingement Testing:

Neer/Impingement sign
Hawkin's test
Neer Impingement test

Other Tests:
Cross body adduction
Yergason's test
Speed's test
Active compression (O'brien's test)
Scapular winging/scapular stabilization
Adson's test (thoracic outlet syndrome)
Spurling's test (cervical spine involvement)

Revised 6/19/10

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Physical Exam Competencies
Shoulder Service: PGY5 at Riverside

By the end of the PGY5 rotation on the Shoulder Service, the resident should be able to demonstrate proficiency in the key physical examination tests;

Shoulder exam:

Normal examination of the shoulder, including:
- Inspection: atrophy, deformity, skin changes, prior scars, etc.
- Palpation:
  - AC joint
  - Greater tuberosity
  - Bicipital groove
  - Coracoid process
- Range of motion:
  - Internal/external rotation
  - Forward elevation
  - Abduction/adduction
- Neurovascular testing

Special Tests:

Instability Testing:
- Load and shift test
- Apprehension test
- Relocation sign
- Posterior apprehension sign
- Circumduction test
- Sulcus sign (with and without external rotation)
- Generalized ligamentous laxity

Rotator Cuff Testing:
- Jobe test (empty can test)
- External rotation "lag" sign
- Hornblower's sign
- Resisted external rotation at the side and at 90° abduction
- Lift off
- Belly press
- Drop arm

Impingement Testing:
- Neer/Impingement sign

Hawkin’s test
Neer Impingement test

Other Tests:
Cross body adduction
Yergason’s test
Speed’s test
Active compression (O’brien’s test)
Scapular winging/scapular stabilization
Adson’s test (thoracic outlet syndrome)
Spurling’s test (cervical spine involvement)

Revised 6/10

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Surgical Competencies
Shoulder Service: PGY3 at OSU

By the end of the PGY3 rotation in Shoulder, the resident should be able to:

- Perform a diagnostic shoulder arthroscopy
  - Gain entry to the joint
  - Establish the anterior portal
  - Probe all structures
- Perform a biceps tenotomy
- Appropriately place the scope in the SA space
- Perform a subacromial decompression
- Perform a mumford
- Understand suture management in rotator cuff and instability surgery
- First assist and anticipate all steps of an arthroscopic RCR/instability surgery
- Understand the approaches to open shoulder surgery and when to use each
- Know the appropriate retractors and when to use each for open shoulder surgery
- Perform a deltopectoral approach down to the subscapularis
- Take down the subscapularis
- Understand/anticipate and know how to assist for fracture fixation, HHR, TSA
- Understand the steps to expose the glenoid and know how to retract/assist this aspect
- Understand the steps, concepts, approaches to bone loss instability cases
- Expose, reduce with assistance, and plate a clavicle fracture

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Shoulder Reading Lists – PGY3& PGY5

1) ASES Curriculum Guide for the Treatment of Shoulder Injury
   Comprehensive reference guide for every type of shoulder injury, with the most important/historic reference provided – developed by ASES Education Committee for the basic foundation of information on the evaluation and treatment of shoulder injury and disease
2) Disorders of the Shoulder, second edition, editors Iannotti and Williams
3) Complex and Revision Problems in the Shoulder, Editors Iannotti, Flatow Recommend this book to assist with the understanding of the complex shoulder injuries/surgeries that the resident will see on the shoulder service – may borrow/photocopy chapters on a case by case basis
4) OKU Shoulder and Elbow

All sources on loan from Dr Bishop/available to copy

Arthroscopic Knot Tying Board/set – available from Dr Bishop – MUST give back at conclusion of the rotation

Revised 6/19/10

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Shoulder Service (OSU) Didactics

- Arthroscopy Labs: Residents will have 2 shoulder arthroscopy labs each year – to learn basic and advanced shoulder techniques and understand principles of surgical repairs.

- For all residents (Friday conference): 12 lectures hours every 2 years

1) Chronic dislocations (Bishop)
    a. Anterior/posterior
    b. Instability with bone loss
2) Rotator Cuff I: (Jones)
    a. nonsurgical management/impingement/partial tears
3) Rotator Cuff II: (Jones)
    a. surgical management/acute/full thickness/subscapularis tears
4) AC/SC disorders/injuries (Bishop)
5) Arthritic conditions of the shoulder/arthroplasty: 2.0 hrs (Bishop)
    a. DJD
    b. AVN
    c. DJD in young patient
    d. cuff arthropathy
    e. 4-part fxs – requiring HHR/reverse TSA
6) Proximal Humerus Fractures (non-arthroplasty): (Bishop)
    a. GT/LT/Surgical neck/3-part/4-part fractures
7) Scapula/glenoid/clavicle/ fractures (Bishop)
8) Frozen shoulder/post-traumatic stiffness/calcific tendonitis (Bishop)
9) Disorders of the scapula (Bishop)
10) Nerve compressions syndromes about the shoulder (Jones)
    a. Suprascapular nerve, spinoglenoid notch, thoracic outlet, brachial neuritis/parsonage turner,
11) Shoulder and elbow injuries in the adolescent (Jones)
    a. (not covered in children's curriculum)

Additional Conferences:

- bi-monthly shoulder journal club – will join the sports journal club when shoulder topics are presented

Faculty: Drs Bishop/Jones/Butler

Revised 7/31/19

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Two Year Curriculum
Shoulder Lecture Series and References

Lecture #1

Anterior and Posterior/Instability With Bone Loss and Chronic Dislocations

1. Piasecki, DP; Verma, NN; Romeo, AA; Levine, WN; Bach, BR; Provenchar, MT Glenoid Bone Deficiency in Recurrent Anterior Shoulder Instability: Diagnosis and Management J Am. Acad Orthop Surg, August, 2009
2. Yamamoto N1, Itoi E, Abe H, Minagawa H, Seki N, Shimada Y, Okada K. Contact between the glenoid and the humeral head in abduction, external rotation, and horizontal extension: a new concept of glenoid track. J Shoulder Elbow Surg. 2007 Sep-Oct;16(5):649-56
3. Flatow EL, Miller SR, Neer CS 2nd.
   Chronic anterior dislocation of the shoulder. J Shoulder Elbow Surg. 1993 Jan;2(1):2-10

Lecture #2

Rotator Cuff I - NonSurgical Management/Impingement/Partial Tears

1. Finnan, RP; Crosby, LA. Partial Thickness Rotator Cuff Tears. J. Shoulder Elbow Surg, 2010: 19, 609-616
2. Dunn WR, **Kuhn** JE, MOON Shoulder Group
   Predictors of failure of nonoperative treatment of chronic, symptomatic, full-thickness rotator cuff tears. J Shoulder Elbow Surg. 2016 Aug;25(8):1303-1

3. Lecture #3

Rotator Cuff II – Surgical Management/acute/full thickness/subscapularis tears

1. Saridakis, P; Jones, G. Outcomes of Single-Row and Double-Row Arthroscopic Rotator Cuff Repair: A Systematic Review. JBJS 2010: 92:732-42

2. Wall, LB; Keener, JD; Brophy, RH. Double-Row Vs. Single-Row Rotator Cuff Repair: A Review of the Biomechanical Evidence. J. Shoulder Elbow Surg. 2009, 18: 933-941

3. Namdari S, Donegan RP, Chamberlain A, Galatz LM, Yamaguchi K, Keener JD Factors affecting outcome after structural failure of repaired rotator cuff tears. J Bone Joint Surg Am. 2014 Jan 15;96(2):99-105

Lecture #4

AC/SC Disorders/Injuries

1. Groh, GH; Wirth, MA; Rockwood, CA.
   Treatment of Traumatic Posterior Sternoclavicular Dislocations. J. Shoulder Elbow Surg June 2010
2. Carofino BC1, Mazzocca AD.

The anatomic coracoclavicular ligament reconstruction: surgical technique and indications. J Shoulder Elbow Surg. 2010 Mar;19(2 Suppl):37-46

Lecture #5 (2 hours)

Arthritic Conditions of the Shoulder/Arthroplasty – DJD, AVN, DJD in Young Patient/Cuff Arthropathy, 4-Part Fractures Requiring HHR/Reverse TSA

1. Bishop JY, Flatow EL
   Humeral head replacement versus total shoulder arthroplasty: clinical outcomes--a review. J Shoulder Elbow Surg. 2005 Jan-Feb;14(1 Suppl S):141S-146S
2. Boileau P1, Watkinson DJ, Hatzidakis AM, Balg F.
   Grammont reverse prosthesis: design, rationale, and biomechanics J Shoulder Elbow Surg. 2005 Jan-Feb;14(1 Suppl S):147S-161S.

Lecture #6

Proximal Humerus Fractures (non-arthroplasty) – GT/LT/Surgical Neck/3-Part/4-Part Fractures

1. Gardner MJ1, Weil Y, Barker JU, Kelly BT, Helfet DL, Lorich DG.
   The importance of medial support in locked plating of proximal humerus Factures. J Orthop Trauma. 2007 Mar;21(3):185-91
2. Neviaser RJ, Resch H, Neviaser AS, Crosby LA.
   Proximal humeral fractures: pin, plate, or replace. Instr Course Lect. 2015;64:203-14. Review

Lecture #7

Scapula/Glenoid/Clavicle/Fractures

Canadian Orthopaedic Truama Society.

1. Nonoperative Treatment Compared With Plate Fixation of Displaced Midshaft Clavicular Fractures: A Multicenter, Randomized Clinical Trial. JBJS, Jan. 2007, 1-10
2. Zlowdowski, M; Bhandari, M; Zelle, BA; Kreger, PJ; Cole,PA.
   Treatment of Scapula Fractures: Systematic Review of 520 Fractures in 22 Case Series. J Orthop Trauma, March 2006: 230-3.

3. Bahk, MS; Kuhn, JE; Galatz, LM; Connor, PM; Williams, GR.
   Acromioclavicular and Sternoclavicular Injuries and Clavicular, Glenoid, and Scapular Fractures. Inst. Course Lect. 2010: 59:209-26

Lecture #8

Frozen Shoulder/Post-traumatic Stiffness/Calcific Tendonitis

1. Neviaser, AS; Hannafin, JA.
   Adhesive Capsulitis: A Review of Current Treatment. Am Journal Sports Med, Vol.
2. Uhtkoff, HK; Loehr, JW.
   Calcific Tendinopathy of the Rotator Cuff: Pathogenesis, Diagnosis, and Management. J Am Acad Orth Surg, Vol. 5, No. 4, August 1997

Lecture #9

Disorders of the Scapula

1. Millet, PJ; Claver, P; Warner, JJ.
   The Painful Snapping Scapula. Chapter 30
2. Clavert, P; Warner, JJ.
   Scapular Winging Caused by Serratus Anterior Dysfunction: Recognition and Treatment. Chapter 31
3. Bishop, JY; Flatow,EL.
   Scapular Winging: Trapezius Dysfunction. Chapter 32

Lecture #10

Nerve Compressions Syndromes About the Shoulder – Suprascapular Nerve, spinoglenoid notch, thoracic outlet, brachial neuritis, parsonage turner

1. Safran, M.
   Nerve Injury About the Shoulder in Athletes, Part I: Suprascapular Nerve and Axillary Nerve. Am J Sports Med, Vol. 32, No. 3, pg. 803
2. Safran, M.
   Nerve Injury About the Shoulder in Athletes, Part II: Long Thoracic Nerve, Spinal Accessory Nerve, Burners/Stingers, Thoracic Outlet Syndrome. Am J Sports Med, Vol. 32, No. 4, Pg. 1063
3. Boykin RE1, Friedman DJ, Higgins LD, Warner JJ.
   Suprascapular neuropathy. J Bone Joint Surg Am. 2010 Oct 6;92(13):2348-64

Lecture #11

Shoulder and Elbow Injuries in the Adolescent

1. Taylor, DC; Krasinski, KL.
   Adolescent Shoulder Injuries: Concensus and Controversies. JBJS, 2009;91:462-73
2. Chen, FS; Diaz, VA; Loebenberg, M; Rosen, JE.
   Shoulder and Elbow Injuries in the Skeletally Immature Athlete. JBJS, Vol. 13, No. 3, May/June 2005

Lecture Readings – Optional/Suggested

Lecture #1

Optional/Suggested

Anterior and Posterior/Instability With Bone Loss and Chronic Dislocations

4. Itoi E, Lee SB, Berglund LJ, Berge LL, An KN The effect of a glenoid defect on anteroinferior stability of the shoulder after Bankart repair: a cadaveric study. J Bone Joint Surg Am. 2000 Jan;82(1):35-46
5. Burkhart, SS; DeBeer, JF; Barth, JR; Cresswell, T; Roberts, C; Richards, P. Results of Modified Latarjet Reconstruction in Patients With Anteroinferior Instability and Significant Bone Loss. Arthroscopy, Oct. 2007
6. Raiss P, Edwards TB, Bruckner T, Loew M, Zeifang F, Walch G.

Reverse arthroplasty for patients with chronic locked dislocation of the shoulder J Shoulder Elbow Surg. 2017 Feb;26(2):279-287.

Lecture #2

Optional/Suggested

Rotator Cuff I - NonSurgical Management/Impingement/Partial Tears

1. Keener JD, Galatz LM, Teefey SA, Middleton WD, Steger-May K, Stobbs-Cucchi G, Patton R, Yamaguchi K. A prospective evaluation of survivorship of asymptomatic degenerative rotator cuff tears J Bone Joint Surg Am. 2015 Jan 21;97(2):89-98.
2. **Kuhn** JE, MOON Shoulder Group
   Effectiveness of physical therapy in treating atraumatic full-thickness rotator cuff tears: a multicenter prospective cohort study
   J Shoulder Elbow Surg. 2013 Oct;22(10):1371-9
3. Zingg PO1, Jost B, Sukthankar A, Buhler M, Pfirrmann CW, Gerber C Clinical and structural outcomes of nonoperative management of massive rotator cuff tears J Bone Joint Surg Am. 2007 Sep;89(9):1928-

Lecture #3

Optional/Suggested

Rotator Cuff II – Surgical Management/acute/full thickness/subscapularis tears

1. Cofield RH, Parvizi J, Hoffmeyer PJ, Lanzer WL, Ilstrup DM, Rowland CM. Surgical repair of chronic rotator cuff tears. A prospective long-term study. J. Bone Joint Surg Am. 2001 Jan;83-A(1)
2. Bishop J, Klepps S, Lo IK, Bird J, Gladstone JN, Flatow EL. Cuff integrity after arthroscopic versus open rotator cuff repair: a prospective study. J Shoulder Elbow Surg. 2006 May-Jun;15(3):290-9
3. Gladstone JN, Bishop JY, Lo IK, Flatow EL. Fatty infiltration and atrophy of the rotator cuff do not improve after rotator cuff repair and correlate with poor functional outcome. Am J Sports Med. 2007 May;35(5)
4. Namdari S, Donegan RP, Chamberlain A, Galatz LM, Yamaguchi K, Keener JD Factors affecting outcome after structural failure of repaired rotator cuff tears. J Bone Joint Surg Am. 2014 Jan 15;96(2):99-105

Lecture #4

Optional/Suggested

AC/SC Disorders/Injuries

1. Bicos, J; Nicholson, GP.
   Treatment and Results of Sternoclavicular Joint Injuries. Clin Sports Med Apr. 2003
2. Bishop, JY; Kaeding, C.
   Treatment of the Acute Traumatic Acromioclavicular Separation. Sports Med Arthrosc, Dec. 2006.
3. Bontempo NA1, Mazzocca AD

Biomechanics and treatment of acromioclavicular and sternoclavicular joint injuries. Br J Sports Med. 2010 Apr;44(5):361-9.

Lecture #5 (2 hours)
Optional/Suggested
Arthritic Conditions of the Shoulder/Arthroplasty – DJD, AVN, DJD in Young Patient/Cuff Arthropathy, 4-Part Fractures Requiring HHR/Reverse TSA

1. Izquierdo, R; Voloshin, I; Edwards, S; Freehill, MQ; Stanwood, W; Wiater, JM; Watters, WC; Goldberg, MK; Keith, M; Turkelson, CM; Weis, JL; Anderson, S; Boyer, K; Raymond, L; Sluka, P.
   Treatment of Glenohumeral Osteoarthritis. J. Am Acad Orthop Surg, June 2010
2. Feeley, BT; Gallo, RA; Craig, EV.
   Cuff Tear Arthropathy: Current Trends in Diagnosis and Surgical Management. J. Shoulder Elbow Surg, May-Jun 2009; 484-94
3. Elhassen, B; Ozbaydar, M; Diller, D; Higgins, LD; Warner, JJ.
   Soft-Tissue Resurfacing of the Glenoid in the Treatment of Glenohumeral Arthritis in Active Patients Less Than Fifty Years Old. JBJS, Feb. 2009; 419-24.
4. Walch G, Badet R, Boulahia A, Khoury A
   Morphologic study of the glenoid in primary glenohumeral osteoarthritis. J Arthroplasty. 1999 Sep;14(6):756-60
5. Chin PY, Sperling JW, Cofield RH, Schleck C.
   Complications of total shoulder arthroplasty: are they fewer or different? J Shoulder Elbow Surg. 2006 Jan-Feb;15(1):19-22
6. Bartelt R, Sperling JW, Schleck CD, Cofield RH
   Shoulder arthroplasty in patients aged fifty-five years or younger with osteoarthritis. J Shoulder Elbow Surg. 2011 Jan;20(1):123-30
7. Wall B, Nové-Josserand L, O'Connor DP, Edwards TB, Walch G.
   Reverse total shoulder arthroplasty: a review of results according to etiology. J Bone Joint Surg Am. 2007 Jul;89(7):1476-85.

Lecture #6
Optional/Suggested
Proximal Humerus Fractures (non-arthroplasty) – GT/LT/Surgical Neck/3-Part/4-Part Fractures

1. George, M.
   Fractures of the Greater Tuberosity of the Humerus. J. Am. Acad Orthop Surg, Vol. 15, No. 10, Oct. 2007: 607-613.
2. Nho, S.; Brophy, RH; Baker, JU; Cornell,CN; MacGillivray, JD.
   Innovations in the Management of Displaced Proximal Humerus Fractures. J. Am. Acad Orthop Surg. Vol. 15, NO. 1, January 2007: 12-26.
3. Bolleau, P; Krishnan, SG: Tinsi, L; Walch, G; Coste, JS; Mole, D.
   Tuberosity Malposition and Migration: Reasons for Poor Outcomes After Hemiarthroplasty for Displaced Fractures of the Proximal Humerus. J. Shoulder Elbow Surg. Sept-Oct. 2002: 401-412
4. Grubhofer F, Wieser K, Meyer DC, Catanzaro S, Beeler S, Riede U, Gerber C
   Reverse total shoulder arthroplasty for acute head-splitting, 3- and 4-part fractures of the proximal humerus in the elderly. J Shoulder Elbow Surg. 2016 Oct;25(10):1690-8

Lecture #7
Optional/Suggested
Scapula/Glenoid/Clavicle/Fractures

1. McKee, MD; Pederson, EM; Jones, C; Stephen, DJ; Krieder, HJ; Schemitsch, EH; Wild, EH; Potter, J.
   Deficits Following Nonoperative Treatment of Displaced Midshaft Clavicular Fractures. JBJS Jan. 2006: 35-40
4. Robinson CM1, Goudie EB, Murray IR, Jenkins PJ, et al.
   Open reduction and plate fixation versus nonoperative treatment for displaced midshaft clavicular fractures: a multicenter, randomized, controlled trial J Bone Joint Surg Am. 2013 Sep 4;95(17):1576-84
5. Banerjee R1, Waterman B, Padalecki J, Robertson W.
   Management of distal clavicle fractures. J Am Acad Orthop Surg. 2011 Jul;19(7):392-401

Lecture #8
Optional/Suggested
Frozen Shoulder/Post-traumatic Stiffness/Calcific Tendonitis

3. Griesser, MJ; Harris, JD; Campbell, JE; Jones, GL.
   Adhesive Capsulitis of the Shoulder A Systematic Review of the Effectiveness of Intra-Articular Corticosteroid Injections. J Bone Joint Surg Am. 2011;93:1727-33.
4. Shaffer B, Tibone JE, Kerlan RK
   Frozen shoulder. A long-term follow-up. J Bone Joint Surg Am. 1992 Jun;74(5):738-46

Lecture #9
Optional/Suggested
Disorders of the Scapula

1. Galano GJ1, Bigliani LU, Ahmad CS, Levine WN
   Surgical treatment of winged scapula. Clin Orthop Relat Res. 2008 Mar;466(3):652-60

Lecture #10
Optional/Suggested
Nerve Compressions Syndromes About the Shoulder – Suprascapular Nerve, spinoglenoid notch, thoracic outlet, brachial neuritis, parsonage turner

1. Kuhn JE, Lebus V GF, Bible JE
   Thoracic outlet syndrome. J Am Acad Orthop Surg. 2015 Apr;23(4):222-32

Lecture #11
Optional/Suggested
Shoulder and Elbow Injuries in the Adolescent

3. Bishop JY1, Flatow EL.
   Pediatric shoulder trauma Clin Orthop Relat Res. 2005 Mar;(432):41-8

The Ohio State University
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Residency Curriculum

Spine

Revised 7/16/2020

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

ORTHOPEDIC SPINE SERVICE GUIDELINES

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Schedules

	Khan	Yu	Kim	Karnes
Monday	1st OCE Clinic 2nd-5th UH OR	UH OR	UH OR	Clinic
Tuesday	1st,2nd,4th UH OR 3rd, 5th BSH Clinic	1st, 3rd,5th UH OR 2nd, 4th Wooster Clinic	OCE Clinic	Clinic
Wednesday	OCE Clinic	OCE Clinic	UH OR	Academic?
Thursday	UH OR	BSH Clinic	OCE Clinic	Clinic
Friday	UH OR	UH OR	1st, 3rd, 5th BSH Clinic 2nd, 4th UH OR	UH OR

Please consult individual attendings for weekly variations in the hourly clinic schedule.

Rounds on operative cases are essential for understanding the postoperative patient care requirements. Therefore, the resident is expected to round every day at OSU Main.

Conferences

Resident Spine Indications Conferences: Fridays @ 6am (Microsoft Teams)
Spine Journal Club- as scheduled.

OSU Spine Learning Objectives

GENERAL EDUCATIONAL GOALS

At the completion of this rotation the resident should be able to:

1. "Cure sometimes, heal often and comfort always" - *Ambrose Pare*

2. Be familiar with the principles and practice of spinal surgery.

3. Be proficient in the examination and management of spine surgery patients.

4. Be proficient and knowledgeable in the discussion of the patients from the initial hospital visit through surgical managements and postoperative recuperation and follow-up.

5. To acquire a practical field of knowledge concerning spinal disorders, including knowledge of basic science, anatomy, physiology, and biomechanics of the spine and an understanding of how to apply this information clinically. Those disorders that affect the spine including: congenital, infections, inflammatory, developmental, metabolic, degenerative, neoplastic, traumatic and deformities will be covered in detail, whether they occur in the cervical, thoracic, or lumbosacral spine. Additional time will be spent studying spinal cord injuries.

6. To understand the appropriate methods for a thorough history and physical examination of the spinal patient.

7. To understand the appropriate clinical and diagnostic methods for evaluation of patients with acute or chronic low back pain, i.e. a working knowledge of such spinal disorders as: all types of disc disorders, spinal stenosis, fractures/dislocations, deformities and the "failed low back".

8. To gain knowledge of interpretive tests relating to spinal disorders including: plain xrays, CAT scans, myelograms, discography, electrodiagnostic testing and MRI.

9. To gain an appreciation for the management of these patients using nonoperative (medications, therapy, orthotics, etc.), as well as operative means (perioperative and surgical management).

10. To participate directly in the care of patients in the office or clinic setting and in the hospital. To follow patients through initial assessment, evaluation, workup, surgery, post-operative care and followup.

SPECIFIC DUTIES AND RESPONSIBILITIES
The resident physician is expected to:

1. To work directly with and under the direction of the faculty of the Ohio State University Department of Orthopaedics in clinic and the operating room.

2. To work toward the accomplishment of the aforementioned goals through readings, deliberation, thoughtful questioning and physical participation in the care of patients.

3. Evaluate and manage patients with spinal pathology including the ability to examine the spine as well as central and peripheral nervous system, interpret spinal imaging modalities and prioritize a spine intervention.

4. Understand patient selection and indications for operative and nonoperative management of spinal problems in the outpatient clinic and emergency department.

5. Develop an understanding of various spinal implants, their indications and usage in operative techniques.

6. Acquire the initial understanding of technical skills that would include and achieve goals of decompression, instrumentation and stabilization of the cervical, thoracic and lumbar spine. The PGY3 and PGY 4 level residents are not expected to become surgically independent in spinal operations.

7. Recognize and treat complications of spinal surgery or conservatively managed conditions.

8. Develop an understanding of the diagnosis and management of such conditions as:
   - Degenerative disc disease
   - Herniated nucleus pulpous with radiculopathy
   - Spinal Stenosis
   - Spondylolysis and Spondylolisthesis
   - Ankylosing Spondylitis and Diffuse Idiopathic Skeletal Hyperostosis (DISH)
   - Rheumatoid arthritis (especially cervical spine involvement)
   - Spinal tumors
   - Spinal Infections

9. Develop an understanding of the pathophysiology, conservative treatment and indications for operative treatment of idiopathic scoliosis, scoliosis related to neuromuscular disease and adult scoliosis.

10. Diagnosis of spinal trauma including recognition from routine imaging, classification of the fracture or dislocation and differentiation of complete and incomplete cord injuries, cauda equina syndrome and nerve root injury and be able to formulate a treatment plan.

11. Understand the indications for and appropriately ordered spinal orthotics.

12. Develop an understanding of other treatment modalities for patients with chronic, mechanical, axial neck and back pain.

13. The resident will see patients in the office, follow them through their hospital course, and follow them during their recuperative period

14. The resident will be expected to participate in conferences at the University and be able to present cases relating to spinal disorders in a logical and cohesive fashion. The weekly Spine Conference at the OSU Spine Center is an opportunity for presentation of patients and the discussion of indications for surgery as well as a time for more in-depth discussions of spinal topics. The resident may also be asked to participate in a clinical study at the Ohio State University Medical Center.

OSU Spine Learning Objectives

Miscellaneous:

1. The usual rules that apply to resident activities regarding vacation and leave time apply to this rotation.

2. The resident may elect to pat1icipate in a project related to spinal disorders.

3. A strong emphasis will be placed on the learning of the aforementioned principles in adults but the resident will also be expected to demonstrate a functional knowledge of how these principles apply to all patients with spinal disorders.

4. Night call duty for the residents will be assigned by the office of the Residency Program Director, the resident should be ready and available to participate with spinal fractures on the occasional emergency case, or to help out where appropriate.

5. The resident's performance evaluation will be conducted by the spine faculty of the Ohio State University and forwarded to the Department Chairman of Orthopaedics at the completion of the rotation.

ACGME MILESTONES FOR ORTHOPEDICS - Effective July 1, 2013

The milestones were designed by the ACGME for use only in evaluation of resident physicians in the context of their participation in ACGME-accredited residency or fellowship programs. The milestones provide a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Milestones were designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into residency through graduation. The Ortho RRC will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The resident demonstrates milestones expected of an incoming resident.

Level 2: The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.

Level 3: The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.

Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

Note that Level 4 is designed as the graduation *target* but does not represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the residency program director.

The milestones which will be evaluated on the Orthopaedic Oncology rotation are as listed on the following pages:

Degenerative Spinal Conditions – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of pathophysiology related to lumbar and cervical degenerative conditions • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., cervical or lumbar radiographs) • Demonstrates knowledge of physical exam of cervical and lumbar spine and related neurologic and provocative signs • Demonstrates knowledge of general peri-operative patient care	• Describes specific clinical syndromes of lumbar and cervical degenerative conditions (e.g., radiculopathy from herniated nucleus pulposus [HNP] vs. stenosis vs. spondylolisthesis, back pain, cervical radiculopathy, or myelopathy) • Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., magnetic resonance imaging [MRI], Myelogram/CT) • Demonstrates knowledge of biological theories of pain generation • Demonstrates knowledge of natural history of lumbar and cervical degenerative conditions • Demonstrates knowledge of anatomic changes resulting from lumbar and cervical degenerative disorders and basic surgical approaches (e.g., anterior cervical, posterior cervical or lumbar) • Demonstrates knowledge of basic pre-surgical planning and criteria for acceptable intra-operative result for simple primary cases (e.g., laminotomy for herniated nucleus pulposus [HNP], single-level anterior cervical discotomy and fusion [ACDF]) • Demonstrates knowledge of non-operative treatment options	• Demonstrates knowledge of current literature and alternative treatments • Demonstrates knowledge of biology of fusion healing • Demonstrates knowledge of the effects of intervention on natural history of lumbar and cervical degenerative conditions • Demonstrates knowledge of alternative surgical approaches, complications of approaches • Demonstrates knowledge of presurgical planning and criteria for acceptable intra-operative result for cases of moderate complexity (e.g., spondylolisthesis, multi-level decompression and fusion) • Demonstrates knowledge of surgical indications • Demonstrates knowledge of basic implant choices	• Demonstrates knowledge of controversies within the field (e.g., epidural blocks, arthroplasty vs. fusion, and fusion techniques) • Demonstrates knowledge of cervical and lumbar biomechanics and alterations by decompression or implants • Demonstrates knowledge of influence of natural history and comorbidity on clinical decision-making • Demonstrates knowledge of alternative implant choices/biomaterials	• Primary author/presenter of original work within the field
☐	☐	☐	☐	☐ ☐ ☐ ☐ ☐
Comments: **Not yet rotated** ☐				

Degenerative Spinal Conditions – Patient care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Prescribes non-operative treatments: non-steroidal anti-inflammatory drugs (NSAIDs), rehabilitation, initiates basic care • Recognizes indications for and initiates immediate additional work-up ("Red Flags") or urgent surgical care (progressive deficit, cauda equina syndrome) • Provides basic/general peri-operative management • Lists potential complications	• Obtains focused history and performs focused exam; appropriately interprets neurological exam • Appropriately interprets basic imaging studies • Assists in exposure for anterior and posterior cervical spine, posterior lumbar spine, performs closure • Provides procedure and patient specific post-operative management and rehabilitation • Capable of diagnosis and early management of complications	• Extends examination to non-spinal differential diagnostic possibilities (vascular claudication, hip arthritis, etc.) • Appropriately orders and interprets advanced imaging studies (MRI, myelogram, CT); correlates clinical and imaging findings to form clinical diagnosis • Prescribes and manages non-operative treatment: injections, referrals to other professionals • Recommends appropriate surgical procedures considering indications and contraindications, risks and benefits for simple cases (e.g., single-level HNP with radiculopathy) • Completes comprehensive pre-operative planning with alternatives and criteria for acceptable intraoperative result for straightforward cases (single-level HNP) • Capable of performing anterior and posterior cervical, posterior lumbar surgical exposure, assisting with implant placement • Modifies and adjusts post-operative treatment plan according to clinical situation (e.g., modifies for comorbid conditions or complications) • Capable of treating simple complications both intra- and post-operatively (e.g., medical complications, hemostasis)	• Provides complex non-operative treatment (e.g., individualized care, shared decision making, comprehensive informed consent) • Recommends appropriate surgical procedures considering indications and contraindications, risks and benefits for complex cases (e.g., multi-level stenosis with deformity) • Completes comprehensive pre-operative planning with alternatives and criteria for acceptable intraoperative result for complex cases (e.g., multi-level stenosis with deformity) • Capable of decorticating for posterolateral fusion, placing grafts • Capable of surgically treating simple complications (e.g., drainage of hematoma, debridement of infection)	• Completes comprehensive pre-operative planning with alternatives and criteria for acceptable intra-operative result for highly complex cases (e.g., revision surgery) • Capable of performing decompression, posterior lumbar interbody fusion (PLIF), transforaminal lumbar interbody fusion (TLIF), places complex implants (e.g., fusion cages, pedicle screws) • Develops unique complex post-operative management plans when indicated • Capable of surgical treatment of complex complications (e.g., revise displaced hardware or graft, durotomy repair)
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

II. PGY Knowledge and Skills Expectations- Spine

TEAM SPECIFIC:

1 Become proficient in the use of the OSUMC system resources.
2 Become proficient in the indications for and ordering of radiologic imaging including X-Rays, MRIs, CAT scans, myelography and advanced imaging modalities.
3 Become proficient with respect to requirements of the Pre-Op-Team patient encounter, the Time-Out process, and the Post-Op Review process.
4 Timely entry of notes, dictation of the Operative Procedure, and entry describing postoperative care, including discharge planning and followup
5 Expectations of reading educational resources, Pub Med, EBP (Evidence Based Practice), Orthopaedic Knowledge (OKO, OTA.org) portals, etc.
6 Attend and present the weekly Spine Conference and a weekly topic scheduled preop/postop case review.
7 Communication with consulting services: Infectious Disease, General Surgery, Plastic Surgery, Neurosurgery, Urology, Neurology, ENT, PM&R/ Rehabilitation, etc.
8 Attend Grand Rounds and educational programs (Friday AM).
9 Attend monthly mortality and morbidity conferences.

Clinical Year PGY3 :

1 Master obtaining, presenting, and documenting a detailed complaint and history relevant to the patient afflicted with a spinal disorder.
2 Mater performing and obtaining past history
3 Master performing and obtaining a thorough musculoskeletal exam
4 Learn to process a detailed differential diagnosis relevant to the musculoskeletal history and physical examination
5 Learn to assess the appropriate requirements for relevant laboratory and imaging studies for musculoskeletal complaints
6 Integrate effectively as a team player with other residents and faculty
7 Make rounds with the team twice daily and record relevant observations and lab data in a timely manner
8 Provide one-on-one instruction in musculoskeletal essentials of history and physical examination to the service intern and medical students.
9 Evaluate consults in a timely manner
10 Present weekly Pre-Op and postoperative cases and be prepared to comment on each case as required
11 Learn basic surgical operating practice including general operating room discipline, patient positioning ,the skills relevant to soft tissue handling, hemostasis and neurological precautions.
12 Accomplish efficient team discipline with respect to integration of duties with junior and senor team members
13 Enhance decision making skills with respect to general orthopaedic elective surgical practice

14 Maintain rigorous discipline with respect to preoperative reading, and relevant on-line research in preparation for surgical cases and Review anatomical dissections preoperatively in certain insistences of unusually complex reconstructive spinal procedures.
15 Present a weekly topic alternating with the PGY4

Clinical Year PGY4 :

1 Mastering all PGY3 requirements
2 Assume responsibilities as team leader of a spine service and direct delegation of responsibilities among interns, junior residents and PA's
3 Assume teaching responsibilities consistent with a Chief Resident leadership position, guiding junior residents, interns and medical students
4 Conduct twice daily rounds and document notable observations and laboratory data or delegate and oversee that responsibility
5 Oversee all aspects of inpatient and outpatient care
6 Provide decision making leadership with regard to surgical indications and appropriate scheduling of cases
7 Oversee the details of surgical preparation including necessary implants, special surgical equipment, and communication with the OR nursing staff the day before surgery or earlier if indicated
8 Provide leadership to team members with respect to surgical preparation including relevant literature on evidence based surgical intervention, and technical aspects of the procedures to be performed
9 Demonstrate appropriate communication skills with consultants preoperatively and postoperatively
10 Improve upon surgical skills and teach surgical skills at appropriate levels for junior faculty, interns and medical students.

DEPARTMENT OF ORTHOPAEDIC SURGERY
OSU Spine Service
Didactic Clinical and Surgical Experience

Spinal Disorders Didactic Educational Schedule

Basic science curriculum

1. Anatomy and embryology emphasizing spinal and neural development
2. Biomechanics and biomaterials
3. Pathophysiology of degenerative disc disease and related symptoms
4. History and Physical Examination Skills- Differential Diagnosis
5. Spinal imaging: Radiographs, computed tomography, myelography, and magnetic resonance imaging along with interventional techniques
6. Clinical neurophysiology
7. Research methods including outcome assessment, nomenclature and coding
8. Disability evaluation and medical ethics

Conservative Treatment and Rehabilitation

1. Pharmacologic management of spinal patients
2. Diagnostic and therapeutic spinal injections
3. Rehabilitation concepts including functional restoration, manipulative treatments and other passive modalities
4. Rehabilitation of spinal cord injuries including prosthetics and orthotics

Adult Topics

1. Initial evaluation and management of spinal trauma
2. Fractures and dislocations of the cervical spine
3. Fractures and dislocations of the thoracolumbar spine and sacrum
4. Evaluation and treatment of neck pain and cervical disk disease
5. Cervical spondylotic myelopathy and other disorders of the spinal cord
6. Head and neck injuries in athletes
7. Evaluation and treatment of back pain and lumbar degenerative disk disease
8. Spinal stenosis
9. Spondylolisthesis
10. Adult Scoliosis
11. Diagnosis and treatment of neoplastic spinal disease
12. Rheumatoid and rheumatoid variant spondyloarthropathy
13. Spinal infections
14. Management and treatment of osteoporosis and metabolic bone disease affecting the spine
15. Complications of Spine Surgery
16. Spinal instrumentation
17. Spine arthroplasty including motion sparing technologies
18. Spinal arthrodesis including biological enhancement

Pediatric Topics

1. Back pain in children and adolescents including Scheuermann's disease
2. Pediatric spine trauma
3. Infantile, Juvenile and Adolescent Idiopathic Scoliosis
4. Congenital and neuromuscular scoliosis

Revised 8/30/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Spine Reading List

1. Required Readings/Lecture References

AAOS Comprehensive Orthopaedic Review

Chapter 10
Chapter 11
Chapter 12
Chapter 13
Chapter 17
Chapter 27
Chapter 36
Chapter 37
Chapter 38
Chapter 39
Chapter 40
Chapter 41
Chapter 42
Chapter 43
Chapter 44
Chapter 46
Chapter 50
Chapter 65
Chapter 66
Chapter 67
Chapter 68
Chapter 70
Chapter 71
Chapter 72

JAAOS – Required Readings ***(Note: All are available on Sharepoint site)***

- Degenerative Lumbar Scoliosis: Evaluation and Management
- Sagittal Plane Deformity in the Adult Patient
- Neurologic Injury in the Surgical Treatment of Idiopathic Scoliosis: Guidelines for Assessment and Management
- Use of All-pedicle-screw
- Constructs in the Treatment of Adolescent Idiopathic Scoliosis
- Cervical Spondylotic Myelopathy: Diagnosis and Treatment Cervical Radiculopathy
- Surgical Management of Cervical Radiculopathy

- Odontoid Fractures: Update on Management
- Subaxial Cervical Spine Trauma

- Upper Cervical Spine Injuries
- Adverse Events Associated With Anterior Cervical Spine Surgery
- The Role of Fibrin Sealants in Orthopaedic Surgery
- Neurologic Complications After Lumbar Spine Surgery
- Reporting and Notification of Adverse Events in Orthopaedics
- Cauda Equina Syndrome
- Nonsurgical Management of Acute and Chronic Low Back Pain
- Low Back Pain: Pathophysiology and Management
- Lumbar Spinal Stenosis
- Degenerative Lumbar Stenosis: Diagnosis and Management
- Randomized Controlled Trials of the Treatment of Lumbar Disk Herniation: 1983-2007
- Recurrent Lumbar Disk Herniation
- Thoracic Disk Disease: Diagnosis and Treatment
- Postoperative Spinal Wound Infections
- Prophylactic Antibiotics in Orthopaedic Surgery
- Spinal Infections
- Evaluation of the Adult Patient (Aged >40 Years) With a Destructive Bone Lesion
- Metastatic Disease of the Spine
- Preoperative Embolization in the Treatment of Spinal Metastasis
- Acute Management of Spinal Cord Injury
- Advances in the Management of Spinal Cord Injury
- Central Cord Syndrome
- Clearing the Cervical Spine in the Blunt Trauma Patient
- Clearing the Pediatric Cervical Spine Following Injury
- Orthopaedic Management of Ankylosing Spondylitis
- Diffuse Idiopathic Skeletal Hyperostosis: Musculoskeletal Manifestations
- Rheumatoid Arthritis in the Cervical Spine
- Rheumatoid Arthritis of the Cervical Spine
- Adult Isthmic Spondylolisthesis
- Degenerative Lumbar Spondylolisthesis: Trends in Management
- Degenerative Lumbar Scoliosis: Evaluation and Management
- Spondylolysis and Spondylolisthesis in Children and Adolescents: I. Diagnosis, Natural History, and Nonsurgical Management
- Spondylolysis and Spondylolisthesis in Children and Adolescents: II. Surgical Management
- The Effects of Medications on Bone
- Recommendations for Optimal Care of the Fragility Fracture Patient to Reduce the Risk of Future Fracture
- Percutaneous Treatment of Vertebral Body Pathology

- Sacral Fractures
- Thoracolumbar Spine Trauma Classification

- Thoracolumbar Spine Trauma: Evaluation and Classification
- Thoracolumbar Spine Trauma: Principles of Management

2. Optional Readings/Lecture References

- Spine Classics CD (note – all available on Sharepoint site)
- Skeletal Trauma, 3rd Edition
  Vol. 1, Section 1, Chapter 19, Chronic Osteomyeletis, pp. 483 – 506
  Section II, Spine, Chapters 35 – 34, pp. 685 – 1028
  Pelvis, Fx's of the sacrum, pp. 1031 – 1051

- AAOS Comprehensive Review
- OKU Spine 3 & 4

THE OHIO STATE UNIVERSITY DEPARTMENT OF ORTHOPAEDICS
SPINE SERVICE-DIDACTIC LECTURE SCHEDULE

LECTURE #	DATE	CORE CURRICULUMLECTURE {FRIDAY Mornings-2 year cycle}	REQUIRED READINGS OKU: Spine 4	REQUIRED READINGS AAOS COMPREHENSIVE ORTHOPAEDIC REVI	ICL: Spine 2	JAAOS	OPTIONAL READINGS OSU SPINE CLASSICS CD	OPTIONAL READINGS RECENT JOURNALS	TEXTS
Spine 1		**SPINE TRAUMA INITIAL EVALUATION AND MANAGEMENT** **SPINAL SPORTS INJURIES** **SPINAL CORD INJURY**	**Chapter 18** **Chapter 23** **Chapter 6**	Chapter 46 Chapter 50					
Spine 2		**UPPER AND SUBAXIAL CERVICAL SPINE TRAUMA**	**Chapter 19** **Chapter 20**	Chapter 68	**Chapter 1**				
Spine 3		**THORACOLUMBAR SPINE TRAUMA (+SACRAL FX.'S**	**Chapter 21** **Chapter 22**	Chapter 68	**Chapter 2** **Chapter 3** **Chapter 4**				**SKELETAL TRAUMA**, 3RD EDITION, BROWNER, JUPITER, LEVINE, TRAFTON eds. W.B. Saunders Co., 2003 Vol.1 Section 1, Chap. 19, Chronic Osteomyelitis, pp. 483 506
Spine 4		**CERVICAL RADICULOPATHY AND MYELOPATHY** **pathogenesis and treatment**	**Chapter 26** **Chapter 4** **Chapter 5**	Chapter 10 Chapter 65 Chapter 69	**Chapter 29**			PRIOR TO EACH OF THE 4 LECTURE BLOCKS A LIST OF RELEVANT AND RECENT ARTICLES WILL BE DISTRIBUTED THE ARTICLES WILL BE FROM THE FOLLOWING JOURNALS: **JBJS,SPINE, JOURNAL OF SPINAL DISORDERS, JOUR. AMER. ACAD. NEUROSURGEONS:SPINE , CORR**	
Spine 5		**LUMBAR DISC HERNIATION AND THORACIC DISC HERNIATION** **pathogenesis and treatment**	**Chapter 27** **Chapter 28** **Chapter 4**	Chapter 10 Chapter 65 Chapter 70	**Chapter 15** **Chapter 17**				
Spine 6		**LUMBAR SPINAL STENOSIS AND TYPES OF SPONDYLOLISTHESIS**	**Chapter 29** **Chapter 30**	Chapter 27 Chapter 70	**Chapter 18** **Section 6**		**SEE CORRESPONING FILE ON OSU SPINE CLASSICS DVD**		Section II, Spine, Chapters 25-34, pp.685-1028
Spine 7		**SPINE INFECTIONS**	**Chapter 44**	Chapter 11 Chapter 67					
Spine 8		**SPONDYLOARTHROPATHIES**	**Chapter 46**	Chapter 44 Chapter 72					Section III, Pelvis: Fx's of the Sacrum, pp. 1031-1051
Spine 9		**SPINE NEOPLASMS**	**Chapter 42** **Chapter 43**	Chapters 36 through 43					
Spine 10		**THE AGING SPINE-METABOLIC BONE DISEASE**	**Chapter 45**	Chapter 71	**Section 7**				
Spine 11		**ADULT SPINE DEFORMITY AND SURGICAL TREATMENT**	**Chapter 31**	Chapter 12 Chapter 66	**Section 4**				**AAOS COMPREHENSIVE REVIEW,** LIEBERMAN JR, ED.,AAOS PUBLISHING, ROSEMONT, Ill., second printing, 2009
Spine 12		**COMPLICATIONS OF SPINE SURGERY**		Chapter 13 Chapter 17	**Section 10**				**OKU-SPINE 3&4**

Orthopaedic Surgery Minimum Numbers (effective 2012-2013)

Category	Minimum
Knee arthroscopy	**30**
Shoulder arthroscopy	**20**
ACL reconstruction	**10**
THA	**30**
TKA	**30**
Hip fractures	**30**
Carpal tunnel release	**10**
Spine decompression/posterior spine fusion	**15**
Ankle fracture fixation	**15**
Closed reduction forearm/wrist	**20**
Ankle & hind & mid-foot arthro	**5**
Supracondylar humerus perc	**5**
Femur and tibia intramedullary fixation	**25**
All pediatric procedures	**200**
All oncology procedures	**10**

CPT Codes in Each Category

Knee arthroscopy (29850, 29851, 29855, 29856, 29866, 29867, 29868, 29870, 29871, 29873, 29874, 29875, 29876, 29877, 29879, 29880, 29881, 29882, 29883, 29884, 29885, 29886, 29887)

Shoulder arthroscopy (29805, 29806, 29807, 29819, 29820, 29821, 29822, 29823, 29824, 29825, 29826, 29827, 29828)

ACL reconstruction (29888)

THA (27130, 27132, 27134, 27137, 27138)

TKA (27442, 27443, 27445, 27446, 27447, 27487)

Hip fractures (27235, 27236, 27244, 27245)

Carpal tunnel release (64721)

Spine decompression lumbar spine/posterior spine fusion thoracic or lumbar (22612, 22630, 22800, 22802, 22804, 63005, 63012, 63017, 63030, 63042, 63047)

Ankle fracture fixation (27766, 27769, 27792, 27814, 27822, 27823, 27826, 27827, 27828, 27829)

Closed reduction forearm and wrist fractures (25505, 25520, 25535, 25565, 25605, 25624, 25690, 25680, 25675)

Ankle and hind and mid-foot arthrodeses (27870, 28705, 28715, 28725, 28730, 28735, 28737)

Supracondylar humerus percutaneous treatment (24538, 24566, 24582)

Femur and tibia intramedullary fixation (27506, 27759)

Please note: manipulations must recorded with procedures in the Case Log System

Orthopaedic Surgery Minimum Numbers (effective 2012-2013)

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Please note: manipulations must recorded with procedures in the Case Log System

The Ohio State University
Department of Orthopaedics

Residency Curriculum

Sports Medicine

About This Curriculum

- It is the responsibility of both the resident and the attending to go over the goals and guidelines included in this handbook
    - At the beginning of the rotation
    - At the conclusion of the rotation
- Additional materials and/or service handbooks may be provided by the attendings at the beginning of the rotation

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Sports Medicine Service Information - OSU

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Schedules

During the 2 month rotation, the PGY 4 sports resident will rotate with the attendings that do not have a sports fellow on their service. The goal is for the resident to have a near even split of sports knee and shoulder, thus you will spend time with several of the attendings throughout your work week and 2 months rotation. However, the schedules are flexible to allow the resident to participate in and see unique cases and also cover an attending that is in need of assistance.

The PGY-2 resident will rotate with Dr. Miller, Dr. Magnussen and Dr. Duerr. The goal is for the resident to have an even split with each attending. It will be expected the resident will prioritize Sports Medicine cases if there is no scheduled responsibilities on any given day.

Monday: Miller OR
Tuesday: Magnussen OR/Clinic
Wednesday: Duerr Clinic
Thursday: Miller Clinic
Friday: Duerr OR

Dr Kaeding

Monday: Administrative / research meetings 12p-5p Clinic at Crane
Tuesday 7a – 3p: surgery, Crane/ 4p – 7p training room
Wednesday: 7a – 11a surgery, Crane / 4 – 7 training room
Thursday: 12p – 6p Clinic (Morehouse)
Friday: 7a – 5p academic

Dr Jones

Monday: 7a OR, Crane
Tuesday: 730a-5p clinic, Crane
Wednesday: 730a-5p clinic, Crame
3rd Wednesday 1p-5p clinic, Crane
Thursday: OR, Crane, 8am
Friday: Academic time

Dr Flanigan

Monday:	7a, OR Crane 1st/3rd and East 2nd/4th
Tuesday:	730a-5p, clinic, Crane
Wednesday:	7a OR Crane
Thursday:	730a-5p, Clinic Crane
Friday:	academic day

Dr Bishop

Monday:	730a-5p, Clinic at Crane
Tuesday:	7a OR at OSU east
Wednesday:	8a-12noon Clinic at Crane Potential afternoon surgery each Wednesday
Thursday:	8a OR at Crame
Friday:	academic time versus add on cases

Dr. Magnussen

Monday:	7a-1130a surgery if needed 12p-5p Clinic at Stoneridge
Tuesday:	7a-12noon surgery at Crane 1p-7p Clinic at Crane
Wednesday:	1030a-3p OR at Crane
Thursday:	730a-1230p Clinic at Stoneridge
Friday:	academic day versus surgery at East if needed

Dr. Miller

Monday:	715a-3p surgery at Crane
Tuesday:	745a-430p Clinic at Healthy New Albany
Wednesday:	715a-3p surgery at Crane
Thursday:	8a-430p Clinic at Gahanna
Friday:	10a-330p Clinic at Crane

Dr. Neviaser

Monday:	8a-12noon Clinic at Lewis Center
Tuesday:	715a-3p Surgery at Crane
Wednesday:	7a-5p Surgery at East
Thursday:	8a-5p Clinic at Crane
Friday:	9a-3p Clinic at Crane

Dr. Duerr

Monday:	7-4p: OR at East
Tuesday:	8-12noon: Clinic at Lewis Center
Wednesday:	7:30-4: Clinic at Crane
Thursday:	8-3:30: Clinic at Gahanna
Friday:	715a-3p: Surgery at Crane

Revised 6/29/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Dilineation of Resident Resposnibilities:
Sports Medicine Service: PGY4

I. Resident Responsibilites for Patient Care

- Rounding: During the course of your rotation, patients may be admitted before and or after surgery. The expectation is for the resident to know about and round on all inpatient surgical patients, even if you were not involved in the case. This is particularly important on the weekends. As of now, there is a rotating senior resident rounding on the weekends at OSU East. If you are not rounding for the weekend, please sign out all Sports Service patients to the resident rounding. Please have the resident call the attending after rounds to discuss issues and management. IF you go out of town, please arrange coverage for the rounding of inpatients. DO NOT make the attending find someone to round on their patients – take care of this prior to leaving.
- Orders: Orders will be done via the current order entry system. There are order sets for UE post-op orders and also for LE and sports cases. Consult MMT on all sports patients that were admitted. Order X-rays in the PACU on all patients that underwent any type of fixation or implant.
- Dictations: Most of the sports medicine attendings do dictate their own operative notes. However, there will be times when you are responsible for the dictation. Before the patient leaves the OR, the decision should be made as to who will be responsible for the dictation. You will be expected to dictate at least one operative report and review this with the attending prior to the conclusion of the service.
- Post-Op Radiographs: As above – all patients that undergo any type of hardware fixation or implant will get radiographs in the PACU. If it is the last case of the day – DO NOT LEAVE – until you see the x-rays were completed and you view them.
- Dressings/drains: If the patients are still in the hospital – all dressings are changed on POD 2 – you do the dressing change and look at the wound – NOT the nurse. If there is a drain – check with that individual attending for when to pull the drain.
- Discharge: Most sports medicine patients will be outpatient surgeries. You will be responsible to coordinate with the PA's filling out the discharge paperwork, instruction sheets, rehab orders and pain medication scripts. Pain medication is unique to each attending and should be discussed with the attending staff for preferences. Discharge paperwork is unique to each attending and you should discuss with the respective attending how they approach this. If there are any inpatients for the service – you will be responsible for the discharge summaries for all inpatients, whether or not you participated in their surgery. Please do this on the day of discharge.
- Communication: Many questions will certainly arise and should be addressed on an as needed basis. Constant communication between all members of the health care team is the best way to get an optimal educational experience and provide the best care possible for each patient.
- Clinic Notes: Resident should be able to create appropriate notes in EPIC for each patient encounter. They should discuss with each attending how to include the pertinent smart sets/phrases to help.

II. Resident Level of Responsibility for Patient Care

- Please understand that patients are real people whom have developed a relationship with the attending physician. They are not limbs or extremities for you to practice surgery skills. Please give the patient and your attending respect by your professionalism, preparation, and diligent hard work. You will in turn learn more and provide confidence in your attending physicians.

- Resident rotations are structured so that the residents have a one-on-one relationship with attendings. The level of responsibility given by the attending to the resident is determined by that attending, depending on the attendings' assessment of the resident's knowledge and skills, and the complexity of the procedure.

- Residents will be expected to be prepared for clinic and OR

- Thorough knowledge of the surgery, surgical approach, and the reasoning, biomechanics, placement, and technique of the surgical reconstuctions/repair and implants used.

- Questions related to any case should be discussed with the attending prior to the case (preferably the day before)

- Residents should see and exam the patient prior to surgery and are EXPECTED to have reviewed all the patient office notes and radiographic studies.

- Lack of preparation will prevent participation

III. Resident Supervision

Attendings are responsible for the direct supervision of residents in both the clinic and the operating room, as well as in on-call situations. Attending physicians are available for consultation at all times.

Senior residents (PGY4 and above) are also directly responsible for the supervision of junior residents (PGY1, PGY2, and PGY3). This applies to all of the above situations (i.e. on-call, in clinic, in the OR). Senior residents must be available for consultation at all times. Ultimately, chief residents (all PGY5's) are responsible for the supervision of all residents, regardless of PGY year.

IV. Performance Feedback

Both attending staff members are available at any time if questions or concerns arise. At the end of each rotation, each attending on the service will evaluate each resident assigned to the service. A meeting should be scheduled at the conclusion of the rotation to discuss performance and provide written feedback on the rotation.

- Resident should arrange a mid-rotation meeting with the primary attendings that they are working with to discuss performance and assess if goals are being met.

ACGME MILESTONES FOR ORTHOPEDICS - Effective July 1, 2013

The milestones were designed by the ACGME for use only in evaluation of resident physicians in the context of their participation in ACGME-accredited residency or fellowship programs. The milestones provide a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Milestones were designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into residency through graduation. The Ortho RRC will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The resident demonstrates milestones expected of an incoming resident.

Level 2: The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.

Level 3: The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.

Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

Note that Level 4 is designed as the graduation *target* but does not represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the residency program director.

The milestones which will be evaluated on the Orthopaedic Oncology rotation are as listed on the following pages:

Anterior Cruciate Ligament (ACL) – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of pathophysiology related to ACL injury (e.g., mechanisms of injury) • Correlates anatomic knowledge to imaging findings on basic imaging studies • Has knowledge of natural history of ACL injury • Demonstrates knowledge of ACL injury anatomy and basic surgical approaches (e.g., ACL bundles)	• Understands pathophysiology of concomitant injuries (e.g., secondary restraints of knee [PL Corner]) • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Ability to grade instability (e.g., translations grade and end point) • Understands the effects of intervention on natural history of ACL injury • Understands alternative surgical approaches (e.g., miniopen, 2 incision) • Understands basic pre-surgical planning and templating • Understands advantages and disadvantages of graft types	• Demonstrates knowledge of current literature and alternative treatments • Understands rehabilitation mechanics (e.g., phases of rehabilitation, closed versus open chain exercises) • Understands biomechanics of the knee and biomechanics of implant choices	• Understands controversies within the field (e.g., graft type, brace treatment, surgical technique and fixation, surgical techniques to include skeletally immature knee) • Applies understanding of natural history to clinical decision-making • Understands how to prevent/avoid potential complications	• Primary author/presenter of original work within the field
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Anterior Cruciate Ligament (ACL) – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam (e.g., age, gender, history of present illness [HPI], past medical history [PMHx], social history, range of motion, effusion, neurovascular status) • Appropriately orders basic imaging studies (e.g., knee radiographs) • Prescribes non-operative treatments (e.g., range of motion [ROM], weight-bearing (WB) status) • Provides basic peri-operative management (e.g., neurovascular status, brace, WB status) • Lists potential complications (e.g., infection, loss of motion, graft failure, neurovascular compromise)	• Obtains focused history and performs focused exam (e.g., mechanism of injury, past knee history, past treatments, Lachman, anterior drawer, pivot shift, meniscal pain) • Appropriately interprets basic imaging studies (e.g., alignment, joint space, patella alignment) • Prescribes and manages non-operative treatment (e.g., closed chain quad strengthening) • Completes pre-operative planning with instrumentation, graft selection and implants • Examines injury under anesthesia (e.g., complete ligament examination) • Provides post-operative management and rehabilitation (e.g., WB status, brace, ROM, quad strength) • Capable of diagnosis and early management of complications (e.g., graft failure, tunnel placement)	• Recognizes concomitant associated injuries (e.g., lateral collateral ligament [LCL], multi ligament, osteochondritis dissecans [OCD], posterior cruciate ligament (PCL), collateral ligaments, posterolateral corner instability, reverse pivot shift) • Appropriately orders and interprets advanced imaging studies (e.g., standing views, magnetic resonance imaging [MRI], Segond fracture, bone bruising) • Provides complex non-operative treatment (e.g., WB status, bracing as appropriate, vascular studies) • Completes comprehensive pre-operative planning with alternatives • Performs diagnostic arthroscopy, notchplasty, and/or graft harvest • Modifies and adjusts post-operative treatment plan as needed (e.g., loss of knee motion treatment, sport specific drills, return to sport)	• Performs graft passage and fixation • Capable of treating complications both intraoperatively and post-operatively (e.g., graft harvest failure, tunnel malposition, chondral injury)	• Performs revision/ transphyseal ACL reconstruction (e.g., hardware removal, outside in drilling techniques) • Develops unique, complex post-operative management plans • Surgically treats complex complications
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Meniscal Tear – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of pathophysiology related to meniscal tear • Correlates anatomic knowledge to imaging findings on basic imaging studies (e.g., joint space height, Fairbank changes) • Understands mechanism of injury • Demonstrates some knowledge of natural history of meniscal tear	• Correlates anatomic knowledge to imaging findings on advanced imaging studies (e.g., tear personality, chondral injury/changes) • Understands biology of meniscal healing • Understands the effects of intervention on natural history of meniscal tear • Demonstrates knowledge of meniscal anatomy and basic surgical approaches • Demonstrates knowledge of non-operative treatment options and surgical indications	• Demonstrates knowledge of current literature and alternative treatments • Understands rehabilitation mechanics (e.g., quad strength closed vs. open chain) • Understands biomechanics and implant choices • Understands alternative surgical approaches (e.g., repair vs. debridement)	• Understands controversies within the field (e.g., repair techniques) • Understands how to prevent/avoid potential complications • Applies understanding of natural history to clinical decision-making	• Primary author/presenter of original work within the field
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Meniscal Tear – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam (e.g., age, gender, HPI, PMHx, social history, ROM, joint tenderness, effusion, neurovascular status • Appropriately orders basic imaging studies (e.g., plain film radiographs) • Prescribes non-operative treatments • Provides basic peri-operative management (e.g., neurovascular status, ROM, brace) • Lists potential complications (e.g., pain, infection, neurovascular injury, loss of motion, degenerative joint disease [DJD])	• Obtains focused history and performs focused exam (e.g., McMurray, Steinmann, applies compression) • Appropriately interprets basic imaging studies (e.g., standing radiographs as needed, Fairbank changes) • Prescribes and manages non-operative treatment (e.g., quad strength closed chain) • Injects/aspirates knee • Examines knee under anesthesia • Provides post-operative management and rehabilitation (e.g., ROM, quad strength closed chain, WB status) • Capable of diagnosis and early management of complications	• Appropriately orders and interprets advanced imaging studies (e.g., MRI findings) • Provides complex non-operative treatment (e.g., concomitant injuries—ligament, fractures) • Capable of performing diagnostic arthroscopy and meniscal debridement • Modifies and adjusts post-operative treatment plan as needed (e.g., knee arthrofibrosis, continued pain)	• Capable of performing meniscal repair—all techniques open and arthroscopic • Capable of performing alternative surgical approaches to a meniscal tear • Capable of treating complications both intra- and post-operatively	• Capable of performing revision of meniscal repair or meniscal transplant • Capable of treating complex complications
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Rotator Cuff Injury – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Understands surgical anatomy (e.g., rotator cuff muscles/tendons, deltoid, axillary nerve position, acromion, biceps, labrum) • Demonstrates knowledge of basic imaging studies: radiographs (e.g., true AP, axillary, supraspinatus outlet)	• Demonstrates knowledge of surgical indications (e.g., non-operative management, therapy, injections, rotator cuff repair, subacromial decompression) • Demonstrates knowledge of basic surgical approaches and portal placement (e.g., anterior, subacromial, posterior, accessory posterior) • Understands pathophysiology related to rotator cuff injury (e.g., impingement, partial thickness cuff tears, extrinsic versus intrinsic theory of cuff tearing) • Understands biology of soft tissue tendon healing • Demonstrates knowledge of advanced imaging studies/lab studies (e.g., MRI, ultrasound, CT arthrogram)	• Demonstrates knowledge of current literature and alternatives • Understands pathophysiology of concomitant injuries (e.g., biceps tendinitis, acromioclavicular joint disease, labral pathology, arthritis) • Understands rehabilitation mechanics (e.g., Neer Phase 1-3) • Understands biomechanics and implant choices • Understands natural history of rotator cuff disease (e.g., symptomatic vs. asymptomatic cuff tears, impingement, intrinsic versus extrinsic mechanisms)	• Understands controversies within field. Examples: single vs. double row repairs, partial repair of massive tears, suprascapular nerve dysfunction • Understands end stage rotator cuff tear arthropathy and treatment options • Understands tear pattern, appropriate repair, biceps tenodesis (e.g., L-shaped, concentric, U-shaped, tissue quality, biceps subluxation) • Understands pathophysiology of failed rotator cuff repair (e.g., biology, implant failure, stiffness, infection, smoking, tendon quality, vascularity)	• Participates in research in the field with publication cites/teaches junior residents appropriate outcomes studies • Understands treatment for massive/irreparable tears • Understands treatments of intra-operative complications (e.g., misalignment of suture anchor, poor exposure, hemostatis, tuberosity fracture, and anchor breakage)
☐	☐	☐	☐	☐	☐	☐	☐	☐
Comments: **Not yet rotated** ☐				

Rotator Cuff Injury – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical examination (e.g., age, gender, smoker, trauma, night pain, weakness, inspection for atrophy, ROM) • Lists surgical complications (e.g., infection, stiffness, RSD, retear)	• Obtains focused history and performs physical examination (e.g., provocative tests, Neer/Hawkins, O'Briens, lag signs, pseudoparalysis, lift-off, belly press, scapular dyskinesia) • Orders basic imaging studies • Performs basic surgical approaches and portal placement (e.g., anterior, subacromial, posterior, accessory posterior) • Performs simple shoulder procedures (e.g., subacromial injection) • Prescribes non-operative treatment • Provides basic post-operative management (e.g., phases of cuff repair rehab, Phase 1-3) • Diagnoses surgical complications	• Interprets basic imaging studies (e.g., rotator cuff tear on MRI, muscle atrophy on MRI, proximal humeral migration on x-ray) • Completes pre-operative planning with instrumentation and implants (e.g., patient positioning, arthroscopic equipment, anchors) • Capable of performing diagnostic arthroscopy, subacromial decompression, distal clavicle resection, biceps tenotomy	• Able to order and interpret advanced imaging studies (e.g., tear size, muscle atrophy, labral tears, arthritis, subscapularis tears) • Completes comprehensive pre-operative planning and alternatives • Capable of performing rotator cuff repair • Appropriately interprets post-operative imaging studies/implant positioning • Modifies and adjusts post-operative rehabilitation plan as needed (e.g., modify for massive cuff repairs, post-operative stiffness) • Treats complications both intra- and post-operatively (e.g., irrigation/debridement for infections, proper infection treatment protocol, infectious disease consultation)	• Capable of performing complex arthroscopic rotator cuff repairs, revision rotator cuff repair, tendon transfers • Surgically treats complex complications (e.g., revision rotator cuff repair with tendon transfer, reverse shoulder replacement for anterosuperior escape)
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments: **Not yet rotated** ☐				

Goals and Objectives
Sports Medicine Rotation – PGY2

I. Core Competency Areas

By the end of the PGY2 rotation in Sports Medicine, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY2 rotation in Sports Medicine, the resident should:

1. Understand physical therapy modalities in general sports medicine
2. Understand and describe the pertinent clinical anatomy of the shoulder, elbow, knee, leg, ankle, and foot
3. Understand and weigh surgical risk and potential benefit for each patient for each surgical procedure considered.
4. Understand and describe the clinical anatomy and biomechanics of the shoulder
5. Understand and describe the mechanics of the throwing motion
6. Understand and describe the relationship between shoulder instability and rotator cuff tendinitis
7. Understand and describe the relationship between impingement and rotator cuff tears.
8. Describe the pathophysiology and the rationale for non-operative treatment of the following pathologic entities related to the shoulder: rotator cuff tendinitis/tear/impingement, Gleno-humeral instability, adhesive capsulitis
9. Describe the indications and rationale for the following procedures related to the shoulder (describe both open and arthroscopic variations of the procedure, indication for each, and rehabilitation protocol): Rotator cuff repair, subacromial decompression, stabilization procedures, Mumford procedure.
10. Understand the differential diagnosis and treatment for anterior knee pain and patellar instability.
11. Understand the typical history and presentation of Anterior or Posterior Cruciate Ligament Injuries
12. Be familiar with the various types of knee braces
13. Understand the healing potential and current treatment options of meniscal tears and chondral defects.
14. Understand the presentation and pathology of meniscal cysts and discoid menisci
15. Understand the non-operative treatment of patella tendinitis, saphenous neuritis, and MCL sprains
16. Understand the post-operative rehabilitation of meniscal repairs and ACL reconstructions
17. Understand the presentation, evaluation and treatment of common post-operative complications of infection and deep venous thrombosis
18. Understand and describe the pathophysiology of Compartment Syndrome
19. Understand and describe the pathophysiology of Stress Fracture
20. Be familiar with special radiographic examinations of the leg and thigh including MRI, CT, and nuclear medicine studies
21. Discuss the possible etiologies of peroneal nerve injury and recognize the signs of peroneal nerve injury.
22. Understand the pathophysiology and presentation of OCD of the talus
23. Understand the pertinent clinical anatomy and biomechanics of the ankle.
24. Understand the non-operative treatment of the following related to the ankle: Peroneal or posterior tibialis tendinitis, ankle sprains, achilles tendinitis, ankle instability
25. Understand the pathophysiology and presentation of the following related to the ankle: the different types of achilles tendinitis, the different types of ankle sprainos, and ankle instability.
26. Understand the presentation and the non-operative treatment of the following related to the elbow: lateral epicondylitis, medial epicondylitis, UCL sprains, ulnar neuritis, olecranon bursitis, and radial head fractures.
27. Understand the pertinent clinical anatomy and biomechanics of the elbow.
28. Understand the pathology and presentation of Panner's Disease (OCD capitellum) and Valgus extension overload

III. Specialty Specific Psychomotor Skills

By the end of the PGY2 rotation in Sports Medicine, the resident should be able to:

1. Write a concise physical therapy prescription
2. Write a physical therapy prescription for the following related to the shoulder: Rotator cuff tendinitis/tear/impingement, gleno-humeral instability, adhesive capusulitis, rotator cuff repair, subacromial decompression, stabilization procedures, and the Mumford procedure.
3. Perform a physical examination of the shoulder and identify all pertinent anatomic landmarks, quantify range of motion, evaluate glenohumeral stability of the rotator cuff and the AC joint
4. Make a clinical diagnosis of the following: Adhesive capsulitis, anterior instability, posterior instability, rotator cuff tendinitis, impingement syndrome, AC joint arthrosis, AC joint separation and grade, and biceps rupture.
5. Identify all pertinent anatomic landmarks of the knee.
6. Evaluate knee range of motion.
7. Make a clinical diagnosis of the following related to the shoulder: labral tear and rotator cuff tear.
8. Know the indications for and perform the following procedures related to the shoulder: distal clavicle excision and open decompression.
9. Evaluate and grade knee stability in varus/valgus, anterior/posterior, and rotatory directions using appropriate clinical tests
10. Make a clinical diagnosis of the following: ACL tear, PCL ter, MCL injury/tear, LCL injury/tear, chondromalacia patella, patella instability, degenerative arthritis, pre-patella bursitis, tibial plateau fracture, quadriceps rupture, patellar tendon rupture, knee dislocation.
11. Make a clinical diagnosis of the following related to the knee: Posterior lateral corner injuries, meniscal tear, loose body, synovitis, plica syndrome, and VMO avulsion
12. Perform and ORIF patella procedure
13. Diagnose and describe the nonoperative treatment of the following related to the thigh/leg: quadriceps contusion, hamstring tear/strain, quadriceps strain/tear, hip flexor/adductor strain/tear, stress fracture of femur or tibia, shin splints, and gastrocnemius strain/tear.
14. Know the indication for and perform the following procedures related to the knee: diagnostic arthroscopy, arthroscopic debridement, partial meniscectomy, abrasion chondroplasty, and patellar tendon repair.
15. Diagnose and describe the non-operative treatment of exertional compartment syndrome, medial tibial stress syndrome, and stress and traumatic fractures of the tibia and fibula.
16. Diagnose the following related to the Leg and Thigh: Exertional compartment syndrome, medial tibial stress syndrome, shin splints, gastrocnemius strain/tear, and Maissoneuve fracture/syndesmosis injury.
17. Know the indications for and be able to perform the following procedures related to the leg/thigh: Compartment releases: Anterior, lateral, and posterior.
18. Be able to perform an intramedullary nailing of stress fracture of the tibia and femur
19. Know the indications for and perform the following procedures related to the ankle: diagnostic arthroscopy, ORIF Jones fracture.
20. Know the indications for and perform the following procedures related to the elbow: diagnostic arthroscopy, tennis elbow debridement, ORIF fractures, Olecranon bursa debridement/drainage.
21. Perform a physical examination of the elbow and identify all pertinent landmarks.
22. Evaluate range of motion and stability of the elbow joint.
23. Diagnose the following related to the elbow: Lateral epicondylitis, medial epicondylitis, ulnar nerve entrapment, valgus extension overload, UCL incompetence, biceps tendinitis or distal rupture, OCD of capitellum, and Olecranon bursitis.
24. Perform the following procedures related to the elbow: Decompression of the Ulnar nerve, reduction of dislocation, and saline arthrogram.

Goals and Objectives
Sports Medicine Rotation – PGY4

I. Core Competency Areas

By the end of the PGY4 rotation in Sports Medicine, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of ones own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions

3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY4 rotation in Sports Medicine and building upon the experiences from the PGY3 rotation, the resident should:

Detailed knowledge of the anatomical structures of the shoulder, elbow, knee and ankle as it relates to sports injuries and surgical approaches and reconstructions

Understand anatomy, physiology, and biomechanics as they relate to patients with sports related injuries and disease

Understanding of the incidence, natural history, cause, historical features, exam findings, classification, non-operative and operative management of the following key sports related injuries:

- ankle sprains
- turf toe
- 5^{th} metatarsal fractures
- lisfranc injuries
- Achilles pathology
- Gastroc strains
- ACL injuries
- Mensical injuries
- Osteochondral defects and cartilage injuries
- Patellofemoral pain syndrome
- Patella dislocations and instability
- Quad mechanism injuries
- Hamstring injuries
- Stress fractures
- Multiligament injuries
- AC sprains and injuries
- Anterior instability

- Multidirection instability
- Rotator cuff pathology and tears
- SLAP tears
- Throwing injuries
- Ulnar collateral ligament injuries
- Distal biceps ruptures
- Game keepers injury
- Mallet finger
- Jersey finger

4. Understanding of incidence, natural history, cause, historical features, exam findings, classification, and return to play issues with the following sports related injuries:
   - Concussion
   - C-spine injuries
   - Stingers
   - Ankle sprains
   - Muscle injuries
   - Stress fractures

5. Understanding the pre-participation examination and key medical issues in sports medicine:
   - Concussion
   - Ocular trauma
   - Asthma
   - Sudden cardiac death
   - Visceral injury
   - Key infections (Mono, HIV, MRSA, Herpes)
   - Ergogenic aids

6. Be familiar with the various types of knee braces
7. Understand the post-operative protocols for various surgeries and decision making for return to full activities.
8. Understand the presentation, evaluation, and treatment of common post-op complications such as arthrofibrosis.
9. Resident should be able to take a detailed and appropriate injury specific history and formulate a differential of pathology, appropriate tests to order, and appropriate indications for surgery.

III. Specialty Specific Psychomotor Skills

The attendings do NOT expect PGY4 residents to be doing a complex knee (ie meniscal repair, ACL reconstruction) or complex shoulder (ie Bankart repair, RTC repair) skin to skin on their rotation. The goal is to provide learning the skills that will need to be put together for your prison experience as a PGY5, to know how to assist properly and understand the flow and thinking of these complex sports cases.
By the end of the PGY4 rotation in Sports Medicine and building upon the experiences from the PGY3 rotation, the resident should:

1. Have a thorough knowledge of the surgery, surgical approach, and the reasoning, biomechanics, placement, and technique of the surgical reconstuctions/repair and implants used.
2. Interpret and synthesize patient history, clinical exam, and diagnostic tests into coherent diagnoses for each condition
3. Perform procedures necessary for the treatment of athletic-associated injuries, including performing the task with a clear understanding of surgical indications
4. In particular, the resident should feel confident in their ability to perform the following at the conclusion of their rotation:
    - Perform a diagnostic knee arthroscopy
    - Perform safely a partial meniscectomy
    - Perform a microfracture
    - Perform graft harvest and preparation in ACL Surgery
    - Doing a notchplasty in ACL surgery
    - Creation of bony tunnels for ACL reconstruction
    - Performing an Achilles repair, patella tendon, or quad tendon repair
    - Perform a diagnostic shoulder arthroscopy
    - Perform a biceps tenotomy
    - Placement of suture anchors in instability or SLAP lesions
    - Passage of suture through the capsule and or labrum
    - Tying arthroscopic suture knot
    - Perform a subacromial decompression
    - Performing a mumford
    - Placement of suture anchors in Rotator cuff tears
    - Understand rotator cuff repair suture management
    - First assist and anticipate all steps of an arthroscopic RCR

Revised 6/19/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Physical Exam Competencies
Sports Medicine Service: PGY3 and PGY4

By the end of the PGY 4 rotation in sports medicine, the resident should be able to demonstrate proficiency in the key physical examination tests

Knee Exam:

- Normal examination of the knee, including:
  - Inspection
    - Gait
    - Effusion
    - Lower extremity alignment
  - Palpation
    - Medial/lateral joint line tenderness
    - Crepitus
  - Range of motion
    - Flexion/extension
  - Neurovascular testing

Special Tests:

Patellofemoral Tests:
- Q angle
- PF apprehension
- PF grind/compression
- PF quadrants
- "J" sign
- Patellar tilt test

Meniscal Tests:
- McMurray's test
- Apley compression test
- Deep knee bend

Other Tests:
- Palpable fluid wave
- Ballotable patella
- Wilson's test

Ligament Stability Tests:
- Valgus stress test
- Varus stress test
- Lachman test
- Anterior drawer
  - Posterior drawer
  - Posterior sag
  - Quadriceps-active test
- Pivot shift
  - Reverse pivot shift
  - Dial test
  - External rotation recurvatum test
  - Hughston posterolateral drawer sign

Shoulder exam:

- Normal examination of the shoulder, including:
  - Inspection: atrophy, deformity, skin changes, prior scars, etc.

- Palpation:
  - AC joint
  - Greater tuberosity
  - Bicipital groove
  - Coracoid process
- Range of motion:
  - Internal/external rotation
  - Forward elevation
  - Abduction/adduction
- Neurovascular testing

Special Tests:

Instability Testing:
- Load and shift test
- Apprehension test
- Relocation sign
- Posterior apprehension sign
- Sulcus sign (with and without external rotation)
- Generalized ligamentous laxity

Rotator Cuff Testing:
- Jobe test (empty can test)
- External rotation “lag” sign
- Hornblower’s sign
- Resisted external rotation at the side and at 90° abduction
- Lift off
- Belly press
- Drop arm

Impingement Testing:
- Neer/Impingement sign
- Hawkin’s test
- Neer Impingement test

Other Tests:
- Cross body adduction
- Yergason’s test
- Speed’s test
- Active compression (O’brien’s test)
- Scapular winging/scapular stabilization
- Adson’s test (thoracic outlet syndrome)
- Spurling’s test (cervical spine involvement)

Revised 6/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Surgical Competencies
Sports Medicine Service: PGY3

By the end of the PGY3 rotation in Sports Medicine, the resident should be able to perform the following procedures:

1. Perform a diagnostic knee arthroscopy
2. Perform safely a partial meniscectomy
3. Perform a microfracture
4. Perform graft harvest and preparation in ACL Surgery
5. Doing a notchplasty in ACL surgery
6. Creation of bony tunnels for ACL reconstruction
7. Performing an Achilles repair, patella tendon, or quad tendon repair
8. Perform a diagnostic shoulder arthroscopy
9. Perform a biceps tenotomy
10. Placement of suture anchors in instability or SLAP lesions
11. Passage of suture through the capsule and or labrum
12. Tying arthroscopic suture knot
13. Perform a subacromial decompression
14. Performing a mumford
15. Placement of suture anchors in Rotator cuff tears
16. Understand rotator cuff repair suture management
17. First assist and anticipate all steps of an arthroscopic RCR

Revised 7/15/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Surgical Competencies
Sports Medicine Service: PGY4

By the end of the PGY4 rotation in Sports Medicine, the resident should be able to perform the following procedures:

1. Perform a diagnostic knee arthroscopy
2. Perform safely a partial meniscectomy
3. Perform a microfracture
4. Perform graft harvest and preparation in ACL Surgery
5. Doing a notchplasty in ACL surgery
6. Creation of bony tunnels for ACL reconstruction
7. Performing an Achilles repair, patella tendon, or quad tendon repair
8. Perform a diagnostic shoulder arthroscopy
9. Perform a biceps tenotomy
10. Placement of suture anchors in instability or SLAP lesions
11. Passage of suture through the capsule and or labrum
12. Tying arthroscopic suture knot
13. Perform a subacromial decompression
14. Performing a mumford
15. Placement of suture anchors in Rotator cuff tears
16. Understand rotator cuff repair suture management
17. First assist and anticipate all steps of an arthroscopic RCR

Revised 9/10

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Sports Medicine Reading Lists – PGY4

1) Hoppenfeld's Orthopedic Surgical Anatomy
2) Deleze and Drez Sports Medicine
3) Cambell's operative orthopaedics
4) Miller's Techniques in Arthroscopy
5) OKU Sports Medicine Update 3

Revised 7/31/19

The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Two Year Curriculum
Sports Medicine Lecture Series and References

Lecture #1
Traumatic Anterior Shoulder Instability/MDI/posterior instability (Dr. Jones)

1) Robinson, CM; Howers, J; Murdoch, H; Will, E; Graham, C. Functional Outcome and Risk of Recurrent Instability After Primary Traumatic Anterior Shoulder Dislocation in Young Patients. JBJS, Vo. 88-A, No. 11, Nov. 2006, Pg. 2326
2) Miller, PJ; Clavert, P; Hatch, GF; Warner, JJ. Recurrent Posterior Shoulder Instability. J Am Acad Orth Surg. Vol. 14, No. 8, Aug. 2006, pg. 464.
Bottoni, CR; Smith, EL; Berkowitz, MJ; Towle, RB; Moore, JH. Arthroscopic Versus Open Shoulder Stabilization for Recurrent Anterior Instability. Am J Sports Med, Vol. 34, NO. 11, Pg. 1730.

Lecture #2
Shoulder injuries in the throwing athlete (Dr. Jones)
(LAP/Internal impingement/biceps injuries)

1) Meister, K. Injuries to the Shoulder in the Throwing Athlete Part I: Biomechanics/Pathophysiology/Classfication of Injury. Am J Sports Med, Vol. 28, No. 2, pg. 265
2) Meister, K. Injuries to the Shoulder in the Throwing Athlete Part II: Evaluation and Treatment. Am J Sports Med, Vol. 28, No. 4, pg. 587.

Lecture #3
Elbow injuries in the throwing athlete (Dr. Neviaser)
(Throwing injuries/arthroscopy/distal biceps_

1) Diagnosis and Treatment of UCL injuries in Athletes. ElAttrache N, Ahmad C
The Elbow and Its Disorders 4th edition Chapt 46 p.658-667. Morrey, Sanchez Sotelo Eds
2) Valgus extension injuries of the elbow in the throwing athlete. Miller CD, Savoie FH. JAAOS 2(5):261-269, 1994.

Lecture #4
Ankle Injuries in the athlete (Dr. Groth)
(OCD/Impingement/sprains/arthroscopy)

1) Lau, Brian, et al. Evaluation and Management of Lateral Ankle Pain Following Injury. JBJS Reviews. 2018;6(8):e7
2) Dekker, Travis, et al. Treatment of Osteochondral Lesions of the Talus: A Critcal Analysis Review. JBJS Reviews. 2017;5(3):e4.

Lecture #5

Quadriceps mechanism/ hamstrings and gastrocnemious injuries/ exertional compartment syndrome (Dr. Magnussen)

1) Figueroa D, Figueroa F, Calvo R. Patellar Tendinopathy: Diagnosis and Treatment. Journal of the American Academy of Orthopaedic Surgeons: December 2016 - Volume 24 - Issue 12 - p e184–e192
2) Fraipont M and Adamson G. Chronic Exertional Compartment Syndrome. J Am Acad Ortho Surg, July/August 2003; 11: 268 – 276.

Lecture #6

ACL Injuries: Adult and Pediatric: (Dr. Kaeding)

1) Chapter 98 "ACL", in DeLee and Drez' Orthopaedic Sports Medicine: Principles and Practice, By Miller + Thompson, 4th edition, 2015. Elsevier/Saunders Publisher.

Lecture #7

PCL/Postero-lateral corner, MCL and Multi-Ligament knee injuries (Dr. Flanigan)

1) Controversies in the Treatment of Knee Dislocations and Multiligament Reconstruction. Levy, BA, et al. JAAOS, Vol. 17, No. 5, pg. 197, April 2009
2) Neurologic and Vascular Injuries Associated With Knee Ligament Injuries. Johnson, ME, Foster, L, DeLee, JC. American Journal of Sports Medicine, Vol. 36, No. 12, pg. 2448, 2008
3) Decision Making in the Multiligament-Injured Knee: An Evidence-Based Systematic Review. Levy, BA, et al. Journal of Arthroscopic and Related Surgery, Vol. 25, No. 4, Aptil 2009, pg. 430

Lecture #8

Patellofemoral joint injuries (Dr. Magnussen)

1) Sanchis-Alfonso V, Dye SF. How to Deal With Anterior Knee Pain in the Active Young Patient. Sports Health. 2017 Jul/Aug;9(4):346-351. doi: 10.1177/1941738116681269.
2) Weber AE, Nathani A, Dines JS, Allen AA, Shubin-Stein BE, Arendt EA, Bedi A. An Algorithmic Approach to the Management of Recurrent Lateral Patellar Dislocation. J Bone Joint Surg Am. 2016 Mar 2;98(5):417-27. doi: 10.2106/JBJS.O.00354.

Lecture #9

Cartilage and meniscus injuries (Dr. Flanigan)

1) Surgical Management of Articular Cartilage Defects in the Knee. Cole, BJ, Pascual-Garrido, C, Grument, RC. JBJS, Vol. 91, page. 1778, 2009.
2) Meniscal Repair. Starke, C., Kopf, S. Peterson, W., Becker, R. Journal of Arthroscopic and Related Surgery, Vol. 25, No. 9, Sept. 2009, pg. 1033

Lecture #10

Hip Joint injuries/arthroscopy indications (Dr. Ryan)

1. Ross JR Larson CM, Bedi A. Indications for Hip Arthroscopy. Sports Health. 2017 Sep/Oct;9(5):402-413.
2. Clohisy JC, Carlisle JC, Beaulé PE, Kim YJ, Trousdale RT, Sierra RJ, Leunig M, Schoenecker PL, Millis MB. A systematic approach to the plain radiographic evaluation of the young adult hip. J Bone Joint Surg Am. 2008 Nov;90 Suppl 4:47-66.

Lecture #11

Event coverage: Medical/ortho emergencies, C spine emergencies, Stingers (return to play), concussion (Dr. Kaeding)

1) Emergency triage of collapsed endurance athletes: a stepwise approach to on-site treatment. Brennan FH, O'Connor FG. *Phys Sportsmed*. 2005 Mar;33(3):28-35

2) Chapter 14 "Team Medical Coverage", in DeLee and Drez' Orthopaedic Sports Medicine: Principles and Practice, By Miller + Thompson, 4th edition, 2015. Elsevier/Saunders Publisher.

Lecture #12

Overuse injuries, tendinopathies, stress fractures (Dr. Kaeding)

1) "Tendinosis – Pathophysiology and Non-operative Treatment", Kaeding C, Best T, *Sports Health*, Vol 1 no 4: 284 – 292, July, 2009

2) "Stress Fractures", Miller T, Kaeding C, Chapter in Rockwood and Green's Fractures in Adults 8th Edition,

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Lecture Readings – Optional/Suggested

Lecture #1

Optional/Suggested

Traumatic Anterior Shoulder Instability/MDI/posterior instability (Dr. Jones)

1) Piasecki, DP, Verma, NN; Romeo, AA; Levine, WN; Bach, BR, Provenchar, MT. Glenoid Bone Deficiency in Recurrent Anterior Shoulder Instability: Diagnosis and Treatment. J Am Acad Orth Surg, Vol. 17, No. 8, Aug. 2009; Pg. 482.
2) Bottoni, CR; Smith, EL; Berkowitz, MJ; Towle, RB; Moore, JH. Arthroscopic Versus Open Shoulder Stabilization for Recurrent Anterior Instability. Am J Sports Med, Vol. 34, NO. 11, Pg. 1730.
3) Schenck, TJ; Brems, JJ. Multidirectional Instability of the Shoulder: Pathophysiology, Diagnosis, and Management. J Am Acad Orth Surg, Vol. 6, No. 1, Feb. 1997, pg. 65.

Lecture #2
Optional/Suggested
Shoulder injuries in the throwing athlete (Dr. Jones)
(LAP/Internal impingement/biceps injuries)

1) Braun, S; Kokmeyer, D; Millet, PJ. Current Concepts Review: Shoulder Injuries in the Throwing Athlete. JBJS, Vol. 91-A, No. 4, Apr. 2009, pg. 966.

Lecture #3
Optional/Suggested
Elbow injuries in the throwing athlete (Dr. Neviaser)
(Throwing injuries/arthroscopy/distal biceps_

1) Biomechanical evaluation of the medial collateral ligament of the elbow Callaway GH1, Field LD, Deng XH, Torzilli PA, O'Brien SJ, Altchek DW, Warren RF J Bone Joint Surg Am. 1997 Aug;79(8):1223-31.
4) Surgical Management of Acute Distal Biceps Tendon Ruptures. Savin DD1, Watson J, Youderian AR, Lee S, Hammarstedt JE, Hutchinson MR, Goldberg BA J Bone Joint Surg Am. 2017 May 3;99(9):785-796.
5) Distal Triceps Tendon Injuries. Keener JD1, Sethi PM2. Hand Clin. 2015 Nov;31(4):641-50
6) Arthroscopy in the Throwing Athlete. **The Elbow and Its Disorders** 4th edition Chapt 39 p.587-595. Morrey, Sanchez Sotelo Eds
7) The outcome of elbow ulnar collateral ligament reconstruction in overhead athletes. A systematic review. Vitale, M. and Ahmad, C. AJSM. 2008; 36 (6): 1193-1205

Lecture #4
Optional/Suggested
Ankle Injuries in the athlete (Dr. Groth)
(OCD/Impingement/sprains/arthroscopy)

1) **DeLee & Drez's Orthopaedic Sports Medicine. Principles and Practice, ed 3 (Vols 1 and 2) DeLee JC, Drez D Jr, Miller MD, eds. Philadelphia, PA 19106, Saunders, 2010.**
2) Taylor, DC et al. Aggressive surgical treatment and early return to sports in athletes with grade III syndesmosis sprains. Am J Sports Med, 35(11): 1833-8, 2007.
3) Gobbi A et al. Osteochondral Lesions of the Talus: Randomized Controlled Trial Comparing Chondroplasty, Microfracture, and Osteochondral Autograft Transplantation. Arthroscopy 22(10): 1085-1092. 2006.
4) Jones, MH and Amendola AS. Acute treatment of inversion ankle sprains: immobilization versus functional treatment. *Clin Orthop Relat Res,* 455: 169-72, 2007.

Lecture #5
Optional/Suggested
Quadriceps mechanism/ hamstrings and gastrocnemious injuries/ exertional compartment syndrome (Dr. Magnussen)

1) Cohen SB, Towers JD, Zoga A, Irrgang JJ, Makda J, Deluca PF, Bradley JP. Hamstring injuries in professional football players: magnetic resonance imaging correlation with return to play. Sports Health. 2011 Sep;3(5):423-30.
2) Kadakia AR[1], Dekker RG 2nd, Ho BS. Acute Achilles Tendon Ruptures: An Update on Treatment. J Am Acad Orthop Surg. 2017 Jan;25(1):23-31. doi: 10.5435/JAAOS-D-15-00187.
3) Bong MR, Polatsch DB, Jazrawi LM, Rokito AS. Chronic exertional compartment syndrome: diagnosis and management. Bull Hosp Jt Dis. 2005;62(3-4):77-84.

Lecture #6
Optional/Suggested
ACL Injuries: Adult and Pediatric: (Dr. Kaeding)

1) "Clinical practice. Anterior Cruciate ligament tear. Spindler KP, Wright RW. N Engl J Med. 2008 Nov 13;359(20):2135-42. Review.
2) "Surgical Techniques and Outcomes after ACL Reconstruction in Pre-adolescent Patients: A Systematic Review", Donaldson C, Flanigan D. Kaeding C, *Arthroscopy* 2010 Nov, 26(11): 1530 – 8

Lecture #7
Optional/Suggested
PCL/Postero-lateral corner, MCL and Multi-Ligament knee injuries (Dr. Flanigan)

1) Acute Management and Surgical Timing of the Multiligament-injured Knee. Gella S, Whelan DB, Stannard JP, MacDonald PB. Instr Course Lect. 2015;64:521-30. Review.
2) Anatomical considerations in multiligament knee injury and surgery. Dwyer T, Whelan D. J Knee Surg. 2012 Sep;25(4):263-74. Review.

Lecture #8
Optional/Suggested
Patellofemoral joint injuries (Dr. Magnussen)

1) Harrison RK, Magnussen RA, Flanigan DC. Avoiding complications in patellofemoral surgery. Sports Med Arthrosc. 2013 Jun;21(2):121-8. doi: 10.1097/JSA.0b013e31828e88a2.
2) Kruckeberg BM, Chahla J, Moatshe G, Cinque ME, Muckenhirn KJ, Godin JA, Ridley TJ, Brady AW, Arendt EA, LaPrade RF. Quantitative and Qualitative Analysis of the Medial Patellar Ligaments: An Anatomic and Radiographic Study. Am J Sports Med. 2017 Oct 1:363546517729818. doi: 10.1177/0363546517729818. [Epub ahead of print]

Lecture #9
Optional/Suggested
Cartilage and meniscus injuries (Dr. Flanigan)

1) The Evidence for Sugical Repair of Articular Cartilage in the Knee. Safran, MR, Seiber, K. JAAOS, Vol. 18, No. 5, May 2010, pg. 259
2) Meniscus Preservation; rationale, repair techniques and results. Boyd, KT, Myers, PT. The Knee, 2003, 1-11.
3) A Systematic Review of Clinical Outcomes in Patients Undergoing Meniscectomy. Salata, MJ, Gibbs, AE, Seklya, JK. The American Journal of Sports Medicine, Vol. 38, 2010, pg. 1907

3. Restoration of articular cartilage. Moran CJ[1], Pascual-Garrido C[1], Chubinskaya S[2], Potter HG[1], Warren RF[1], Cole BJ[3], Rodeo SA[1]. J Bone Joint Surg Am. 2014 Feb 19;96(4):336-44. doi: 10.2106/JBJS.L.01329

Lecture #10
Optional/Suggested
Hip Joint injuries/arthroscopy indications (Dr. Ryan)

1. 1) Tibor LM, Sekiya JK. Differential diagnosis of pain around the hip joint. Arthroscopy. 2008 Dec;24(12):1407-21.
2. Safran MR. The acetabular labrum: anatomic and functional characteristics and rationale for surgical intervention. J Am Acad Orthop Surg. 2010 Jun;18(6):338-45.
3. Martin HD, Kelly BT, Leunig M, Philippon MJ, Clohisy JC, Martin RL, Sekiya JK, Pietrobon R, Mohtadi NG, Sampson TG, Safran MR. The pattern and technique in the clinical evaluation of the adult hip: the common physical examination tests of hip specialists. Arthroscopy. 2010 Feb;26(2):161-72.
4. Menge TJ, Briggs KK, Dornan GJ, McNamara SC, Philippon MJ. Survivorship and Outcomes 10 Years Following Hip Arthroscopy for Femoroacetabular Impingement: Labral Debridement Compared with Labral Repair. J Bone Joint Surg Am. 2017 Jun 21;99(12):997-1004.
5. Larson CM, Stone RM. Current concepts and trends for operative treatment of FAI: hip arthroscopy. Current Reviews in Musculoskeletal Medicine. 2013;6(3):242-249

Lecture #11
Optional/Suggested
Event coverage: Medical/ortho emergencies, C spine emergencies, Stingers (return to play), concussion (Dr. Kaeding)

1) NCAA Sports Medicine Handbook 2009 - 2010, Chapters on "Medical Disqualification", "Management of Concussion", "Management of Heat Illness"
2) "Preventing sudden death on the athletic field: the Emergency action plan". Courson R. *Cur Sports Med Rep.* 2007 Apr;6(2):93-100

Lecture #12
Optional/Suggested
Overuse injuries, tendinopathies, stress fractures (Dr. Kaeding)

1) "High-Risk Stress Fractures: Evaluation and Treatment", Boden P, Osbahr D, Journal of the American Academy of Orthopaedic Surgeons Vol 8, No 6, November/December 200, 344-353
2) "Management and Return to Play of Stress Fractures", C. Kaeding, J. Yu, R. Wright, A. Amendola, K. Spindler, *Clinical Journal of Sports Medicine,* 15(6) November 2005
3) "Classification and Return to Play Considerations for Stress Fractures", J. Diehl, T. Best, C. Kaeding, *Clinics in Sports Medicine*, Vol. 25 No 1, January 2006
4) "Management of Troublesome Stress Fractures", C. Kaeding, K. Spindler, A. Amendola, *American Academy of Orthopaedic Surgery Instructional Course Lectures*, 2004, Volume 53:455-69

Orthopaedic Surgery Minimum Numbers (effective 2012-2013)

Category	Minimum
Knee arthroscopy	**30**
Shoulder arthroscopy	**20**
ACL reconstruction	**10**
THA	**30**
TKA	**30**
Hip fractures	**30**
Carpal tunnel release	**10**
Spine decompression/posterior spine fusion	**15**
Ankle fracture fixation	**15**
Closed reduction forearm/wrist	**20**
Ankle & hind & mid-foot arthro	**5**
Supracondylar humerus perc	**5**
Femur and tibia intramedullary fixation	**25**
All pediatric procedures	**200**
All oncology procedures	**10**

CPT Codes in Each Category

Knee arthroscopy (29850, 29851, 29855, 29856, 29866, 29867, 29868, 29870, 29871, 29873, 29874, 29875, 29876, 29877, 29879, 29880, 29881, 29882, 29883, 29884, 29885, 29886, 29887)

Shoulder arthroscopy (29805, 29806, 29807, 29819, 29820, 29821, 29822, 29823, 29824, 29825, 29826, 29827, 29828)

ACL reconstruction (29888)

THA (27130, 27132, 27134, 27137, 27138)

TKA (27442, 27443, 27445, 27446, 27447, 27487)

Hip fractures (27235, 27236, 27244, 27245)

Carpal tunnel release (64721)

Spine decompression lumbar spine/posterior spine fusion thoracic or lumbar (22612, 22630, 22800, 22802, 22804, 63005, 63012, 63017, 63030, 63042, 63047)

Ankle fracture fixation (27766, 27769, 27792, 27814, 27822, 27823, 27826, 27827, 27828, 27829)

Closed reduction forearm and wrist fractures (25505, 25520, 25535, 25565, 25605, 25624, 25690, 25680, 25675)

Ankle and hind and mid-foot arthrodeses (27870, 28705, 28715, 28725, 28730, 28735, 28737)

Supracondylar humerus percutaneous treatment (24538, 24566, 24582)

Femur and tibia intramedullary fixation (27506, 27759)

Please note: manipulations must recorded with procedures in the Case Log System

The Wexner Medical Center
Ohio State University

Residency Curriculum

Orthopaedic Trauma

Revised 10-14-2019

About This Curriculum

- It is the responsibility of both the resident and attending to go over the goals and guidelines included in this handbook
    - At the beginning of the rotation
    - In the middle of the rotation
    - At the conclusion of the rotation
- Additional materials and/or service handbooks may be provided by the attendings at the beginning of the rotation and throughout the rotation.

Trauma Service Information

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Daily Schedule for Residents and Attendings (subject to change)

	Monday	Tuesday	Wednesday	Thursday	Friday
1	6:15 Combined Main/East Rounds 7:30 Trauma Room (Clinic Quatman)	6:15 Combined Main/East Rounds 7:30 Trauma Room	6:15 Combined Main/East Rounds 7:30 Trauma Room (Clinic PA)	6:30-8:00 M & M 7:30 Rounds APP 8:30 Trauma Room (Clinic Phieffer)	6:00 Combined Main/East Rounds 7:30 Trauma Room (Clinic Ly)
2	6:15 Combined Main/East Rounds 7:30 Trauma Room (Clinic Quatman)	6:15 Combined Main/East Rounds 7:30 Trauma Room	6:00 OITE (Quatman) 6:30 Rounds 7:30 Trauma Room (Clinic PA)	6:00 Trauma research 6:30 Grand Rounds 7:30 Rounds APP 8:30 Trauma Room (Clinic Phieffer)	6:15 Combined Main/East Rounds 7:30 Trauma Room (Clinic Ly)
3	6:15 Combined Main/East Rounds 7:30 Trauma Room (Clinic Quatman)	6:15 Combined Main/East Rounds 7:30 Trauma Room	6:15 Rounds 6:30 UH OR Comm 7:30 Trauma Room (Clinic PA)	6:00 Ortho Faculty Mtg 6:30 Chief led fx conf 7:15 Xray conf / rounds 8:30 Trauma Room (Clinic Phieffer)	6:15 Combined Main/East Rounds 7:30 Trauma Room 8:00 Conf @ NCH (Clinic Ly)
4	6:15 Combined Main/East Rounds 7:30 Trauma Room (Clinic Quatman)	6:15 Combined Main/East Rounds 7:30 Trauma Room	6:00 OITE (Quatman) 6:30 Rounds 7:30 Trauma Room (Clinic PA)	6:30 Grand Rounds 7:30 Rounds APP 8:30 Trauma Room (Clinic Phieffer)	6:15 Combined Main/East Rounds 7:30 Trauma Room (Clinic Ly)
5	6:15 Combined Main/East Rounds 7:30 Trauma Room (Clinic Quatman)	6:15 Combined Main/East Rounds 7:30 Trauma Room	6:00 OITE (Quatman) 6:30 Rounds 7:30 Trauma Room (Clinic PA)	6:30 Grand Rounds 7:30 Rounds APP 8:30 Trauma Room (Clinic Phieffer)	6:15 Combined Main/East Rounds 7:30 Trauma Room (Clinic Ly)

Trauma Faculty Daily Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
Phieffer	Administrative	Trauma Room Resident A & B	Medical Directorship	Clinic CPE Resident A or B (*after conf)	Trauma Room Resident A & B
Ly	Trauma Room Resident A & B	Administrative	Trauma Room Resident A & B	Trauma Room Resident A or B (*after conf)	Clinic CPE Resident A or B
Quatman	Clinic CPE	Trauma Room	Research	Trauma Room or Research	Trauma Room or Research
—					

It will be up to the residents to ensure that coverage in the OR and in clinic is maintained. Please remind the attendings a month prior to any vacation or conference so that appropriate changes to coverage can be obtained. **It is the responsibilities of the Chief residents to make arrangements for coverage and communicate with the attendings.**

Morning triage (Xray Conference) will begin promptly according to the daily schedule. Please see chart above for further detail. When in doubt, the chief should check in with the trauma attending scheduled in the trauma room. Residents assigned to the OR are expected to be in the room by 7:30 Monday, Tuesday, Wednesday, Friday and by 8:30 on Thursdays. The schedule for Thursday will vary depending on the resident conference schedule. The APP will assist in the operating room when the residents are at conferences. One resident will be expected to cover clinic when both residents are here. *Specific requests to participate in certain cases and miss clinic must be discussed with the attending. GME requires that resident need to do at least one day of clinic.* You are expected to be ON TIME for cases, this means in the room for sign-in without delaying the anesthesia induction. If there are extenuating circumstances where you are in the ED helping with a consult, please inform the team so that someone can be present at sign-in.

The intern will be responsible for seeing all ER/Trauma consults as well as floor consults. They will be available to assist with patient care issues and questions and will help to facilitate discharges. If there is time, they are strongly encouraged to come to the operating room to scrub cases.

When emergency medicine (EM) or podiatry residents are on the rotation, please make sure to spend time teaching them Orthopaedics. These include lectures, reviewing x-rays, participating in consults and reduction/splinting procedure etc. They will be doing a one month rotation. Please make this a great learning experience for them.

- **Conferences**

OSU Orthopaedic Trauma Subspecialty Conference Lectures (updated 8-29-2019)

Trauma Service: We meet every morning (Monday - Friday) for x-ray conference. We spend 30 - 45 minutes going over cases that come in overnight. This includes taking the time to teach the residents / medical students about each topic (emphasizing the important points from the didactic lectures). We will incorporate in common questions that are asked on the OITE. Articles relevant to the cases being presented are routinely referenced and residents are encouraged to read them. Every Wednesday, Dr. Quatman leads a separate 30 minutes session to prepare residents for the OITE.

2 months rotating topic list:

Week	Faculty	Topics (www.ota.org)
1	Trauma	Acute management of polytrauma patients OTA G01, G02
2	Trauma	Compartment syndrome, soft tissue, and open fractures OTA G4, G14
3	Trauma	Basic management of Pelvis and acetabular fractures (Dr. Ly's lectures and OTA comprehensive course)
4	Trauma	Geriatric Trauma (pathological, fragility, and bone health)OTA G15, G16, G22, G26
5	Trauma	Hip fractures (femoral neck and intertrochanteric) OTA L02, L03
6	Trauma	Femoral and tibial shaft fractures OTA L04, L09, L10
7	Trauma	Distal femur and tibial plateau fractures OTA L05, L08
8	Trauma	Knee dislocation, patella fractures, extensor mechanism injuries OTA L06, L07
9	Trauma	Ankle and pilon fractures OTA L11, L12
10	Trauma	Basic principles and techiques of internal / external fixation of fractures OTA G07, G08, G10, G11
11	Trauma	Nonunions and malunions (basic principles and management) OTA G17, G24

3rd Thursday: Trauma attending have faculty meeting to attend (0600-700). This will be a resident driven conference. It may be a fracture related discussion or lecture. It may also be a journal article review or OITE questions. Individual topics will be announced at the conference the prior week.

Morbidity and Mortality (M and M)

It will be the responsibility of the Chief on trauma to collect all M and M cases during their trauma rotation. They must then turn in that list to the incoming chief so that all cases can be properly prepared for and presented by the chief/ PGY-2. Cases that are going to be presented should be discussed with the attending at least 48 hours prior to M and M.

Delineation of Resident Responsibilities

I. Resident Responsibilities for Patient Care

In general, we are all responsible to provide exceptional patient care. This begins with the intern and ends with the attending. However, it only works if we are all one team. In general, interns will see consults, work up the patient, and then present to a more senior level resident prior to presenting to the attending. The resident who is in the OR is responsible for being in the room prior to surgery, getting the patient positioned and draped appropriately, and having a good pre- operative plan. The chief resident will be overseeing all aspects of patient care, prioritizing new patients and especially sick patients (i.e. SICU patients). Residents are expected to report to clinic on time, to see patients and formulate a plan (with the attending), and compose an appropriate clinic note and provide discharge medications and paperwork. We are here to help you in any way that we can. Please ask questions if you are unsure of anything. More autonomy in the operating room comes with more preparedness about the indications for surgery, having the appropriate work up completed and working as a team to ensure that all of our patients are treated with the utmost quality and respect.

Patient Care

- The key is not about ordering the tests, x-rays, or consultation but make sure they are executed and get done and that we follow up on these results with an action plan!!!

- **Admitting patients for surgery**

Chief resident should see or know all new patients that are on the schedule for surgery to make sure that the PGY 2 overnight made the correct decision for surgery. Make sure patient is cleared for surgery from standpoint of ACS, medicine, etc. as needed. Make sure c-spine is cleared if positioning in lateral or prone position for the procedure. Labs should be done early so that we can react to them if the labs are abnormal. Labs should include CBC, Chem 7, Coags (PT, PTT, INR), type and screen or cross as needed. Make sure appropriate x-rays are done using above and below principle).

- **Rounds**

Residents are expected to have seen and written a note on all patients on the trauma service each day before going to the operating room or clinic. It is the expectation that the PGY2 on day shift must see their patients that they operated on thru post-op day 2 instead of the night float for continuity of care. All consults need to be seen the same day as the consult is placed. All patients need to be seen on a DAILY basis unless the attending responsible for the patient determines that they can be seen less frequently. Attending rounds will be done after the daily X-ray conference and before the beginning of cases. Weekend rounds should be completed before 8am to allow for patient care issues with regards to timely orders, nursing and ancillary staff issues whether or not cases are posted. Please discuss weekend rounding plans with the attending on call.

Interns and PGY-2 are responsible for updating the daily trauma list.

After conference on Friday, the intern PGY 2 and 5 will sign out to the weekend team to improve patient care pass off but will be expected to return to the hospital to complete the day.

- **Orders**

All orders will be done via EPIC. Please pay careful attention to antibiotics, pain medications, weight bearing status, DVT prophylaxis and imaging studies. Please make sure that all orders are put in and follow up on their completion. *Please be sure that an ALOC (admission level of care) is placed on all patients going to surgery and a certification note is completed regarding hospital admission status.*

- **Discharge**

All patients discharged from the service will have the electronic discharge instructions completed in full. This is a detailed account of the discharge plan. If you are not sure of the plan, ASK. Please be complete and fill in the medications and include all necessary information.

- Weight bearing status
- Name the affected extremity (s)
- ROM permitted of joints, restrictions, etc.
- Braces such as knee immobilizer, fracture boot, etc. and particulars about the brace that need to be addresses
- Postoperative wound/dressing care/showering
- DVT prophylaxis if indicated

Not including all of the necessary information delays the patients care and increases outpatient phone calls to the office.

Discharge summaries should be done expediently after discharge. This is a record of the admission, and should include a complete history, pertinent physical exam, reason for the admission, and a summary of what was done. Include dates for all surgical procedures. Follow-up specifics should be provided as well.

In general, patients will follow-up in 10-14 days for a wound check with our PA or NP. Patients that are discharged with an external fixator will return within the next week to be taught pin care. Pin care teaching while in the hospital is the exception.

Enough pain medication should be written at discharge in order for the patient to make it to their first follow-up visit. The usual protocol is two weeks of Oxycodone 5mg (#120), 1-2 po q 4-6 hours pm. Especially painful surgeries may require the addition of OxyContin SR (#20) 10-20mg po BID but only if approved by the attending Please ask the attending if you are in doubt. *May be updated as new guidelines released…. Make sure documenting on why giving more pain meds. DO NOT give OXYCONTIN

Please follow the pain protocol (check with the trauma team physician for the protocol

- **Documentation**

If you didn't write it down, you didn't do it.

Daily notes: Justify your actions i.e. if you order blood, note that the patient is anemic. Be complete, and note all pertinent diagnoses. Record neurologic exam, pre/post-op, record lab values pre/post-op, medications (pain meds, antibiotics and DVT prophylaxis). Use the standardized notes for all trauma patients.

Please try to follow the recommended format.

Brief Op Note/PQRI/Operative dictation: Before the patient leaves the room, discuss who will be completing the brief op note, PQRI statements and dictation. If you are dictating, list the procedure as listed on the OR record, and mention the name of the attending. **Besureto document* a *complete/detailed postoperative plan.*
Please try to follow the recommended format.

Consults: This must include a complete history, and a thorough musculoskeletal exam. Please identify the orthopaedic attending, the plan, and the weight-bearing status of the patient on the consult. Make sure that you have all the elements necessary so that the attendings can bill for the consult. "Accepting no history on file for medical, surgical and social history" is not acceptable. This is not a complete H&P if it is not in the note as discussed with the patient and updated.
Please try to follow the recommended format.

H&P: This must include a complete history, general exam, thorough musculoskeletal exam, a plan, and who the attending is. If a female patient is going to surgery ask about possible pregnancy and always order a urine pregnancy test.
Please try to follow the recommended format. See attachment for proper consult or H and P note.

Off service patients (ie ACS with ortho injuries). Please do not order labs, xrays, or obtain other consultation (ie medicine or hospitalist) unless you have spoken or communicated with the primary service provider (ie ACS).

Role of the NP and PA

The Advanced Practice Providers are available to help with issues that arise on the orthopedic TRAUMA service. They are not to assist in the care, discharge or ordering of tests on non-trauma patients. They are available to answer patient questions, assist with dressings and help facilitate and coordinate discharges with the assistance of the PCRM. They can assist with patient care issues on inpatients where appropriate. APPs will help in the OR when residents are not available.

Role of the PCRM

The PCRM on the service can be a great help, but he/she does not function as a junior resident or a medical student. He/she is responsible for cutting red tape in planning discharges, obtaining consults, moving patient through the system and managing outpatient issues. He/she is an integral and valuable member of the team and should be treated as such. When possible he/she will round with the team during am rounds. If he/she are not able to make rounds, one member of the team should call/page to update him/her on the progress of all Orthopaedics patients and anticipated problems during the day. The PCRM will work closely with the NP and PA.

Pearls

Pain Management: check with trauma team physician assistants for Our Trauma team pain protocol.

Pain management can be difficult and no one protocol will control pain for every patient. The following should be used as a guideline. Please use your clinical judgment and ask when you are in doubt. For most trauma patients we recommend q 6 hour Tylenol po with a PCA of dilaudid or morphine. You may also add oxycodone 5mg q 3-4 hours prn. If a patient has a number of injuries or this is not controlling the pain, you may add OxyContin 10-20mg BID but always check with attending.

Geriatric patients, in general, are less tolerating of strong narcotics. For these patients we recommend scheduled Tylenol with the addition of 2.5-5mg of oxycodone q 4-6 hour's prn. The following can be found in the FFP guidelines (Appendix A)

MEDICATIONS for geriatric patients
Do not resume bisphosphonates if patient was previously taking one while inpt

- *Pain control (**No** morphine, Demerol, or combination pills):*
  - *scheduled PO 650mg Tylenol q6hrs*
  - *pm Oxycodone 2.5 to 7.5 mg q 4 hrs (use 2.5 mg for over age 85 or mental status changes)*
  - *pm Dilaudid IV (use 0.5mg for over age 85 or mental status changes)*

Hip fractures

Hip fractures, whether femoral neck or intertrochanteric, should be evaluated with an AP pelvis film, an AP and shoot-through lateral of the affected hip, and an internal rotation view of the affected hip. Some patients will benefit from a traction view. Without active medical issues, these patients are being admitted to the ortho service with a HOPS consult. If they are having active medical issues then a medicine service admit with an orthopedic consult would be appropriate. Geriatric fractures should also be designated at FFP patients and the appropriate labs and paperwork should be completed.

Fragility Fracture Patients (FFP)

Please see the FFP inpatient process and order sets (Appendix A)

Emergency Department Films

Radiographic examinations of injuries in the ED require 90 degree views of the fracture, and must show a joint above/below the injury. It is often helpful to pull traction on the injured part to obtain the best quality films for preoperative planning. If outside films are inadequate, repeat them. If films obtained by the ED are inadequate, repeat them or get the additional films that you need. Please remember to push outside films on Powershare to our epic hospital system ASAP.

External fixator patients

External fixator patients will have a dressing placed on their pins in the OR. In general, pin care should not be ordered during the hospital care (with specific exceptions). Pin care teaching will be done in the clinic at the next clinic day. If pin care is ordered, it should be ½ strength NS/peroxide BID. Discuss this with the attending of record before ordering.

Posture

Please pay particular attention to the position of a patient's ankle and knee. Ankles and subtalar joints should be splinted in neutral to prevent equinus contracture. Inadequate splints will be replaced. Legs should be elevated with pillows under the calf (so as not to put pressure on the heel), not under the knee. This results in a knee flexion contracture.

Calcaneus fractures

Patients who are diagnosed with a calcaneus fracture in the ED should have as part of their evaluation: a lateral/axial view of the injured foot, 3 views of the injured ankle and comparison views of the other side, and an axial and coronal CT scan of the calcaneus (no reconstructions). Patients should be put into a well-padded posterior splint with the ankle in neutral position.

Pilon fractures

Patients who are diagnosed with a pilon fracture in the ED should have 3 views of the injured ankle, and in general, an axial CT scan of the ankle. Patients with shortening of the leg should be treated initially with a spanning external fixator. Radiographic studies (plain films of the ankle, and CT scan) should be obtained **AFTER** placement of the external fixator.

Plateau fractures

Patients who are diagnosed with a plateau fracture in the ED should have an AP, oblique, and lateral views of the injured knee, and in general, an axial CT scan of the knee. Patients with shortening of the leg (IV, V, VI) should be treated initially with a spanning external fixator in the OR. Radiographic studies should be obtained **AFTER** placement of the external fixator. Patients with a unicondylar fracture can be splinted in a knee immobilizer.

Pelvic ring injuries

Pelvic ring injuries are identified on the trauma AP pelvis film. Pelvic ring injuries also require an acceptable inlet and outlet view of the pelvis and a CT scan of the entire pelvis. Order CT scans with 3mm cuts. All trauma patients with a pelvic ring injury should have a UA sent and checked for # of RBCs. If RBCs > 25, a cystogram should be ordered to r/o an occult bladder injury.

Acetabulum fractures

Acetabulum fractures are identified in the initial trauma AP pelvis film. These fractures also require an acceptable set of Judet views of the pelvis. A CT scan of the ENTIRE pelvis should also be obtained with 3 mm cuts through the acetabulum and a 3D reconstruction obtained. The definitive CT scan and plain films should be obtained after a hip dislocation has been reduced.

Open fractures

Open fractures are an orthopaedic emergency, and should be treated as such. In the ED, the wound should be examined, grossly irrigated, dressed with a betadine dressing, and splinted. IV antibiotics and tetanus should be given in the ED. Every effort should be made to get the patient to the OR in an expedient manner. Please discuss all of these cases with the chief resident and attending so that a plan can be made. Please see attachment for open fracture protocol with regards to choice of antibiotics.

Fractures discharged from the ED

Patients with fractures discharged from the ED can follow-up in the ortho trauma fracture clinic. An attending clinic is available Monday, Tuesday, Thursday, and Friday. We a PA clinic every Wednesday for postop visit and new patients if need be. Do not specify an attending unless told to do so, so that they can be placed in the first available time slot. ***During daytime hours please call/email Janet Sauer directly at 293-6142 to coordinate a time PRIOR to the pts discharge. If after hours, please get the best phone number from the patient to be reached and email Janet Sauer, and Drs. Phieffer, Ly, Quatman, and Harrison, and give the pertinent pt details, pt MRN, pt best contact phone number to facilitate patient follow-up. Try to present all cases that we are consulted on, even if the patient got discharge from the ED.***

Pressure Ulcers

We have been working with our plastic surgery colleagues on an algorithm to assist with the many pressure ulcer consults that we get. Please see Appendix C for the algorithm. Understand that this is a fluid model and we should be available to help out whenever we can. As always, you should evaluate all consults, get pertinent information, and discuss with the team at morning triage.

Research

We have quite a few research projects going on within the trauma service. If you are interested in doing a project please let us know and we are happy to help you. You may be asked to notify teams of certain patients (i.e. METRC, Trauma Registry). Please be aware that this helps you too. By helping contribute to the data collection it will mean more opportunities for research for residents utilizing these databases.

Our goal at the end of your rotation is to have an idea of how to come up with a trauma research project and to know what the "hot topics" are in the literature right now so that we can be providing the highest level of care to our patients. Monthly lab meetings are meant to help you get familiar with what high level research teams do in terms of research design, analysis, and presentations. Our goal is that you learn some basic research skills for OITE, journal evaluations, presentations and publications.

Own the Bone/OrthoCONNECT:

As part of our division goals, we have a special focus on osteoporosis related fractures and prevention. We participate in the Own the Bone Program to help educate our patients about osteoporosis. We are also a Premier Certified Center for the International Geriatric Fracture Society which demonstrates how dedicated we are to benchmark care for our older fracture patients. You may be asked to help identify these patients, order/follow up on labs and other important initiatives. We are focused on length of stay, avoiding complications, working with interdisciplinary teams and research. We have now started a program called Ortho CONNECT (Comprehensive Outreach Network for Novel, Exceptional Care Transformation). As part of this program we provide mobile outreach. This will mostly be run by the APPs and Dr. Quatman, however, you may be asked to help with triaging patients, provide communication to different providers, direct admit patients that are sent from outreach sites and answer phone calls during late hours and weekends. As this program grows we appreciate any feedback and thoughts you may have to best facilitate a program that is helpful to our patients, provides best quality and safety care and in order to address any challenges we need to be aware of any difficulties you encounter.

Orthopaedic Trauma Physical Exam Competencies

Orthopaedic Trauma Service: PGY 1, 2, and 5

Orthopaedic trauma general survey:

Secondary survey to be completed both in the trauma bay after the primary survey as well as the following day to look for missed injuries

- Complete palpation of all 4 extremities
- Pelvic compression/stress testing
- ROM of all major joints
- Neurovascular assessment of all 4 extremities

Screening neurologic examination:

- Differentiate median/radial/ulnar nerve injury in the upper extremity
- Assess axillary nerve function
- Differentiate sciatic/tibial/deep peroneal/superficial peroneal nerve injury in the lower extremity
- Sensory pattern of the lateral femoral cutaneous nerve

Range of motion: understand the normal ROM of the major joints for assessment after injury or after subsequent fixation

- Shoulder
- Elbow
- Wrist/hand
- Hip
- Knee
- Ankle

Compartment syndrome:

- Understand the physical examination findings of a compartment syndrome
- Demonstrate use of the Stryker needle for compartment pressure monitoring

Ankle-Brachial Index (ABI):

- Understand the indications for use of an ABI in the trauma setting
- Demonstrate proficiency in obtaining an ABI

Orthopaedic Trauma Reading List

A binder containing all pertinent reading materials and articles can be found in the resident library on the 7th floor of prior.

Textbook References:

1) Skelatal Trauma in Adults and Children 3rd Edition. Brown, Jupiter, Levine, Trafton (Eds)
2) Campbell's Operative Orthopaedics. 10th Edition. Canale (Ed)
3) AO Principles of Fracture Management. Colton, Fernandez Doll'Oca, Holz, Kellam, Ochsner (Eds)

Open Fractures/Damage Control/Trauma

1) Soft Tissue Injury Volgas, David OKU 3 Chapter 759-64
2) Pathophysiology of the Trauma patient Menth-Chiari, Wolfgang et al. OKU Trauma 3 Chapter 11 93-106
3) Open Fractures: Evaluation and Management Zalavras, Charalamposet al. JAAOS Vol 11, No 3 May/June 2003 212-219
4) Compartment Monitoring in Tibial Fractures McQueen and Court-Brown. JBJS- British Vol 78-B No.I, Jan 1996 99-104
5) Long Term Disability Following Severe Lower-Limb Trauma. MacKenzie, Bosse, et al JBJS Vol 87-A Number 8, Aug 20051800-1809
6) Changes in the Management of Femoral Shaft Fractures in Polytrauma Patients Pape et al. Journal of Trauma, Injury, Infection, and Critical Care Vol 53, Number 3 2002 452-462
7) Health Care Costs Associated with Amputation or Reconstruction of a Limb-Threatening Injury. Mackenzie, Bosse, et al JBJS Vol 89-A Number 8, Aug2007.1685-1692

Fracture Healing

8) Evolution of the Internal Fixation of Long Bone Fractures Perren, Stephen JBJS-Br; 84-B: November 2002 1093-1110
9) Biomechanics of Locked Plates and Screws Egol et al JOT Volume 18, Number 8 Sept 2004 488-493
10) Reduction With Plates; from Planning and Reduction Technique in Fracture Surgery Mast, Jakob, Ganz (eds) pp48-l 29
11) The Science of Fracture Healing Einhorn, Thomas JOT Volume 19, Number 10 Supplement, November/December 2005 pS4-S6
12) Overview of Biologics Watson, J Tracy JOT Volume 19, Number 10 Supplement, November/December 2005 Sl4-Sl6
13) Bone Morphogenic Protein Science and Studies Lane, Joseph JOT Volume 19, Number 10 Supplement November/December 2005 Sl 7-S22
14) Articular Fractures: Does an Anatomic Reduction Really Change the Result? Marsh et al JBJS Vol 84-A. Number 7, July2002 1259-1271
15) rBMP-2 for Treatment of Open Tibial Fractures BESTT Study Group JBJS 84-A, Number 12, December 2002, 2123-2134

Fractures of the Foot

16) Fractures and Fracture-Dislocations of the Tarsometatarsal Joint Arntz et al. JBJS Vol 70- A. No. 2. February 1988173-181
17) Surgical Treatment of Talar Body Fractures. Vallier et al. JBJS Vol. 86-A Supplement 1, Part 2. Sept 2004. 180-192
18) Operative Compared With Nonoperative Treatment of Displaced, Intra-Articular calcaneal Fractures Buckley et al. JBJS Vol 84-A Number 10, Oct 2002. 1733-1744
19) Operative Treatment in 120 Displaced Intraarticular Calcaneal Fractures Sanders et al. CORR Number 290 pp87-95
20) Current Concepts Review: Displaced Intraarticular Fractures of the Calcaneus. Roy Sanders. JBJS Vol 82-A No. 2 Feb 2000. 225-250

Fractures of the Ankle and Pilon

21) Anatomy of Pilon Fractures of the Distal Tibia Topliss et al. JBJS-Br Vol 87-B. No.5. May 2005 p692-697
22) A Staged Protocol for Soft Tissue Management in the Treatment of Complex Pilon Fractures Sirkin et al. JOT Vol 18, Number 8. Supplement Sept 2004. pS32-S38.
23) Outcomes After Treatment of High-Energy Tibial Plafond Fractures. Pollak et al. JBJS Vol 85-A. Number 10 Oct 2003 pl893-1899.

Fractures of the Tibial Diaphysis

24) Reamed INtramedullary Tibial Nailing Court-Brown, CM JOT Volume 18 No.2, Feb 2004 96-101
25) Prospective Randomized Study of Intramedullary Nails Inserted with and Without Reaming for the Treatment of Open and Closed Fractures of the Tibial Shaft. Finkemeier et al. JOT Vol 14 No.3 March/April 2000 p187-193
26) Fractures of the Proximal Third of the Tibial Shaft Treated with IM Nails and Blocking Screws. Ricci et al. JOT Vol 15. No.4 2001. p 264-270.

Fractures of the Tibial Plateau

27) The Tibial Plateau Fracture: The Toronto Experience 1968-1975 Schatzker et al. CORR Number 138. Jan/Feb 1979 p94-104
28) Tibial Plateau Fractures: A Study of Associated Soft Tissue Injuries. Bennett and Browner. JOT Vol 8 No.3 1994 p183-188
29) The Posterior Shearing Tibial Plateau Fracture Bhattacharyya et al. JOT Vol 19. No.5. May/June 2005 p305-310

Fractures of the Femur

30) Intra-Articular Fractures of the Distal Femur. Rademakers et al. JOT Vol 18. No.4. April 2004. p213-219
31) The Association Between Supracondylar-Intercondylar Distal Femoral Fractures and Coronal Plane Fractures. Nork et al. JBJS 87-A, No.3. March 2005 p564-569
32) OKU Trauma 3 Chapter 34. Fractures of the Distal Femur
33) OKU Trauma 3 Chapter 33. Fractures of the Femoral Diaphysis

Fractures of the Proximal Femur and Hip

34) Ipsilateral Femoral Neck and Shaft Fractures. Wolinsky and Johnson. CORR Number 318, pp81-90
35) Reducing Complications in the Surgical Treatment of Intertrochanteric Fractures. Templeman et al. AAOS Instructional Course Lectures, Vol 54 2005. p409-415
36) Treatment of Reverse Oblique and Transverse Intertrochanteric Fractures with Use of an IM Nail or 95° Screw-Plate. Sadowski et al. JBJS Vol 84-A. No.3. March 2002 P 372-381.
37) Reverse Obliquity Fractures of the Intertrochanteric Region of the Femur. Haidukewych et al. JBJS Vol 83-A. Number 5. May 2001643-649.
38) Anatomy of the Medial Femoral Circumflex Artery and its Surgical Implications. Gautier et al. JBJS-Br. Vol 82-B No. 5 July 2000 679-682
39) Operative Treatment of Femoral Neck Fractures in Patients Between the Ages of Fifteen and Fifty Years. Haidukewych et al. JBJS Vol 86-A. No.8. August 2004. 1711-1716.
40) Internal Fixation Compared with Arthroplasty for Displaced Fractures of the Femoral Neck. Bhandari et al. JBJS Vol 85-A. No.9. p1673-1681.

Pelvis and Acetabulum

41) Radiology of the Normal Acetabulum (Chapter 3) in Fractures of the Acetabulum. Letournel and Judet.
42) Corona Mortis: Incidence and Location. Tornetta et al. CORR Vol 329. August 1996 p97-101
43) Pelvic Ring Disruptions: Effective Classification System and Treatment Protocols. Young and Burgess et al. Journal of Trauma. Vol 30. No.7. July 1990. p848-856
44) Pelvic Fracture Patterns and their Corresponding Angiographic Sources of Hemorrhage. Metz et al. OCNA 35 (2004) p 431-437.
45) Pelvic Fracture in Multiple Trauma: Classification by Mechanism is Key to Pattern of Organ Injury, Resuscitative Requirements, and Outcome. The Journal of Trauma. Vol 29. No.7. July 1989. p981-999
46) Acetabular Fracture Fixation Via a Modified Stoppa Limited Intrapelvic Approach. Cole and Bolhofner. CORR. Number 305. pl 12-123.
47) Operative Treatment of Acetabular Fractures Through and Ilioinguinal Approach. Matta, Joel. CORR. Number 305. pl0-19.

Fractures of the Shoulder Girdle

48) Acute and Traumatic Injuries of the Stem clavicular Joint. Wirth and Rockwood. JAAOS. Vol4. No.5. Sept/Oct 1996. 268-278.
49) Deficits Following Nonoperative Treatment of Displaced Midshaft Clavicular Fractures. McKee et al. JBJS. Vol 88-A. Number 1. Jan 2006 p35-40.
50) Modified Judet Approach to the Scapula. Obremsky and Lyman. JOT Volume 18, No.10. Nov/Dec 2004. p696-699.
51) The Floating Shoulder: Clinical and Functional Results. Ego! et al. JBJS Vol 83-A. Number 8. August 2001. pl188-1194.

Fractures of the Humerus and Elbow

52) Fractures of the Humerus with Radial-Nerve Paralysis. Holstein and Lewis. JBJS. Vol 45-A. No.7 Oct 1963. 1382-1388
53) Functional Bracing of Fractures of the Shaft of the Humerus. Sarmiento et al. JBJS. Vol 59-A. No.5. July 1977.p596-600.
54) Intramedullary Stabilization of Humeral Shaft Fractures in Patients with Multiple Trauma. Brumback et al. JBJS. Vol 68-A. No. 7. Sept 1986. p 960-969.
55) ORIF of Fractures of the Radial Head Ring et al. JBJS Vol 84-A. No 10. October 2002. 1811-1814

Miscellaneous

56) The Use of Antibiotic-Impregnated, Osteoconductive, Bioabsorbable Bone Substitute in the Treatment of Infected Long Bone Defects. McKee et al. JOT Vol 16. No.9. 2002 p622-627.
57) Exchange Intramedullary Nailing. Court-Brown et al. JBJS-Br Vol 77-B. No.3. May 1995. p408-411.
58) The Accuracy of the Saline Load Test in the Diagnosis of Traumatic Knee Arthrotomies. Keese et al. JOT. Volume 21. No 7. August 2007. p442-443.
59) Radiation Exposure with use of the Mini C-arm for Routine Orthopaedic Imaging Procedures. Badman et al. JBJS Vol87-A. No.1. Jan 2005. 13-17.
60) Polytrauma in the Elderly. Lonner and Koval. CORR Number 318 1995. p136-143

Orthopaedic Trauma Lecture Series and References

NOTE: All readings are available in the Trauma Binder in the Resident Library as well as online on the orthopaedic website.

Ask Julia Panzo if you have any questions.

Two Year Curriculum

***Trauma Lecture Series and References UPDATED REQUIRED* readings 8-10-2018.**

NOTE: All readings are available in the Trauma Binder in the Resident Library as well as on-line on the orthopaedic website.

Lecture #1

Principles of Fractures

a. Principles of Minimally Invasive Fracture Care. Lee MA, Eastman JG. OKU Trauma 5. Chapter 5. 43-54.
b. Biomechanics of Fracture Healing. Lowe JA, Herman A. OKU Trauma 5. Chapter 7. 67-72.

Lecture #2

Evaluation of the polytrauma patient (Ly)

a. Timing of Fracture Fixation in Multitrauma Patients: The Role of Early Total Care and Damage Control Surgery; Hans-Christoph Pape, Paul Tornetta, Ivan Tarkin, Christopher Tzioupis, Vani Sabeson, Steven A. Olson. JAAOS Sept. 2009, Vol 17, No 9, 541-549.
b. Management of the Polytrauma Patient and Damage Control Orthopaedic Care. Vallier, HA. OKU Trauma 5, Chapter 19. 219-228.

Lecture #3

Pelvic/acetabular fractures (Ly)

a. Pelvic Fractures: Part 1. Evaluation, Classification, and Resuscitation; Joshua R. Langford, Andrew R. Burgess, Frank A. Liporace, George J. Haidukewych. JAAOS 2013, Vol 21, No 8, 448-457.
b. Evaluation and Management of Acetabular Fractures. Firoozabadi, R. Kleweno, C. OKU Trauma 5. 403-418.

Lecture #4

Hip dislocations / Femoral head and neck / Proximal femur fractures (Quatman)

a. Hip Dislocations and Femoral Head Fractures (Mullis B, DeFalco CA) and Femoral Neck Fractures in the Younger Patient (Collinge C, Mir H). OKU Trauma 5. Chapters 36 and 37. 457-474.
b. Intertrochanteric fractures: ten tips to improve results. Haidukewych GJ. Instr Course Lect. 2010;59:503-9. Review.

Lecture #5

Femoral shaft and distal femur fractures

a. Femoral Shaft Fractures. McLaurin TM, Sparks CY. OKU Trauma 5. Chapter 39. 483-492.
b. Fractures of the Distal Femur. Avilucea FR, Archdeacon MT. OKU Trauma 5. Chapters 40. 493-506.

Lecture #6

Principles of open fracture management/Orthopaedic Emergencies (Quatman)

a. Evaluation and Management of Soft-Tissue Injury and Open Fractures. Manson, TT and Pensy, RA. OKU Trauma 5. Chapter 14. 161-174.
b. Acute Compartment Syndrome. Doro C. OKU Trauma 5. Chapter 20. 229-240.

Lecture #7

Fractures about the Knee: Patella, tibial plateau (Phieffer)

a. Patella Fractures and Extensor Mechanism Injuries. Jones T, Tucker MC. OKU Trauma 5. Chapter 41. 507-522.
b. Fractures of the Tibial Plateau. Zura R, Kahn M. OKU Trauma 5. Chapter 43. 533-550.

Lecture #8

Tibial shaft and tibial pilon fractures (Phieffer)

a. Controversies in the intramedullary nailing of proximal and distal tibia fractures. [Review]Tejwani N; Polonet D; Wolinsky PR. Journal of the American Academy of Orthopaedic Surgeons. 22(10):665-73, 2014 Oct.
b. Distal Tibial Pilon Fractures. Hartsock LA, White PH. OKU Trauma 5. Chapter 46. 575-586.

Lecture #9

The mangled lower extremity/soft tissue injury/coverage (Ly)

a. MacKenzie EJ et al: Factors influencing outcome following limb-threatening lower limb trauma: Lessons learned from the Lower Extremity Assessment Project (LEAP). J AM Acad Orthop Surg 2006;1 (10Spec No.,Suppl)S205-S210.
b. The Mangled Lower Extremity. Ming BW, Bosse MJ. OKU Trauma 5 Chapter 15.

Lecture #10

Geriatric trauma (Quatman)

a. Femoral Neck Fractures in the Geriatric Population (Florschutz AV, Langford JR, Koval KJ) and Intertrochanteric Hip Fractures in the Geriatric Population (Tejwani NC, Aggarwal VK). OKU Trauma 5. Chapters 49 and 50. 613-636.
b. Global Forum: Fractures in the Elderly. Court-Brown CM1, McQueen MM2. J Bone Joint Surg Am. 2016 May 4;98(9):e36.
c. The American Academy of Orthopaedic Surgeons Evidence-Based Guideline on Management of Hip Fractures in the Elderly. Brox WT, Roberts KC, Taksali S, Wright DG, et al. J Bone Joint Surg Am. 2015 Jul 15;97(14):1196-9.

Lecture #11

Arm/Elbow fractures

a. Humeral Shaft Fractures (Walmsley D, Schemitsch EH) and Distal Humerus Fracture (Sela Y, Baratz ME). OKU Trauma 5. Chapters 23 and 24. 263-294.
b. Fractures of the Proximal Radius and Ulna, and Dislocation of the Elbow. Varecka T. OKU Trauma 5. Chapter 25. 295-308.

Lecture #12

Complications of Trauma/Malunion/Nonunion (Phieffer)

a. Nonunions (Brewer J, O'Connor DP, Brinker MR) and Malunions (Swanson E). OKU Trauma 5. Chapters 10 and 11. 97-130.
b. Diagnosis and Management of Infection Associated with Fractures and Nonunions. Achor TS and Gary JL. OKU Trauma 5. Chapter 13. 141-160.

Lecture #1

Principles of Fractures (Dr. Phieffer)

Evolution of the Internal Fixation of Long Bone Fractures Perren, Stephen JBJS-Br; 84-B: November 2002 1093-1110

a. Biomechanics of Locked Plates and Screws Egol et al JOT Volume 18, Number 8 Sept 2004 488-493

b. Reduction With Plates; from Planning and Reduction Technique in Fracture Surgery Mast, Jakob, Ganz (eds) pp48-129
c. The Science of Fracture Healing Einhorn, Thomas JOT Volume 19, Number 10 Supplement, November/December 2005 p S4-S6
d. Overview of Biologics Watson, J Tracy JOT Volume 19, Number 10 Supplement, November/December 2005 S14-S16

Lecture #2
Evaluation of the Polytrauma Patient (Dr. Ly)

e. Changes in the Management of Femoral Shaft Fractures in Polytrauma Patients Pape et al. Journal of Trauma, Injury, Infection, and Critical Care Vol 53, Number 3 2002 452-462
f. Pathophysiology of the Trauma patient Menth-Chiari, Wolfgang et al. OKU Trauma 3 Chapter 11 93-106

Lecture #3
Pelvic/Acetabular Fractures (Dr. Ly)

g. Radiology of the Normal Acetabulum (Chapter 3) in Fractures of the Acetabulum. Letournel and Judet.
h. Corona Mortis: Incidence and Location. Tornetta et al. CORR Vol 329. August 1996 p97-101
i. Pelvic Ring Disruptions: Effective Classification System and Treatment Protocols. Young and Burgess et al. Journal of Trauma. Vol 30. No.7. July 1990. p848-856
j. Pelvic Fracture Patterns and their Corresponding Angiographic Sources of Hemorrhage. Metz et al. OCNA 35 (2004) p 431-437.
k. Pelvic Fracture in Multiple Trauma: Classification by Mechanism is Key to Pattern of Organ Injury, Resuscitative Requirements, and Outcome. The Journal of Trauma. Vol 29. No.7. July 1989. p981-999
l. Acetabular Fracture Fixation Via a Modified Stoppa Limited Intrapelvic Approach. Cole and Bolhofner. CORR. Number 305. p112-123.
m. Operative Treatment of Acetabular Fractures Through and Ilioinguinal Approach. Matta, Joel. CORR. Number 305. p10-19.

Lecture #4
Fractures and Dislocations about the Hip (Dr. Quatman)

n. Reducing Complications in the Surgical Treatment of Intertrochanteric Fractures. Templeman et al. AAOS Instructional Course Lectures, Vol 54 2005. p409-415
o. Treatment of Reverse Oblique and Transverse Intertrochanteric Fractures with Use of an IM Nail or 95^0 Screw-Plate. Sadowski et al. JBJS Vol 84-A. No.3. March 2002 P 372-381.
p. Reverse Obliquity Fractures of the Intertrochanteric Region of the Femur. Haidukewych et al. JBJS Vol 83-A. Number 5. May 2001643-649.
q. Anatomy of the Medial Femoral Circumflex Artery and its Surgical Implications. Gautier et al. JBJS-Br. Vol 82-B No. 5 July 2000 679-682
r. Operative Treatment of Femoral Neck Fractures in Patients Between the Ages of Fifteen and Fifty Years. Haidukewych et al. JBJS Vol 86-A. No.8. August 2004. 1711-1716.
s. Internal Fixation Compared with Arthroplasty for Displaced Fractures of the Femoral Neck. Bhandari et al. JBJS Vol 85-A. No.9. p1673-1681.

Lecture #5

Femoral Injuries (Dr. Quatman)

t. OKU Trauma 3 Chapter 33. Fractures of the Femoral Diaphysis
u. Ipsilateral Femoral Neck and Shaft Fractures. Wolinsky and Johnson. CORR Number 318, pp81-90

Lecture #6

Principles of Open Fracture Management/Orthopaedic Emergencies (Dr. Phieffer)

v. Open Fractures: Evaluation and Management Zalavras, Charalampos et al. JAAOS Vol 11, No 3 May/June 2003 212-219
w. Compartment Monitoring in Tibial Fractures McQueen and Court-Brown. JBJS-British Vol 78-B No.1, Jan 1996 99-104

Lecture #7

Fractures about the Knee (Dr. Phieffer)

x. Intra-Articular Fractures of the Distal Femur. Rademakers et al. JOT Vol 18. No.4. April 2004. p213-219
y. The Association Between Supracondylar-Intercondylar Distal Femoral Fractures and Coronal Plane Fractures. Nork et al. JBJS 87-A, No.3. March 2005 p564-569
z. OKU Trauma 3 Chapter 34. Fractures of the Distal Femur
aa. The Tibial Plateau Fracture: The Toronto Experience 1968-1975 Schatzker et al. CORR Number 138. Jan/Feb 1979 p94-104
bb. Tibial Plateau Fractures: A Study of Associated Soft Tissue Injuries. Bennett and Browner. JOT Vol 8 No.3 1994 p183-188
cc. The Posterior Shearing Tibial Plateau Fracture Bhattacharyya et al. JOT Vol 19. No.5. May/June 2005 p305-310

Lecture #8

Tibial Injuries (Dr. Ly)

dd. SPRINT Investigators: Randomized trial of reamed and undreamed intramedullary nailing of tibial shaft fractures. J Bone Joint Surgery 2008: Vol. 90A Edition 12 p. 2567-2578.
ee. Controversiesin theintramedullary nailing of proximal anddistal tibia fractures. [Review]Tejwani N; Polonet D; Wolinsky PR. Journal of the American Academy of Orthopaedic Surgeons. Vol 22 Chpt. 10 p. 665-73, 2014 Oct.
ff. Open tibial shaft fractures: I. Evaluation and initial wound management. Melvin JS; Dombroski DG; Torbert JT; Kovach SJ; Esterhai JL; Mehta S. Journal of the American Academy of Orthopaedic Surgeons. Vol. 18 Chpt. 1 p.10-19, 2010 Jan.
gg. Open tibial shaft fractures: II. Definitive management and limb salvage. Melvin JS; Dombroski DG; Torbert JT; Kovach SJ; Esterhai JL; Mehta S. Journal of the American Academy of Orthopaedic Surgeons. Vol. 18 Chpt. 2 p. 108-117, 2010 Feb.
hh. Reamed Intramedullary Tibial Nailing Court-Brown, CM JOT Volume 18 No.2, Feb 2004 96-101
ii. Fractures of the Proximal Third of the Tibial Shaft Treated with IM Nails and Blocking Screws. Ricci et al. JOT Vol 15. No.4 2001. p 264-270.
jj. OKU Trauma 4: Fractures of the ankle and distal pilon. Barei DP, Crist BD. Chpt 38 p. 508-511.
kk. A Staged Protocol for Soft Tissue Management in the Treatment of Complex Pilon Fractures Sirkin et al. JOT Vol 18, Number 8. Supplement Sept 2004. pS32-S38.
ll. Outcomes After Treatment of High-Energy Tibial Plafond Fractures. Pollak et al. JBJS Vol 85-A. Number 10 Oct 2003 p1893-1899.
mm. Crist BD; Khazzam M; Murtha YM; Della Rocca GJ. Pilon fractures: Advances in surgical management. Journal of the American Academy of Orthopaedic Surgeons. 19(10):612-22, 2011 Oct.

Lecture #9

The Mangled Lower Extremity/Soft Tissue Injury/Coverage (Dr. Ly)

nn. An Analysis of outcomes of reconstruction or amputation after leg threatening injuries. Bosse MJ et al. N Engl J Med 2002; Vol 347 Chpt. 24 p.1924-1931

oo. Long-term persistence of disability following severe lower-limb trauma: Results of a seven-year follow-up. MacKenzie EJ et al. J Bone Joint Surgery Am 2005; Vol. 87 chpt. 8 p.1801-1809.

pp. Ability of lower-extremity injury severity scores to predict functional outcome after limb salvage. Ly TV et al. J Bone Joint Surg Am 2008; Vol. 90 Chpt. 8 p.1738-1743.

qq. Factors influencing outcome following limb-threatening lower limb trauma: Lessons learned from the Lower Extremity Assessment Project (LEAP). MacKenzie EJ et al. J AM Acad Orthop Surgery 2006; Vol. 1 Chpt. 10 Spec No.,Suppl)S205-S210.

Lecture #10

Geriatric Trauma (Dr. Quatman)

rr. Polytrauma in the Elderly. Lonner and Koval. CORR Number 318 1995. p136-143

Lecture #11

Arm/Elbow Fractures (Dr. Quatman)

ss. Fractures of the Humerus with Radial-Nerve Paralysis. Holstein and Lewis. JBJS. Vol 45-A. No.7 Oct 1963. 1382-1388

tt. Functional Bracing of Fractures of the Shaft of the Humerus. Sarmiento et al. JBJS. Vol 59-A. No.5. July 1977. p596-600.

uu. Intramedullary Stabilization of Humeral Shaft Fractures in Patients with Multiple Trauma. Brumback et al. JBJS. Vol 68-A. No. 7. Sept 1986. p 960-969.

vv. ORIF of Fractures of the Radial Head Ring et al. JBJS Vol 84-A. No 10. October 2002. 1811-1814

Lecture #12

Complications of Trauma/Malunion/Nonunion (Dr. Phieffer)

ww. Exchange Intramedullary Nailing. Court-Brown et al. JBJS-Br Vol 77-B. No.3. May 1995. p408-411.

xx. The Use of Antibiotic-Impregnated, Osteoconductive, Bioabsorbable Bone Substitute in the Treatment of Infected Long Bone Defects. McKee et al. JOT Vol 16. No.9. 2002 p622-627.

yy.Articular Fractures: Does an Anatomic Reduction Really Change the Result? Marsh et al JBJS Vol 84-A. Number 7, July 2002 1259-1271

zz.rBMP-2 for Treatment of Open Tibial Fractures BESTT Study Group JBJS 84-A, Number 12, December 2002, 2123-2134

Resident Level of Responsibility for Patient Care

The level of responsibility given by the attending to the resident is determined by that attending, depending on the attending's assessment of the resident's knowledge and skills, and the complexity of the procedure.

Resident Supervision

Attendings are responsible for the direct supervision of residents in the clinic, operating room and while on-call. Attending physicians are available for consultation at all times.

Senior residents (PGY4 and above) are also directly responsible for the supervision of junior residents (PGY1, PGY2, and PGY3). This applies to all of the above situations (i.e. on-call, in clinic, in the OR). Senior residents must be available for consultation at all times. Ultimately, chief residents (all PGY5's) are responsible for the supervision of all residents, regardless of PGY year.

Performance Feedback

Both attending staff members are available at any time if questions or concerns arise. At the beginning, middle and end of each rotation, each attending on service will evaluate each resident assigned to the trauma service. A meeting should be scheduled at the conclusion of the rotation to discuss performance and provide written feedback on the rotation.

The ACGME has recently began the Orthopedic Surgery Milestone Project. This project will list several milestones that each resident will be graded on during their training. Each milestone is broken down into medical knowledge and patient care. For trauma, there are 4 milestones that you will be evaluated on: Ankle Fracture, Diaphyseal Femur and Tibia Fracture, Adult Elbow Fracture, Hip Fracture.

Please see appendix B for a list of these milestones.

In addition to these milestones, we still require all residents to meet certain core competencies, obtain specialty specific knowledge and develop psychomotor skills. Rotation evaluations will be completed based on the attendings opinion of successful completion of the competencies found below under goals and objectives. As of now, the ACGME milestones are NOT a requirement for graduation. The "year-specific" competencies listed below are used to determine if you have successfully completed your trauma rotation.

Goals and Objectives

Orthopaedic Trauma Rotation: PGY1

General Rotation Information

The Orthopaedic rotation is intended to provide the PGY1 orthopaedic resident with an introduction to the diagnosis and management of orthopaedic trauma and related disorders. The focus of this rotation is on developing the proper thought processes and the basics of history and physical examination as well as the general principles of musculoskeletal diseases, pathology, and their manifestation. Emphasis will be placed on the initial history, physical examination, imaging and treatment of patients with skeletal injury. The inpatient management of orthopaedic trauma patients as well as the coordination of care and consultants will be a primary area of focus. Introduction to definitive methods of care will be introduced in a graded fashion. This rotation is directed by Dr. Phieffer with assistance by Dr. Ly.

I. Core Competency Areas

By the end of the PGY1 rotation in Orthopaedic Trauma, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families.
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system.
3. Responsiveness to the individual needs of patients and their families.
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis.
6. Evaluation of risks, benefits, and alternative treatments.
7. Implementation of a complete and effective treatment plan (operative and non-operative).
8. Counsel of patient and family in treatment procedure, options, and potential outcomes.
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health.
10. Understanding of and performance of medical procedures related to treatment plan.
11. Ability to work well with entire team of health care professionals and be involved in care of the patient.

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately.
2. Investigation of topics as needed for clinical assignments.
3. Understanding and use of basic science principles as related to medical practice.

Practice-Based Learning

1. Assessment of one's own patient management skills and ability to make appropriate changes in practice.
2. Integration of evidence from scientific studies in the care of patient's problems.
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies.

4. Usage of available information technology to obtain and manage information.
5. Willingness to take time to educate students and other health care professionals.

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families.
2. Ability to listen to patients and include them in treatment decisions.
3. Ability to listen to information provided by other members of the health care team.

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients.
2. Demonstration of an ethically sound practice of medicine.
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients.

Systems-Based Practice

1. Knowledge of how to provide cost-effective care.
2. Willingness to advocate for patients within the health care system.
3. Referral of patient to appropriate practitioners and agencies within the health care system.
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care.

II. Specialty Specific Knowledge

By the end of the PGY1 rotation in Orthopaedic Trauma, the resident should:

1. Understand the diagnosis and management of orthopaedic trauma and related disorders.
2. Understand and develop a systematic approach to the evaluation of trauma patients in all areas of the hospital, including the emergency department, inpatient wards, and clinic.
3. Develop the proper thought processes in regard to order of care of the multiply injured patient.
4. Understand the pathoanatomy of long bone fractures including recognition of associated injuries, classification of fractures, and temporary stabilization.
5. Be able to classify and correctly workup periarticular injuries including pilon, plateau, distal femur, distal radius, elbow and shoulder fractures.
6. Be able to classify and correctly workup pelvis and acetabular injuries.
7. Understand the decision to advance from splint stabilization to operate stabilization via external fixator for periarticular injuries.
8. Understand the treatment methods for major joint dislocations, including when to order adjunctive tests including angiograms.
9. Recognize orthopedic surgical emergencies.
10. Manage the patients on the orthopaedic trauma service under the direction of the attending physician and senior resident.
11. Effectively communicate the orthopaedic needs of patients to consulting services.
12. Coordinate the care of our patients with consulting services.

III. Specialty Specific Psychomotor Skills

By the end of the PGY1 rotation in Orthopaedic Trauma, the resident should be able to:

1. Evaluate traumatic fractures, dislocations, and injuries in the emergency department.
2. Demonstrate effective patient management skills, in both the inpatient and outpatient settings.
3. Demonstrate appropriate management of major joint dislocations.
4. Demonstrate appropriate reduction techniques for basic fractures, including distal radius, forearm, humerus, tibial shaft, ankle, and foot fractures.
5. Apply proper splinting techniques for fractures.
6. Advance understanding of appropriate patient positioning and operating room setup.
7. Advance basic surgical techniques, including suturing and wound management.

Goals and Objectives
Orthopaedic Trauma Rotation: PGY2

General Rotation Information

The Orthopaedic rotation is intended to provide the PGY2 orthopaedic resident with an introduction to the diagnosis and management of orthopaedic trauma and related disorders. The focus of this rotation is on developing the proper thought processes and the basics of history and physical examination as well as the general principles of musculoskeletal diseases, pathology, and their manifestation. Emphasis will be placed on the initial history, physical examination, imaging and treatment of patients with skeletal injury. Introduction to definitive methods of care will be introduced in a graded fashion. This rotation is directed by Dr. Phieffer with assistance by Dr. Ly.

I. Core Competency Areas

By the end of the PGY2 rotation in Orthopaedic Trauma, the resident should demonstrate progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and inpatient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of one's own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY2 rotation in Orthopaedic Trauma, the resident should:

13. Understand the diagnosis and management of orthopaedic trauma and related disorders.
14. Understand and develop a systematic approach to the evaluation of trauma patients in all areas of the hospital, including the emergency department, inpatient wards, and clinic.
15. Develop the proper thought processes in regard to order of care of the multiply injured patient.
16. Understand the pathoanatomy of long bone fractures including recognition of associated injuries, classification of fractures, and temporary stabilization.
17. Be able to classify and correctly workup periarticular injuries including pilon, plateau, distal femur, distal radius, elbow and shoulder fractures
18. Be able to classify and correctly workup pelvis and acetabular injuries
19. Understand the decision to advance from splint stabilization to operate stabilization via external fixator for periarticular injuries.
20. Understand the treatment methods for major joint dislocations, including when to order adjunctive tests including angiograms.
21. Recognize orthopedic surgical emergencies

III. Specialty Specific Psychomotor Skills

By the end of the PGY2 rotation in Orthopaedic Trauma, the resident should be able to:

8. Evaluate traumatic fractures, dislocations, and injuries in the emergency department.
9. Demonstrate effective patient management skills, in both the inpatient and outpatientsettings.
10. Demonstrate appropriate management of major joint dislocations
11. Demonstrate appropriate reduction techniques for basic fractures, including distal radius, forearm, humerus, tibial shaft, ankle, and foot fractures.
12. Apply proper splinting techniques for fractures
13. Advance your skill in the treatment of basic fractures including antegrade femoral and tibial nailing, retrograde femoral nailing, ORIF of distal radius, both bone forearm, and ankle fractures
14. Understand and apply proper techniques in the placement of external fixators that span the knee and those that span the ankle.

Goals and Objectives

Orthopaedic Trauma Rotation: PGY5

General Rotation Information

The PGY5 Orthopaedic Trauma rotation is built upon the knowledge and skills acquired in the previous Trauma rotations. The resident at the end of the PGY5 rotation, should be able to perform all of the goals and objectives of the PGY2 rotation in addition to the advanced goals and objectives listed below. This rotation is directed by Dr. Phieffer with assistance by Dr. Ly.

I. Core Competency Areas

By the end of the PGY5 rotation in Orthopaedic Trauma, the resident should demonstrate further progress towards obtaining excellence in each of the following core competency areas.

Patient Care

1. Demonstration of caring and respectful behaviors when interacting with patients and families
2. Procurement of thorough, logical, and concise patient histories with an emphasis on the musculoskeletal system
3. Responsiveness to the individual needs of patients and their families
4. Performance of physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and inpatient settings.
5. Integration of medical facts and clinical data as the basis for diagnosis
6. Evaluation of risks, benefits, and alternative treatments
7. Formulation and carry out of a complete and effective treatment plan (operative and non-operative)
8. Counsel of patient and family in treatment procedure, options, and potential outcomes
9. Dissemination of education and services to the patient which are aimed at preventing treatment complications and maintaining health
10. Understanding of and performance of medical procedures related to treatment plan
11. Ability to work well with entire team of health care professionals and be involved in care of the patient

Medical Knowledge

1. Exhibition of a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
2. Investigation of topics as needed for clinical assignments
3. Understanding and use of basic science principles as related to medical practice

Practice-Based Learning

1. Assessment of one's own patient management skills and ability to make appropriate changes in practice
2. Integration of evidence from scientific studies in the care of patient's problems
3. Demonstration of knowledge of study designs and statistical methods in order to evaluate scientific studies
4. Usage of available information technology to obtain and manage information
5. Willingness to take time to educate students and other health care professionals

Interpersonal Skills

1. Fostering of a compassionate, therapeutic relationship with patients and their families
2. Ability to listen to patients and include them in treatment decisions
3. Ability to listen to information provided by other members of the health care team

Professionalism

1. Respectfulness of patient wishes and ability to provide adequate counseling, education, and informed consent instructions to patients
2. Demonstration of an ethically sound practice of medicine
3. Demonstration of sensitivity to cultural, age, gender, and disability issues among patients

Systems-Based Practice

1. Knowledge of how to provide cost-effective care
2. Willingness to advocate for patients within the health care system
3. Referral of patient to appropriate practitioners and agencies within the health care system
4. Accessing of consultants appropriately and use of their assistance in the management of ongoing care

II. Specialty Specific Knowledge

By the end of the PGY5 rotation in Orthopaedic Trauma and building upon the experiences from the PGY2 rotation, the resident should:

1. Know the pathoanatomy of most skeletal injury i.e. fractures and dislocations of the shoulder, arm, elbow, forearm, wrist, pelvis, acetabulum, femur, knee, ankle and foot.
2. Know the classification of most skeletal injury i.e. fractures and dislocations of the shoulder, arm, elbow, forearm, wrist, pelvis, acetabulum, femur, knee, ankle and foot.
3. Understand the priorities for initial management, triage, and initial stabilization of skeletal injuries in the multiply injured patient.
4. Know the indications for various methods of operative and non-operative treatment of various injuries and learn to use clinical data to decide on treatment method.
5. Know the complications of each injury.
6. Understand the post-operative management of trauma patients.

III. Specialty Specific Psychomotor Skills

By the end of the PGY5 rotation in Orthopaedic Trauma and building upon the experiences from the PGY2 rotation, the resident should be able to:

1. Evaluate traumatic fractures, dislocations, and injuries in the emergency department.
2. Determine the classification of such injuries.
3. Discuss the treatment options, priorities, and initially stabilize musculoskeletal trauma.
4. Become competent in the definitive management of basic fractures i.e. long bone shaft fractures, hip fractures, ankle fractures, and fractures of the distal radius.
5. Demonstrate advancing competence in the management of pelvis, acetabulum, and peri- articular fractures.
6. Show advanced knowledge in the use of external fixation for definitive and temporary stabilization.
7. Be responsible for the surgical management of the orthopaedic trauma patient when on call.
8. Demonstrate the ability to coordinate the care of a large musculoskeletal trauma service.

CHIEF CALL RESPONSIBLITIES / EXPECTATIONS (Revised 6-2019-LY)

1. Be very involved, as if you are the Attending and doing the case out in private practice.

2. Know your Junior Residents abilities, can you trust them? Be hands on
   .
3. Review every single x-ray yourself and make sure appropriate x-rays are done / ordered.

4. See operative patients, especially before x-ray conference – be ready to discuss borderline patients you are concerned about.

5. Operative patients – make sure the patient is prepared and ready for surgery – check pre-op list. The attending should never beat you to the hospital or OR!

6. If possible try to write a chief note / addendum. Very important for polytrauma patients.

7. Teach Junior Residents

8. If possible show up to next day Trauma Xray conference. Always show up on Monday AM Trauma Xray conference after weekend call.

9. Operative Cases performed with on call attending and plan to hand off to Trauma Service – example: IMN femur
   - Have a clear cut plan of what the attending wants postop
   - Abx
   - Weight bear
   - Anticoagulation with duration
   - Post op X-rays?
   - F/U plan: On call attending to f/u or ask Trauma Service Attendings to takeover

10. Call the on call Attending, do not have the junior resident do it, especially on patients that need urgent/emergent decision making.
    - Better patient care
    - You are more involved
    - I like getting your thoughts, advice and input about what you want to do with that injured patient.

Pre-Operative Note Template

Preop dx: L hip FN fx

Procedure planned: L hip hemiarthroplasty

Labs: CBC, BMP, Coag

Xrays: AP pelvis, L femur AP/lateral

A/P:

1. OR: Wed
2. NPO: done
3. Anticoag: held
4. Consent: done
5. Consult: medicine
6. Misc: recheck hgb in am, T+ C 2u PRBC

Brief-Operative Note Template

Preop and Postop Dx:
Procedure:
Surgeons:
Assistants:
Anesthesia:
EBL:
Fluid:
UOP:
Drain:
Postop Plan:

- Abx
- Wt bear
- Anticoagulation
- Xrays
- Trapeze bars
- PT
- SW
- F/U
  - F/U

Post-Operative Plan Template

DOS:

Name:

Procedure: 1.

2.

EBL: TT:

Fluid: LR:

Antibiotic: Ancef X _____ hours PRBC:

Vanco X _____ hours UOP:

Wt. Bearing: NWB X _____ Wks TTWB WBAT

Anticoagulation: Lovenox 30mg SQ BID, Start POD #1 AM, Then 40mg daily on D/C from hosp X _____wks.

ASA 325mg daily X _____wks

Coumadin

NONE

Xrays: On POD# 1 _____

Labs: CBC X _____ days HGB X _____days

Drains: empty and record qshift, D/C drain when output < _____cc/shift

Routine Orders:

TEDs and pneumoboots, Trapeze bar bed

PT

SW: Disposition

Others

F/U with Dr. LY in _____Wks

Progress Note Template

POD#: 2
S/p: ORIF R hip
DOS: 5/1/08

S: Comfortable, pain undercontroll with po etc (very short)

PE: Tm: or AVSS

Wound c/d/I, mild serosang drainage, no erythema

NV exam: DF/PF/EHL: 5/5, sensory intact
DP +, or good cap refill

Labs: check hgb today

A/P: stable

Wt bear: WBAT
Abx: done
DVT prophylaxis: Lovenox x 4wks
PT: seeing pt
Foley/ HVAC: will remove foley today, HVAC d/ced
SW: have not seen pt
Dispostion: likely to NH in 2 days
F/u: 5/14/08

Procedure	Phieffer/Quatman	Ly	Harrison	Reps
Acetabular Fx **Supine case** (ABC, ACPHT, AW) **CPT Codes** PW, AW 27226 Transverse 27227 Associated 27228	Position: Supine Bed: OSI Flat top, pelvic bone foam, pelvic bed traction post attachment Implants: Synthes pelvic implants	Position: Supine Bed: OSI Flat top, pelvic bone foam, pelvic bed traction post attachment Implants: Synthes pelvic implants	Confer with Surgeon	
Acetabular Fx **Prone case** (Transverse, T-type, PC, PW, PC+PW)	Position: Prone Bed: Pro-Fx table Implants: Synthes pelvic implants	Position: Prone Bed: Pro-Fx table Implants: Synthes pelvic implants		
Acetabular Fx **Lateral case** (Post wall, Surgical hip dislocation)	Position: Lateral Bed: OSI Flat top, bean bag Implants: Synthes pelvic implants	Position: Lateral Bed: OSI Flat top, bean bag Implants: Synthes pelvic implants		
Pelvic Ring Fx **SI screw or /and anterior pelvic ring**	Position: Supine Bed: OSI Flat top, pelvic foam May use Pelvic bed traction post attachment Implants: Smith/Nephew 6.5mm SI screws possible Synthes pelvic plates Adam Porter	Position: Supine Bed: OSI Flat top, pelvic foam, May use Pelvic bed traction post attachment Implants: Synthes SI screws 7.3mm, possible pelvic plates Adam Porter	Position: Supine Bed: OSI Flat top, pelvic foam Implants: Synthes Adam Porter	Adam Porter, Syn 740-703-6688 Eli Marietta Syn 740-323-6629 Jon Kleber, Depuy 317-657-0757 Steve, Depuy 513-906-0553
Hemi Hip **CPT Code** **27236**	Position: Lateral w/Peg Board Bed: Flat Top Jackson Implants: Depuy Rep: Jon Kleber	Position: Lateral w/Peg Board Bed: OSI flat top Implants: Depuy Rep: Jon Kleber	Position: Lateral w/Bean Bag Bed: Flat Top Jackson Implants: Depuy Rep: Jon Kleber	Ming Li uses Wexon positioner
Perc Pinning-Hip (ND FN fx) **CPT Codes** Perc 27235	Position: Supine, Arm across chest Bed: Hanna Table Implants: Syn 7.3 Cannulated	Position: Supine, Arm across chest Bed: Hanna Table Implants: Syn 7.3 Cannulated Rep: Adam Porter	Position: Supine, Arm across chest Bed: Hanna Table Implants: Syn 7.3 Cannulated	

Open 27236	Rep: Adam Porter		Rep: Adam Porter	
Intertroch/Subtroch (Majority of Fractures) **CPT Codes** Plating 27244 Nail 27245	Position: Supine, Arm across chest Bed: Hanna Table Implants: Syn TFN/DHS Rep: Adam Porter	Position: Supine, Arm across chest Bed: Hanna Table Implants: Syn TFN Rep: Adam Porter	Position: Supine, Arm across chest Bed: Hanna Table Implants: Syn TFN/DHS Rep: Adam Porter	
Femoral Neck Fx ORIF **Stable Hip Intertroch fx** (Displaced young adult FN fx)	Position: Supine, Arm across chest Bed: Hanna Table Implants: Syn 7.3 Cannulated or DHS DHS for stable 2 parts IT fx Rep: Adam Porter	Position: Supine, Arm across chest Bed: Hanna Table Implants: Syn 7.3 Cannulated or DHS DHS for stable 2 parts IT fx Rep: Adam Porter		
Femoral Shaft-Retrograde	Position: Supine Bed: Diving Board Implants: Syn Retrograde Rep: Adam Porter	Position: Supine Bed: OSI flat top Implants: Syn Retrograde Rep: Adam Porter	Position: Supine Bed: Diving Board Implants: Syn Retrograde Rep: Adam Porter	
Femoral Shaft-Antegrade **CPT Codes** Nail 27506	Position: Supine Bed: Hanna Table Implants: Syn TFN/DHS Rep: Adam Porter	Position: Supine Bed: OSI flat top Implants: Synthes Piriformis femoral IMN Rep: Adam Porter	Position: Supine Bed: Hanna Table Implants: Syn TFN/DHS Rep: Adam Porter	
Distal Femur **CPT Codes** ORIF 27511 Joint Ext 27513	Position: Supine, bump, bone foam Bed: Diving Board or OSI flat top Implants: Syn 4.5 VA-LCP (Ask Dr. Surgeon) Rep: Adam Porter	Position: Supine, bump Bed: OSI flat top Implants: Syn 4.5 VA-LCP or Femoral LISS plate (ask Dr. Ly) Rep: Adam Porter	Position: Supine, bump, bone foam Bed: Diving Board Implants: Syn 4.5 VA-LCP Rep: Adam Porter	
Tibial Plateau **CPT Codes** Unicondylar 27535 Bicond 27236	Position: Supine, bump, BF, Tourn Bed: Diving Board Implants: Syn 3.5 VA-LCP (Ask Surgeon) Rep: Adam Porter	Position: Supine, bump, Bone Foam, Tourn Bed: OSI flat top Implants: Syn 3.5 VA-LCP or tibial LISS plate (ask Dr. Ly) Rep: Adam Porter	Position: Supine, bump, BF, Tourn Bed: Diving Board Implants: Syn 3.5 VA-LCP Rep: Adam Porter	
Tibial Shaft Fx w/nail (Majority of tibial fx) **CPT Codes**	Position: Supine, bump, BF, Triangle Bed: Diving Board or OSI flat	Position: Supine, bump, Metal Triangle Bed: OSI FLAT TOP	Position: Supine, bump, BF, Triangle Bed: Diving Board	

Nail 27759	top Implants: Syn Suprapatellar & Tibia Rep: Adam Porter	Implants: Synthes infrapatellar Tibia nail Rep: Adam Porter	Implants: Syn Suprapatellar & Tibia Rep: Adam Porter	
Tibial Shaft Fx w/plate & screws (rarely) **CPT Codes** Plate 27758	Position: Supine, bump, BF, Tourn Bed: Diving Board or OSI flat top Implants: Syn Lg Frag Rep: Adam Porter	Position: Supine, bump, BF, Tourn Bed: OSI Flat top Implants: Syn Lg Frag	Position: Supine, bump, BF, Tourn Bed: Diving Board Implants: Syn Lg Frag	
Pilon **CPT Codes** Tibia only 27827 Tib + Fib 27828	Position: Supine, bump, BF, Tourn Bed: Diving Board Implants: Syn Rep: Adam Porter	Position: Supine, bump, BF, Tourn Bed: OSI Flat top Implants: Synthe distal tibial pilon plates (ask Dr. Ly) Rep: Adam Porter	Position: Supine, bump, BF, Tourn Bed: Diving Board Implants: Syn Rep: Adam Porter	
Ankle **CPT Codes** Lat mal 27792 Med Mal 27766 Bilmal 27814 Trimal 27822(27823)	Position: Supine, bump, BF, Tourn Bed: Diving Board Implants: Synthes Adam Porter	Position: Supine, bump, BF, Tourn Bed: OSI flat top Implants: Synthes locking small frag set, distal fibular lock plate Adam Porter	Position: Supine, bump, BF, Tourn Bed: Diving Board Implants: Synthes Adam Porter	
Calcaneus **CPT Codes** ORIF 28415 Perc 28406	Position: Supine, bump, BF, Tourn Bed: Diving Board Implants: Synthes Adam Porter	Position: Supine, bump, BF, Tourn Bed: 3080 Regular bed Implants: Synthes calcaneal plate, small frag set Adam Porter	Position: Supine, bump, BF, Tourn Bed: Diving Board Implants: Synthes Adam Porter	
Clavicle Fx **CPT Codes** 23515	Position: Beach Chair Bed: 3080 Regular bed Implants: Synthes clavicle plate, locking small fragment set Adam Porter	Position: Beach Chair Bed: 3080 Regular bed Implants: Synthes clavicle plate, locking small fragment set Adam Porter	Position: Supine, Plexi Glass Bed: OSI Flat top Implants: Synthes Adam Porter	
Proximal Humerus **CPT Codes** 23615	Position: Beach Chair Bed: 3080 Regular bed Implants: Synthes proximal humeral lock plate Adam Porter	Position: Beach Chair Bed: 3080 Regular bed Implants: Synthes proximal humeral lock plate Adam Porter	Position: Lateral with bean bag, Quackenbush Arm Holder, Padded Sterile Mayo Stand Bed: 3080 Implants: Synthes	

			Adam Porter	
Humeral Shaft **CPT Codes** 24515	Position: Lateral with bean bag, Quackenbush Arm Holder, Padded Sterile Mayo Stand Bed: OSI Flat top Implants: Synthes Adam Porter	Position: Lateral with bean bag, Quackenbush Arm Holder, Padded Sterile Mayo Stand Bed: OSI Flat top Implants: Synthes Adam Porter	Position: Lateral with bean bag, Quackenbush Arm Holder, Padded Sterile Mayo Stand Bed: 3080 Implants: Synthes Adam Porter	
Distal Humerus/Elbow **CPT Codes** ORIF 24545 Joint Ext 24546	Position: Lateral with bean bag, hand table, shoulder bone foam Bed: OSI flat top Implants: Synthes distal humerus plates Adam Porter	Position: Lateral with bean bag, hand table, shoulder bone foam Bed: OSI flat top Implants: Synthes distal humerus plates Adam Porter	Position: Lateral with bean bag, Quackenbush Arm Holder, Padded Sterile Mayo Stand Bed: 3080 Implants: Synthes Adam Porter	

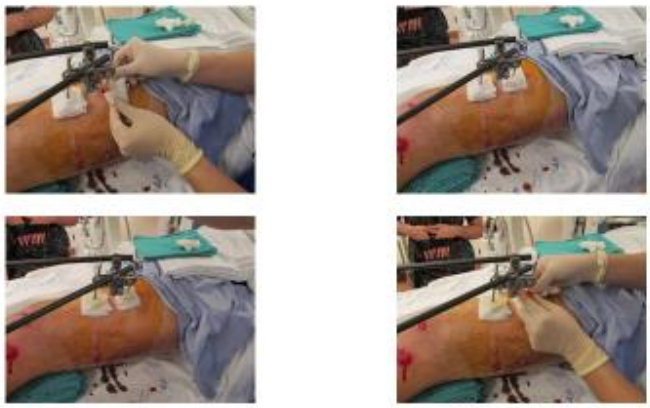
Thuan Ly, MD

External Fixation Pin Site Care Protocol

In the OR

Use 4x4 gauze, fold in half and cut a ½ slit. Do not use Drain sponge.

In the OR



Place 4x4 gauze around pin (no xeroform), put foam sponge on top,
Then put plastic red cap. The foam sponge protect red cap from impinging on the skin.

In the OR

Push down the red cap and secure the gauze and foam sponge from moving.
This helps limit motion of the skin around the pins, thus decrease infection!

Cleaning pin sites (ward, clinic or home)

Incorrect

Correct!

Solution: ½ % h2O and ½% hydrogen peroxide
The Q-tip has to be in the pin site wound and clean out the fibrinous or crusty tissue in order to let wound air out

Cleaning pin sites (ward, clinic, home)

Push down the red cap and secure the gauze and foam sponge from moving.
This helps limit motion of the skin around the pins, thus decrease infection!

Ace wrap for compression

Pain Medication Protocol after pain block

You will have 3 medications you will be discharged with:

OxyContin SR 10 mg (narcotic) - 1 tablet by mouth in am/pm until block worn off and pain controlled - you will need this for maximum 5 days.

Toradol 10 mg (anti-inflammatory) - take 1 tablet by mouth *with meals every 8 hours as needed for pain - maximum 5 days *do not take any other anti-inflammatories (i.e. Advil, Motrin) while on this medication

Oxycodone 5 mg (narcotic) - take 1 to 2 tablets by mouth every 3-6 hours as needed when block starts wearing off, then as needed for pain

Today when you get home, take 1 of the 10 mg OxyContin.

Prior to going to bed tonight take 1 of the 10

mg OxyContin. When you wake up in the am

take 1 of the 10 mg OxyContin.

Tomorrow I anticipate you block start wearing off; once you start feeling your ankle take 110 mg toradol, then an hour later, take 1-2 oxycodone.

Take the toradol every 8 hours and the oxycodone every 3-6 hours until the pain is controlled.

OSU Orthopaedic Trauma Pain Management Policy

The Ohio State Orthopaedic Trauma team recognizes that appropriate pain management is an important part of your overall care. We are providing this information to make you aware of our guidelines in balancing pain relief with minimization of pain medication use.

- You can expect to have some level of pain after your procedure or injury which will ease over time
- Ohio narcotic prescription laws prohibit our providers from providing you with narcotic pain medications long term. Most patients no longer need narcotics 2 weeks after their surgery or initial injury
- In the event that narcotic medication is needed for pain control beyond 2 weeks, refills will be at the discretion of the primary surgeon, who will work with you to develop a medication wean plan
    - We may enlist the services of your primary care physician or pain management specialist to identify other sources (depression, smoking) of your continued pain
- While you may be given prescriptions for pain medication, there are other ways to control your pain including over the counter medications such as Tylenol or Aleve, physical therapy, cold therapy, meditation and massaging of the painful areas
- There are potential risks for psychological and/or physical addiction associated with ongoing use of narcotic pain medications
    - Potential side effects of narcotics include nausea, constipation, upset stomach, sexual dysfunction, depression, fatigue, increased sensitivity to pain, drug addiction and drug tolerance
- Many insurance companies now require a prior authorization for narcotic medication. If this applies to you, please allow 3-5 business days for the processing of this claim. Our office staff is not able to control this timeline, but will do our best to limit delays
- Please inform our medical staff if you are currently receiving pain medications from another physician or have a pain management specialist
    - We will be verifying that you are receiving pain medications from only one prescriber and only one pharmacy by checking the Prescription Monitoring Program
- Should you need a **refill** between office visits, please call 614-293-2663 **Monday-Friday** between the hours of **8am-2pm** and we will address your refill request within 24 hours
        - Please verify your preferred pharmacy when requesting a refill
        - We do not refill narcotic prescriptions on a walk-in basis or on weekends
        - Lost or stolen pain medications or prescriptions will <u>not</u> be replaced
        - Pharmacies will refill pain medications up to 1 week at a time

All of my questions and concerns regarding pain management have been adequately answered. A copy of this document has been given to me and a copy will be placed in my permanent chart.

_____	_____	_____
Patient or Guardian Signature	Printed Name	Date
_____	_____	_____
Provider Signature	Printed Name	Date

ACGME MILESTONES FOR ORTHOPEDICS - Effective July 1, 2013

The milestones were designed by the ACGME for use only in evaluation of resident physicians in the context of their participation in ACGME-accredited residency or fellowship programs. The milestones provide a framework for the assessment of the development of the resident physician in key dimensions of the elements of physician competency in a specialty or subspecialty. They neither represent the entirety of the dimensions of the six domains of physician competency, nor are they designed to be relevant in any other context.

Milestones were designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into residency through graduation. The Ortho RRC will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education. Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The resident demonstrates milestones expected of an incoming resident.

Level 2: The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.

Level 3: The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.

Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

Note that Level 4 is designed as the graduation *target* but does not represent a graduation *requirement*. Making decisions about readiness for graduation is the purview of the residency program director.

The milestones which will be evaluated on the Hand and Upper Extremity rotation are as listed on the following pages:

Milestone Reporting

This document presents milestones designed for programs to use in semi-annual review of resident performance and reporting to the ACGME. Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as a resident moves from entry into residency through graduation. In the initial years of implementation, the Review Committee will examine milestone performance data for each program's residents as one element in the Next Accreditation System (NAS) to determine whether residents overall are progressing.

For each period, review and reporting will involve selecting milestone levels that best describe each resident's current performance and attributes. Milestones are arranged into numbered levels. Tracking from Level 1 to Level 5 is synonymous with moving from novice to expert. These levels do not correspond with post-graduate year of education.

Selection of a level implies that the resident substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

Level 1: The resident demonstrates milestones expected of an incoming resident.

Level 2: The resident is advancing and demonstrates additional milestones, but is not yet performing at a mid-residency level.

Level 3: The resident continues to advance and demonstrate additional milestones, consistently including the majority of milestones targeted for residency.

Level 4: The resident has advanced so that he or she now substantially demonstrates the milestones targeted for residency. This level is designed as the graduation target.

Level 5: The resident has advanced beyond performance targets set for residency and is demonstrating "aspirational" goals which might describe the performance of someone who has been in practice for several years. It is expected that only a few exceptional residents will reach this level.

The diagram below presents an example set of milestones for one sub-competency in the same format as the milestone report worksheet. For each reporting period, a resident's performance on the milestones for each sub-competency will be indicated by:

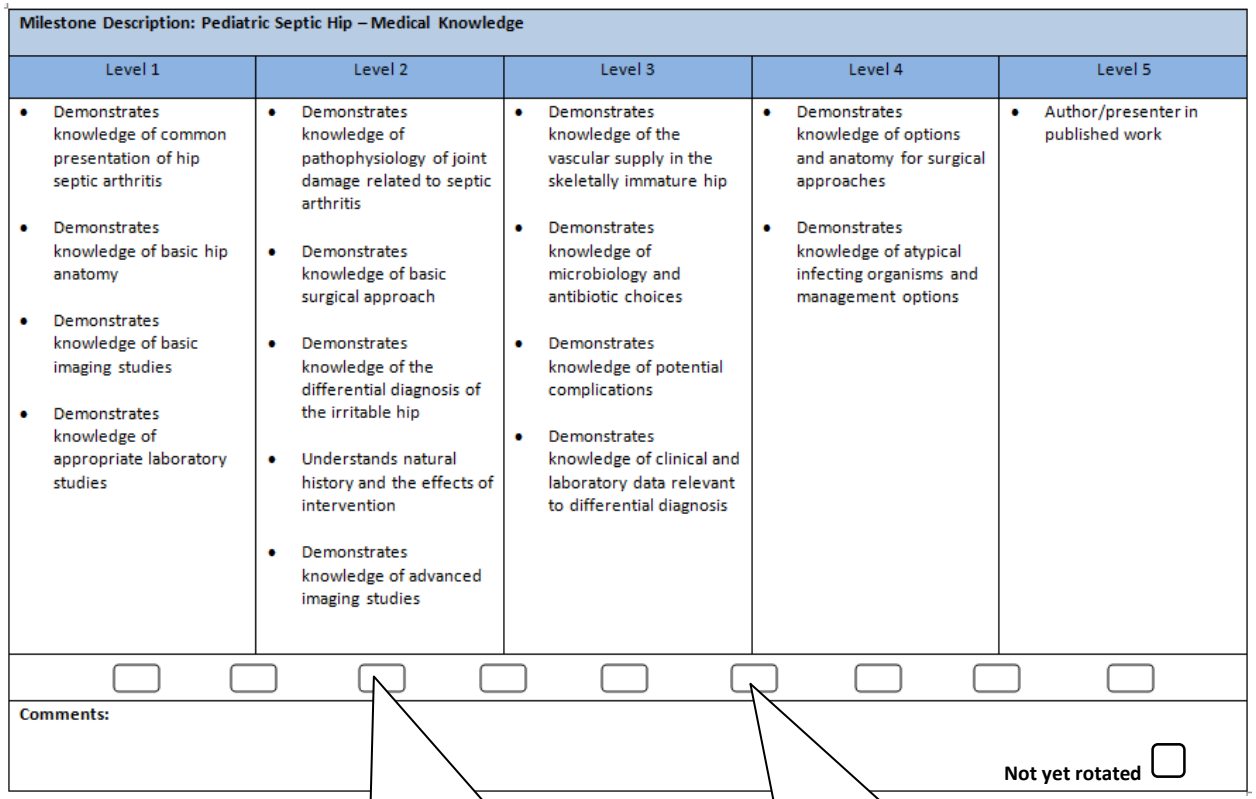
- Selecting the level of milestones that best describes that resident's performance in relation to the milestones

or

- For Patient Care and Medical Knowledge milestones, selecting the option that says the resident has "Not yet rotated"

or

- For Interpersonal and Communication Skills, Practice-based Learning and Improvement, Professionalism, and Systems-based Practice, selecting the option that says the resident has "Not yet achieved Level 1"



Milestone Description: Pediatric Septic Hip – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of common presentation of hip septic arthritis • Demonstrates knowledge of basic hip anatomy • Demonstrates knowledge of basic imaging studies • Demonstrates knowledge of appropriate laboratory studies	• Demonstrates knowledge of pathophysiology of joint damage related to septic arthritis • Demonstrates knowledge of basic surgical approach • Demonstrates knowledge of the differential diagnosis of the irritable hip • Understands natural history and the effects of intervention • Demonstrates knowledge of advanced imaging studies	• Demonstrates knowledge of the vascular supply in the skeletally immature hip • Demonstrates knowledge of microbiology and antibiotic choices • Demonstrates knowledge of potential complications • Demonstrates knowledge of clinical and laboratory data relevant to differential diagnosis	• Demonstrates knowledge of options and anatomy for surgical approaches • Demonstrates knowledge of atypical infecting organisms and management options	• Author/presenter in published work
☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐				
Comments:				
Not yet rotated ☐				

Selecting a response box in the middle of a level implies that milestones in that level and in lower levels have been substantially demonstrated.

Selecting a response box on the line in between levels indicates that milestones in lower levels have been substantially demonstrated as well as **some** milestones in the higher level(s).

Ankle Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of pathophysiology related to ankle fractures • Correlates anatomic knowledge to imaging findings on basic imaging studies • Demonstrates knowledge of non-operative treatment options and surgical indications	• Demonstrates ability to describe and classify fractures • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Demonstrates basic knowledge of natural history of ankle fractures • Demonstrates knowledge of ankle fractures anatomy and basic surgical approaches • Understands basic pre-surgical planning and templating • Understands implication of open fractures and soft tissue injury	• Demonstrates knowledge of current literature and alternative treatments • Understands the effects of intervention on natural history of ankle fractures • Understands alternative surgical approaches	• Understands controversies within the field (e.g., syndesmotic fixation, indications and options) • Applies understanding of natural history to clinical decision-making • Understanding of biomechanics and implant choices	• Primary author/presenter of original work within the field
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Ankle Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Prescribes non-operative treatments • Splints fracture appropriately • Provides basic peri-operative management • Lists potential complications	• Obtains focused history and performs focused exam; recognizes implications of soft tissue injury • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment • Performs a closed reduction • Completes pre-operative planning with instrumentation and implants • Performs surgical exposure of the lateral malleolus • Provides post-operative management and rehabilitation • Capable of diagnosis and early management of complications	• Appropriately orders and interprets advanced imaging studies (e.g., stress views, computed tomography [CT] scan) • Provides a comprehensive assessment of most fractures on imaging studies • Completes comprehensive pre-operative planning with alternatives • Performs surgical reduction and fixation of a simple fracture (e.g., lateral or bimalleolar ankle fracture) • Modifies and adjusts post-operative treatment plan as needed • Capable of treating complications both intra-operatively and post-operatively (e.g., wound breakdown following malleolar fixation)	• Provides comprehensive assessment of complex fracture patterns on imaging studies (e.g., pilon fracture) • Recognizes indications for and provides non-operative treatment of an unstable fracture (e.g., diabetes, medical comorbidities, non-compliance) • Performs surgical reduction and fixation of a moderately complex fracture (e.g., open reduction internal fixation [ORIF] trimalleolar ankle fracture or simple pilon fracture)	• Performs surgical reduction and fixation of a full range of fractures and dislocations (e.g., ORIF complex pilon fracture) • Develops unique, complex post-operative management plans • Surgically treats complex complications (e.g., revision fixation after failed ORIF)
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Diaphyseal Femur and Tibia Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of pathophysiology related to diaphyseal femur and tibia fractures • Correlates anatomic knowledge to imaging findings on basic imaging studies • Demonstrates knowledge of medical and surgical comorbidities	• Able to describe and classify fractures • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Demonstrates knowledge of associated injuries and impact on surgical care (e.g., femoral neck fracture, associated skeletal injuries) • Understands implication of open fractures and soft tissue injury • Demonstrates knowledge of bone biology, osteoporosis and bone health management • Demonstrates knowledge of natural history of diaphyseal femur and tibia fractures • Demonstrates knowledge of diaphyseal femur and tibia fractures anatomy and basic surgical approaches • Understands basic pre-surgical planning and templating • Demonstrates knowledge of non-operative treatment options and surgical indications • Demonstrates knowledge of surgical and non-operative complications (e.g., compartment syndrome, fat emboli, infection)	• Demonstrates knowledge of current literature and alternative treatments • Demonstrates knowledge of impact on polytrauma on management of diaphyseal femur and tibia fractures • Understands biomechanics and implant choices • Understands the effects of intervention on natural history of diaphyseal femur and tibia fractures • Understands alternative surgical approaches • Recognizes surgical indications in complex fractures and the polytrauma patient	• Understands controversies within the field (e.g., initial management of femur fracture in the polytrauma patient) • Applies understanding of natural history to clinical decision-making	• Primary author/presenter of original work within the field
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Diaphyseal Femur and Tibia Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Splints fracture appropriately • Provides basic peri-operative management • Assesses for limb perfusion and compartment syndrome • Lists potential complications	• Obtains focused history and performs focused exam • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment • Performs a closed reduction • Completes pre-operative planning with instrumentation and implants • Performs basic surgical approaches • Performs patient positioning for operative fixation (e.g., use of fracture table) • Provides post-operative management and rehabilitation • Performs basic open wound management and debridement • Initiates management of limb reperfusion and compartment syndrome • Recognizes the needs of the polytrauma patient • Capable of diagnosis and early management of complications	• Appropriately orders and interprets advanced imaging studies • Provides complex non-operative treatment • Completes comprehensive pre-operative planning with alternatives • Performs surgical repair to a simple fracture • Effectively uses intraoperative imaging • Modifies and adjusts post-operative treatment plan as needed • Capable of performing compartment release	• Performs surgical repair to a moderately complex fracture (e.g., able to perform intramedullary nailing of segmental femur fracture) • Performs alternative surgical approaches for femur and tibia fractures (e.g., open reduction techniques) • Performs complex wound management and debridement (e.g., understands need for consultation for flap coverage) • Prioritizes the needs of the polytrauma patient (e.g., timing of long bone fixation, works with consulting teams) • Capable of treating complications both intraoperatively and post-operatively (e.g., manages post-operative infection)	• Performs surgical repair to a complex fracture (e.g., able to perform intramedullary nail nailing of distal tibia fracture with intraarticular extension) • Develops unique, complex post-operative management plans • Surgically treats complex complications (e.g., treats femoral neck fracture identified after femoral nailing)
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Adult Elbow Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of fractures (e.g., olecranon, radial head, coronoid fracture, terrible triad fracture, distal humerus fracture, fracture dislocation) • Demonstrates knowledge of anatomy (e.g., elbow joint, radial head, coronoid, olecranon, distal humerus, elbow ligaments) • Understands basic imaging studies	• Understands mechanism of injury and knowledge of fracture classification and soft tissue injury (e.g., olecranon, radial head, coronoid fracture, terrible triad fracture, distal humerus fracture, fracture dislocation) • Demonstrates knowledge of imaging studies/lab studies (e.g., radiographs anteroposterior [AP]/lateral/oblique/axial) • Understands surgical approaches (e.g., soft tissue envelope, cutaneous nerves, ulnar nerve treatment) • Understands biology of fracture healing • Understands advanced imaging studies (e.g., post-operative x-rays, CT scans for fracture healing)	• Demonstrates knowledge of current literature and alternatives (e.g., fracture repair vs. replacement, post-operative stiffness concepts) • Understands rehabilitation mechanics (e.g., range of motion therapy, dynamic/static stretch splinting) • Understands biomechanics and implant choices (e.g., radial head replacement, compression headless screws, elbow replacement types)	• Understands controversies within field (e.g., tension band vs. plating olecranon fractures, elbow replacement for elderly distal humerus fractures; radial head repair vs. replacement) • Understands how to avoid/prevent potential complications • Demonstrates knowledge of pathophysiology of elbow stiffness (e.g., intrinsic, extrinsic, hardware placement) • Understands post-operative imaging studies/implant positioning	• Participates in research in the field with publication
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Adult Elbow Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and basic physical (e.g., age, gender, mechanism of injury, deformity, skin integrity, open/closed injury) • Splints fracture appropriately • Provides basic peri-operative management (e.g., post-operative orders, ice, elevation, compression) • Lists potential complications (e.g., infection, hardware failure, stiffness, reflex sympathetic dystrophy [RSD], neurovascular injury, posttraumatic arthritis)	• Obtains focused history and physical, recognizes implications of soft tissue injury (e.g., open fracture, compartment syndrome, ligamentous injury) • Able to order appropriate imaging studies (e.g., radiographs, CT scan/3D reconstruction) • Performs basic surgical approach to elbow fractures • Reduces fracture if necessary (e.g., provisional fixation, fluoroscopic checks) • Recognizes surgical indications (e.g., fracture displacement, elbow instability, transolecranon injury • Provides post-operative management and rehabilitation (e.g., splinting and ROM therapy) • Capable of diagnosis and early management of complications (e.g., diagnosis from peri-operative x-rays, recognize infection, recognize fracture displacement/dislocation)	• Performs pre-operative planning with instrumentation and implants (e.g., patient positioning, plates/screws, fluoroscopy) • Capable of surgical reduction and fixation of a simple fracture (e.g., olecranon fracture) • Provides post-operative management and rehabilitation (e.g., increase ROM as healing progresses, adequate/proper post-operative x-rays)	• Performs comprehensive pre-operative planning/alternatives (e.g., use of external fixation, radial head replacement, elbow arthroplasty) • Capable of surgical reduction and fixation of moderately complex fractures (extraarticular and simple intraarticular distal humerus fracture) • Modifies and adjusts post-operative plan as needed (e.g., dynamic/static stretch splinting, revise therapy) • Treat simple complications both intra- and post-operatively (e.g., revise hardware placement, recognize improper hardware position)	• Capable of surgical reduction and fixation of a full range of fractures and dislocations • Understands how to avoid/prevent potential complications • Surgically treats complex complications (e.g., elbow release for stiffness, ID infection, revision hardware failure, nonunion treatment)
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Hip Fracture – Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
• Demonstrates knowledge of pathophysiology related to hip fracture • Correlates anatomic knowledge to imaging findings on basic imaging studies • Demonstrates knowledge of non-operative treatment options and surgical indications	• Able to describe and classify fractures • Correlates anatomic knowledge to imaging findings on advanced imaging studies • Demonstrates knowledge of bone biology, osteoporosis and bone health management • Demonstrates knowledge of natural history of hip fracture • Demonstrates knowledge of hip fracture anatomy and basic surgical approaches • Understands basic pre-surgical planning and templating • Understands comorbidities and impact on fracture treatment	• Demonstrates knowledge of current literature and alternative treatments • Understands the effects of intervention on natural history of hip fracture • Understands alternative surgical approaches	• Understands controversies within the field (e.g., hemiarthroplasty vs. total hip for displaced femoral neck fracture) • Applies understanding of natural history to clinical decision making • Understands biomechanics and implant choices	• Primary author/presenter of original work within the field
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Hip Fracture – Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
• Obtains history and performs basic physical exam • Appropriately orders basic imaging studies • Prescribes non-operative treatments • Provides basic peri-operative management • Lists potential complications	• Obtains focused history and performs focused exam • Appropriately interprets basic imaging studies • Prescribes and manages non-operative treatment • Recognizes and evaluates fragility fractures (e.g., orders appropriate workup and/or consult) • Interacts with consultants regarding optimal patient management (e.g., timing of surgery, medical management) • Completes pre-operative planning with instrumentation and implants • Capable of performing a basic surgical approach to the hip fracture • Provides post-operative management and rehabilitation • Capable of diagnosis and early management of complications • Assesses risk for thromboembolic disease	• Completes comprehensive assessment of fracture patterns on imaging studies-recognizes reverse obliquity fractures • Interprets diagnostic studies for fragility fractures with appropriate management and/or referral • Arranges for long-term management of geriatric patients (e.g., management of bone health, discharge planning to long-term care) • Completes comprehensive pre-operative planning with alternatives • Capable of surgical repairs to a simple fracture (e.g., stable intertrochanteric femur fracture, minimally displaced femoral neck fracture) • Modifies and adjusts post-operative treatment plan as needed • Provides prophylaxis and manages thromboembolic disease	• Capable of surgical repair to moderately complex fractures (e.g., unstable intertrochanteric femur fracture) • Capable of treating complications both intra- and post-operatively (e.g., manages a post-operative infection)	• Capable of surgical repair of complex fractures (e.g., open reduction internal fixation of femoral neck fracture) • Capable of surgical treatment of complex complications (e.g., revision fixation after failed ORIF, intertrochanteric osteotomy)
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Orthopaedic Surgery Minimum Numbers (effective 2012-2013)

Category	Minimum
Knee arthroscopy	**30**
Shoulder arthroscopy	**20**
ACL reconstruction	**10**
THA	**30**
TKA	**30**
Hip fractures	**30**
Carpal tunnel release	**10**
Spine decompression/posterior spine fusion	**15**
Ankle fracture fixation	**15**
Closed reduction forearm/wrist	**20**
Ankle & hind & mid-foot arthro	**5**
Supracondylar humerus perc	**5**
Femur and tibia intramedullary fixation	**25**
All pediatric procedures	**200**
All oncology procedures	**10**

CPT Codes in Each Category

Knee arthroscopy (29850, 29851, 29855, 29856, 29866, 29867, 29868, 29870, 29871, 29873, 29874, 29875, 29876, 29877, 29879, 29880, 29881, 29882, 29883, 29884, 29885, 29886, 29887)

Shoulder arthroscopy (29805, 29806, 29807, 29819, 29820, 29821, 29822, 29823, 29824, 29825, 29826, 29827, 29828)

ACL reconstruction (29888)

THA (27130, 27132, 27134, 27137, 27138)

TKA (27442, 27443, 27445, 27446, 27447, 27487)

Hip fractures (27235, 27236, 27244, 27245)

Carpal tunnel release (64721)

Spine decompression lumbar spine/posterior spine fusion thoracic or lumbar (22612, 22630, 22800, 22802, 22804, 63005, 63012, 63017, 63030, 63042, 63047)

Ankle fracture fixation (27766, 27769, 27792, 27814, 27822, 27823, 27826, 27827, 27828, 27829)

Closed reduction forearm and wrist fractures (25505, 25520, 25535, 25565, 25605, 25624, 25690, 25680, 25675)

Ankle and hind and mid-foot arthrodeses (27870, 28705, 28715, 28725, 28730, 28735, 28737)

Supracondylar humerus percutaneous treatment (24538, 24566, 24582)

Femur and tibia intramedullary fixation (27506, 27759)

Please note: manipulations must recorded with procedures in the Case Log System