The Ohio State University
Department of Orthopaedics

Residency Curriculum

Orthopaedic Trauma
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

Trauma Service Information

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Schedule

- **OR Days (OSU main)**
  Residents assigned to the OR are expected to be in the room before 7:30am on Mondays and Tuesdays and by 8:30am on Thursdays. The schedule for Friday will vary depending on the resident conference schedule. Dr Lakatos covers the trauma room on Wednesday and will be covered by the resident on the Spine Service.

  Drs Phieffer, Van Hoff, and Quackenbush rotate on a three week schedule between the Trauma room at OSU Main, OSU East, and week of clinic/outreach/education/research. This schedule is available usually 2 months in advance.

- **OR Days (OSU East)**
  Currently the Orthopaedic Trauma PAs will be covering the trauma cases at OSU East hospital. Residents are welcome to assist at East as long as there is adequate coverage at OSU Main. Discuss this with the OSU Main and East attendings prior to going to East

- **Clinic Days**
  Drs Phieffer, Van Hoff, and Quackenbush have clinic all day on Wednesday. The second year and Chief residents are expected to attend.

  Dr. Lakatos has clinic on Monday and Friday's. His clinic will be covered by the Spine resident.
Chief Resident Rotation (2 month rotation)

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Intern Rotation

| Intern | Floor work /consults OR if time | Floor work /consults OR if time | Floor work /consults OR if time | Floor work /consults OR if time | Academic Day PM floor work / consults vs. OR |

Conferences

- **Thursday Morning Conference**
  Every Thursday from 6:30am until 8am. This is an educational conference attending by the trauma service and the other OSU Main services, including Tumor, Prison, and Hand. This conference will follow a rotating schedule.

  1st **Thursday**: Resident fracture conference/OITE review
  This conference will focus on a more in-depth study of specific fractures with an Emphasis on correct diagnosis, classification, workup/testing, operative care, and postoperative care/outcomes. The Chief resident will prepare this conference. OITE review may be substituted at the beginning of the academic year. The attendings have their faculty meeting this Thursday and will not be present.

  2nd **Thursday**: Case review- a review of all cases performed by Trauma attendings from the past two weeks. Each case will have a brief presentation and discussion. The Chief resident will assign the cases to cover to each resident on service.

  3rd **Thursday**: This will be a faculty driven conference. It may be a fracture related discussion or lecture. It may also be a journal article review. Individual topics will be announced at the conference the prior week.

  4th **Thursday**: Case review conference  **(same as 2nd Thursday)**

- **Daily Conference**
All residents, with specific exceptions, are expected to attend daily signout rounds. This will occur at 0630 in the conference room in the house-staff area except on Thursdays where it will be done on the 4th floor Cramblett Hall Resident Library.
OSUMC Department of Orthopaedics
Handoff Policy

Consults

During the day (from 7am – 6pm), all consults will be seen by the Orthopaedic Surgery Intern on the trauma service. The consult should then be staffed with the PGY-2 on the trauma service and a plan formulated with the assistance of the trauma chief. Day consults will be staffed through the on call attending, only after all appropriate imaging and laboratory studies have been completed. It is expected that all consult patients have a complete consult history and physical completed and placed on the chart (or dictated). The orthopaedic trauma intern is responsible for updating the list daily, adding all consults and patient information as they arise. As patients are assigned to different orthopaedic surgery services (e.g. if patient to be placed on the oncology or prison service), at a minimum, the junior resident on that service should be notified of the consult.

Overnight consults will be seen by the on‐call/night float resident and will be staffed with the on-call attending once a plan has been formulated. The chief resident on-call should be contacted for each consult to allow for resident to resident teaching if the junior is unable to formulate a plan, is unsure of the best course of action, or if the consult requires surgical intervention. If a patient will be going to the OR, the junior resident, after consulting with the chief resident and attending, must book the case, mark and consent patient, and make sure all necessary equipment is available (the chief and/or attending will help with appropriate instrumentation). The chief is the ultimate responsible individual for ensuring the proper instrumentation is available.

Fracture Conference

It is a requirement that residents attend the daily AM trauma fracture conference to receive handoff for their respective service. If the resident’s particular service responsibility precludes participation in the fracture conference (e.g. on Tuesdays, tumor has indications conference at the same time), communication between that resident and the on‐call/night float person needs to take place to discuss any overnight issues.

Evening Hand-Off

All patients MUST be added to the list daily, which includes patient name, mrn, location, service, diagnosis, surgery, medical issues. Each service is expected to sign-out to the nightfloat resident/resident on-call each night. At a minimum, an email or a telephone call should occur to discuss all patients on the list. Pertinent information to include what surgery was/is to be performed, any medical concerns, all follow-up information (e.g. Hb level, POC), and what to do given particular circumstances (e.g. if Hb drops to 6, transfuse, etc). All residents should attempt to
manage the patients on their service and not leave excess work for the night float resident to do (e.g. if a patient finished surgery at 10am, the resident on service should be able to do the POC before leaving for the day). However, the night float resident will complete all tasks signed out to them by their fellow residents (e.g. pre-op a patient for surgery, etc).
Delineation of Resident Responsibilities: 
Orthopaedic Trauma Service:  PGY2 and PGY5

I.  Resident Responsibilities for Patient Care

Patient Care

- Rounds
Residents are expected to have seen and written a note on all patients on the trauma service each day before going to the OR or clinic. 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 Xray conference and before the beginning of cases. Weekend rounds on patients must 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.

On Friday’s after conference, the PGY2, interns and Trauma PAs on the service will round with the on call senior prior to weekend call to improve patient care pass off.

- Orders
All orders will be done via the CAPI order entry system. Most major operative and trauma diagnoses have their own order set. Please use these sets, as they represent the usual way of doing things on the service. Weight bearing status of all patients should be recorded in the PT consult and the nursing orders. Refer to specific sheets given. IF IN DOUBT, ASK!

- Discharge
All patients discharged from the service will have the electronic discharge instructions (EDI) completed in full. This is a detailed account of the discharge plan. If you are not sure of the plan, ASK. No handwritten instructions are acceptable. Please be complete and fill in the medications. This is the job of the resident. Please be complete 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
  - DVT prophylaxis if indicated

By 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 can be provided in the EDI.

In general, patients will follow-up in 10-14 days for a wound check. 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 Percocet (#120) so that they have enough to get to their first postop appointment.

- **Documentation**

If you didn’t write it down, you didn’t do it.

**Daily notes:** Time and date all 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. Be sure to **sign your name** and then **print your name** and **pager number**.

**Brief OP Notes:** Must include a plan and the weight bearing status of the patient and discharge information. Use the standardized forms available in OR 20.

**Operative dictation:** Before the patient leaves the room, a decision on who will dictate the case will be decided. If you are dictating, list the procedure as listed on the OR record, and mention the name of the attending.

**Consults:** This must include a complete history, and a thorough musculoskeletal exam. Please identify the orthopaedic attending, the plan, and the weightbearing status of the patient on the consult.

**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 UPT.

**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. Each morning, 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 can solve many problems on the floor during the day, but can’t do it in a vacuum.
Pearls

Emergency Department Films
Radiographic examination 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.

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. The definitive CT scan and plain films should be obtained after a hip dislocation has been reduced.

**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 need the ortho resident to pull for traction view. In general, we are trying to have all geriatric fracture patients (Hip fractures, proximal humerus, etc) transferred to OSU East hospital as part of our Geriatric Fracture service. These patients will get admitted to the MMT service at East. Coordination with the resident at OSU East is important as well as informing Tom Freeman. If the patient stays at OSU Main and will require a medical consult, please obtain it early, as failure to do so will result in a delay in definitive treatment. Use the Hospitalist service at Main.

**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.

**Geriatic Fractures**
There is a geriatric fracture service at OSU East Hospitals. We are working to have these patients taken directly to OSU East and bypassing OSU Main. However, as these patients continue to arrive at OSU Main, we need to identify those that are capable of being transferred. The on-call resident needs to discuss with the Emergency Department about the possibility of transfer. These patients will be admitted to the Geriatric Fracture Service, which is covered by MMT at East.

**Fractures discharged from the ED**
Patients with fractures discharged from the ED can follow-up in the ortho trauma fracture clinic (we have clinics on Wed and often on Tuesday and Friday as well). 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 Greta Slater 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 Greta Slater, Pam Hoehn and Phieffer/Quackenbush/Vanhoff and give the pertinent pt details, pt MRN, pt best contact phone number to facilitate patient follow-up.
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
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 Drs Lakatos, Van Hoff, and Quackenbush.

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.
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.
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 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, in-patient 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.
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 Drs Lakatos, Van Hoff, and Quackenbush.

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 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 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, in-patient 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
III. Specialty Specific Psychomotor Skills

By the end of the PGY2 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 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
7. 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 Drs Lakatos, Van Hoff, and Quackenbush.

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 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 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.
Physical Exam Competencies
Orthopaedic Trauma Service: PGY1, 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
By the end of the PGY2 rotation in Orthopaedic Trauma, the resident should be able to perform the following procedures:

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 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.
7. Understand and apply proper techniques in the placement of external fixators that span the knee and those that span the ankle.
Surgical Competencies
Orthopaedic Trauma: PGY5

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.
Orthopaedic Trauma Reading List

Textbook References:
1) Skeletal 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 7 59-64
2) Pathophysiology of the Trauma patient Menth-Chiari, Wolfgang et al. OKU Trauma 3 Chapter 11 93-106
4) Compartment Monitoring in Tibial Fractures McQueen and Court-Brown. JBJS-British Vol 78-B No.1, Jan 1996 99-104

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) pp48-129
11) The Science of Fracture Healing Einhorn, Thomas JOT Volume 19, Number 10 Supplement, November/December 2005 p S4-S6
12) Overview of Biologics Watson, J Tracy JOT Volume 19, Number 10 Supplement, November/December 2005 S14-S16
13) Bone Morphogenetic Protein Science and Studies Lane, Joseph JOT Volume 19, Number 10 Supplement November/December 2005 S17-S22
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
19) Operative Treatment in 120 Displaced Intraarticular Calcaneal Fractures Sanders et al. CORR Number 290 pp87-95

Fractures of the Ankle and Pilon

Fractures of the Tibial Diaphysis
24) Reamed INtramedullary Tibial Nailing Court-Brown, CM JOT Volume 18 No.2, Feb 2004 96-101

Fractures of the Tibial Plateau

Fractures of the Femur
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
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.

Pelvis and Acetabulum
41) Radiology of the Normal Acetabulum (Chapter 3) in Fractures of the Acetabulum. Letournel and Judet.
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. p112-123.

Fractures of the Shoulder Girdle

Fractures of the Humerus and Elbow

Miscellaneous
The Ohio State University
Department of Orthopaedics
Orthopaedic Residency Program

Orthopaedic Trauma Didactics (with references):

NOTE: All readings are available in the Trauma Binder in the Resident Library as well as on-line on the orthopaedic website.

1) Principles of Fractures
   a. Evolution of the Internal Fixation of Long Bone Fractures Perren, Stephen  JBJS-Br; 84-B: November 2002 1093-1110
   b. Biomechanics of Locked Plates and Screws Egol et al. JOT Volume 18, Number 8 Sept 2004 488-493
   c. Reduction With Plates; from Planning and Reduction Technique in Fracture Surgery Mast, Jakob, Ganz (eds) pp48-129
   d. The Science of Fracture Healing Einhorn, Thomas JOT Volume 19, Number 10 Supplement, November/December 2005 p S4-S6
   e. Overview of Biologics Watson, J Tracy JOT Volume 19, Number 10 Supplement, November/December 2005 S14-S16

2) Evaluation of the polytrauma patient
   b. Pathophysiology of the Trauma patient Menth-Chiari, Wolfgang et al. OKU Trauma 3 Chapter 11 93-106

3) Principles of open fracture management/Orthopaedic Emergencies
   b. Compartment Monitoring in Tibial Fractures McQueen and Court-Brown. JBJS-British Vol 78-B No.1, Jan 1996 99-104

4) Complications of Trauma/Malunion/Nonunion
   d. rBMP-2 for Treatment of Open Tibial Fractures BESTT Study Group JBJS 84-A, Number 12, December 2002, 2123-2134

5) The mangled lower extremity/soft tissue injury/coverage

6) Pelvic/acetabular fractures
a. Radiology of the Normal Acetabulum (Chapter 3) in Fractures of the Acetabulum. Letournel and Judet.
e. Pelvic Fracture in Multiple Trauma: Classification by Mechanism is Key to Pattern of Organ Injury, Rescuscitative Requirements, and Outcome. The Journal of Trauma. Vol 29. No.7. July 1989. p981-999
f. Acetabular Fracture Fixation Via a Modified Stoppa Limited Intrapelvic Approach. Cole and Bolhofner. CORR. Number 305. p112-123.

7) Fractures and Dislocations about the Hip


8) Femoral injuries
a. OKU Trauma 3 Chapter 33. Fractures of the Femoral Diaphysis
b. Ipsilateral Femoral Neck and Shaft Fractures. Wolinsky and Johnson. CORR Number 318, pp81-90

9) Fractures about the Knee
c. OKU Trauma 3 Chapter 34. Fractures of the Distal Femur

10) Tibial Injuries
a. Reamed Intramedullary Tibial Nailing Court-Brown, CM JOT Volume 18 No.2, Feb 2004 96-101


11) Arm/Elbow fractures


12) Geriatric trauma