

Division of Pediatric Orthopaedics

7. Rotation Goals and Objectives by Core Competency

General Goals & Objectives PGY-2 Year

A. Patient Care

The resident will develop the ability to:

- 1) Perform and document comprehensive surgery history and physical examination (H&P) and generate cost-effective evaluation and management plan
- 2) Counsel patients on risks, goals, limits and alternatives of surgical procedures and the importance of postoperative care
- 3) Demonstrate ability to teach medical students basic surgical H&P
- 4) Understand the indications for and interpret complex serological and radiographic testing in orthopaedic surgery, including computed tomography and MRI/MRA
- 5) Develop complex diagnostic and patient management skills, including participation in out-patient clinics
- 6) Establish and implement effective patient care plans
- 7) Perform selected parts of surgical procedures under direct supervision
- 8) Assist in major surgical procedures and perform under guidance those portions of the operations that are appropriate to the resident's level of training

B. Interpersonal and Communication Skills

The resident will develop the ability to:

- 1) Provide compassionate in-patient and out-patient care as determined by patients, families colleagues and auxiliary health care professionals
- 2) Work effectively as a member of a health care team
- 3) Participate meaningfully in multidisciplinary conferences

C. Professionalism

The resident will develop the ability to:

- 1) Demonstrate sensitivity and responsiveness to patients' culture, age, gender and disabilities
- 2) Demonstrate integrity and a commitment to patients which supersedes self-interest
- 3) Participate meaningfully in ongoing professional development by submitting research to peer-reviewed journals and regional and national professional meetings.

D. Medical Knowledge

The resident will develop the ability to:

- 1) Demonstrate an initial familiarity with the Pediatric orthopaedic literature
- 2) Demonstrate sound habits of personal scholarship and scientific inquiry while building upon core of fundamental knowledge in orthopaedic surgery
- 3) Perform at greater than 15th Percentile on the OITE
- 4) Demonstrate accuracy in clinical evaluation skills, including the correct interpretation of basic and advanced laboratory and radiological studies

Specialty- Specific Knowledge and Skills

- 1) Perform physical exam for spinal deformity, limb pathology, & CP
- 2) Understand diagnoses, treatment & complications of femur, tibia, & ankle fractures
- 3) Diagnose compartment syndromes in children
- 4) Prevent pressure sores in casts and dressing
- 5) Apply hip spica casts for femur fractures
- 6) Apply Ponseti casts for clubfeet
- 7) Measure Cobb angles for spine deformity
- 8) Treat supracondylar humerus fractures non-operatively and operatively
- 9) Perform lengthening of adductor, hamstring and Achilles tendon
- 10) Stabilize slipped capital femoral epiphysis

E. Practice-Based Learning and Improvement

The resident will develop the ability to:

- 1) Demonstrate an ability to learn from error
- 2) Locate, appraise and assimilate evidence from scientific studies related to common orthopaedic surgical problems
- 3) Develop fundamental research skills that can be used to plan the design of a research project to be carried out during the research blocks
- 4) Demonstrate ACGME core competency as judged by faculty advisor

F. Systems Based Practice

The resident will develop the ability to:

- 1) Understand the university-based practice of orthopaedic surgery, including interactions with other health care organizations, and how these elements of health care affect the practice
- 2) Advocate for quality patient care and assist patients in dealing with system complexities
- 3) Practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care
- 4) Understand practice management issues, such as patient processing, evaluation and management coding, procedural terminology, documentation of services rendered and other reimbursement process-related issues

General Goals & Objectives PGY-3 Year

A. Patient Care

The resident will develop the ability to:

- 1) Perform and document comprehensive surgery history and physical examination (H&P) and generate cost-effective evaluation and management plan
- 2) Counsel patients on risks, goals, limits and alternatives of surgical procedures and the importance of postoperative care
- 3) Demonstrate ability to teach medical students basic surgical H&P
- 4) Understand the indications for and interpret complex serological and radiographic testing in orthopaedic surgery, including computed tomography and MRI/MRA

- 5) Develop complex diagnostic and patient management skills, including participation in out-patient clinics
- 6) Establish and implement effective patient care plans
- 7) Perform selected parts of surgical procedures under direct supervision
- 8) Assist in major surgical procedures and perform under guidance those portions of the operations that are appropriate to the resident's level of training

B. Interpersonal and Communication Skills

The resident will develop the ability to:

- 1) Provide compassionate in-patient and out-patient care as determined by patients, families colleagues and auxiliary health care professionals
- 2) Work effectively as a member of a health care team
- 3) Participate meaningfully in multidisciplinary conferences

C. Professionalism

The resident will develop the ability to:

- 1) Demonstrate sensitivity and responsiveness to patients' culture, age, gender and disabilities
- 2) Demonstrate integrity and a commitment to patients which supersedes self-interest
- 3) Participate meaningfully in ongoing professional development by submitting research to peer-reviewed journals and regional and national professional meetings.

D. Medical Knowledge

The resident will develop the ability to:

- 1) Demonstrate an expanded familiarity with the orthopaedic literature
- 2) Demonstrate sound habits of personal scholarship and scientific inquiry while building upon core of fundamental knowledge in ortho surgery
- 3) Perform at greater than 15th Percentile on the OITE
- 4) Demonstrate accuracy in clinical evaluation skills, including the correct interpretation of basic and advanced laboratory and radiological studies

Specialty- Specific Knowledge and Skills

- 1) Understand diagnoses, treatment and complications of femur, tibia, & ankle fractures
- 2) Diagnose compartment syndromes in children
- 3) Prevent pressure sores in casts and dressing
- 4) Apply hip spica casts from femur fractures
- 5) Apply Ponseti casts for clubfeet
- 6) Measure Cobb angles for spine deformity
- 7) Treat supracondylar humerus fractures non-operatively and operatively
- 8) Perform lengthening of adductor, hamstring and Achilles tendon
- 9) Stabilize slipped capital femoral epiphysis

E. Practice-Based Learning and Improvement

The resident will develop the ability to:

- 1) Demonstrate an advanced ability to learn from error
- 2) Locate, appraise and assimilate evidence from scientific studies related to common orthopaedic surgical problems
- 3) Develop fundamental research skills that can be used to plan the design from a research project to be carried out during the research blocks
- 4) Demonstrate ACGME core competency as judged by faculty advisor

F. Systems Based Practice

The resident will develop the ability to:

- 1) Understand the university-based practice of orthopaedic surgery, including interactions with other health care organizations, and how these elements of health care affect the practice
- 2) Advocate for quality patient care and assist patients in dealing with system complexities
- 3) Practice cost-effective health care and resource allocation through evidence-based medical practice that does not compromise quality of care

- 4) Under practice management issues, such as patient processing, evaluation and management coding, procedural terminology, documentation of services rendered and other reimbursement process-related issues.

General Goals & Objectives PGY-4 Year

A. Patient Care

The resident will develop the ability to:

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

B. Interpersonal and Communication Skills

The resident will develop the ability to:

- 1) Foster a compassionate, therapeutic relationship with patients and their families
- 2) Listen to patients and include them in treatment decisions
- 3) Listen to information provided by other members of the health care team

C. Professionalism

The resident will develop the ability to:

- 1) Respect patient wishes and provide adequate counseling, education, and informed consent instruction to patients
- 2) Demonstrate an ethically sound practice of medicine
- 3) Demonstrate sensitivity to cultural, age, gender, and disability issues among patients

D. Medical Knowledge

The resident will develop the ability to:

- 1) Exhibit a fund of medical knowledge that is up-to-date and ability to cite literature appropriately
- 2) Investigate topics as needed for clinical assignments
- 3) Understand and use of basic science principles as related to medical practice

Specialty Specific Knowledge & Skills

- 1) Understand, recognize, and discuss skeletal dysplasia
- 2) Understand the etiology, diagnosis and treatment of sickle cell anemia and hemophilia
- 3) Understand the characteristics, pathogenesis, diagnostic features, and management of neuromuscular disorders
- 4) Recognize and treat, in conjunction with a multidisciplinary team, cerebral palsy, juvenile rheumatoid arthritis, and spinal deformities
- 5) Understand, recognize, and non-operatively and operatively manage upper limb, leg length, hip, and lower limb deformities and disorders
- 6) Understand the clinical manifestations, treatment, and long-term prognosis of complex gait disorder and fractures
- 7) Understand the characteristics, pathogenesis, management, and treatment of the complex trauma problems

Specialty Specific Psychomotor Skills

- 1) Interpret and synthesize patient history, clinical exam, and diagnostic tests into a differential diagnosis for the conditions listed above

- 2) Know the indications for an interpretation of various laboratory, radiologic, and other diagnostic tests for the condition listed above
- 3) Plan appropriate surgery based upon the diagnosis and clinical findings
- 4) Perform or assist in surgical procedures required to address the conditions listed above (i.e. scoliosis surgery, limb length problems, tumors, fracture care, neuromuscular disease, cerebral palsy, myelomeningocele, developmental deformities, DDH, Legg Perthes disease, congenital anomalies).

E. Practice-Based Learning and Improvement

The resident will develop the ability to:

- 1) Assess one's own patient management skills and ability to make appropriate changes in practice
- 2) Integrate evidence from scientific studies in the care of patient's problems
- 3) Demonstrate knowledge of study designs and statistical methods in order to evaluate scientific studies
- 4) Use available information technology to obtain and manage information
- 5) Take time to educate students and other health care professionals

F. Systems Based Practice

The resident will develop the ability to:

- 1) Know how to provide cost-effective care
- 2) Advocate for patients within the health care system
- 3) Refer patient to appropriate practitioners and agencies within the health care system
- 4) Access consultants appropriately and use of their assistance in the management of ongoing care

General Goals & Objectives PGY-5 Year

A. Patient Care

The resident will develop the ability to:

- 1) Demonstrate caring and respectful behaviors when interacting with patients and families

- 2) Procure thorough, logical, concise patient histories with an emphasis on the musculoskeletal system.
- 3) Respond to the individual needs of patients and their families
- 4) Perform physical examinations that are accurate, comprehensive, and directed to patient's problems. This applies to the clinic, emergency department, and in-patient settings.
- 5) Integrate medical facts and clinical data as the basis for diagnosis
- 6) Evaluate risks, benefits, and alternative treatments
- 7) Formulate and carry out of a complete and effective treatment plan (operative and non-operative)
- 8) Counsel patient and family in treatment procedure, options , potential outcomes
- 9) Disseminate education and services to the patient which are aimed at preventing treatment complications and maintaining health
- 10) Understand and perform medical procedures related to treatment plan
- 11) Work well with entire team of health care professionals and be involved in care of the patient

B. Interpersonal and Communication Skills

The resident will develop the ability to:

- 1) Foster a compassionate, therapeutic relationship with patients and their families
- 2) Listen to patients and include them in treatment decisions
- 3) Listen to information provided by other members of the health care team

C. Professionalism

The resident will develop the ability to:

- 1) Respect patient wishes and provide adequate counseling, education, and informed consent instruction to patients
- 2) Demonstrate an ethically sound practice of medicine
- 3) Demonstrate sensitivity to cultural, age, gender, and disability issues among patients

D. Medical Knowledge

The resident will develop the ability to:

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

Specialty Specific Knowledge & Skills

- 1) Understand, recognize, and discuss skeletal dysplasia
- 2) Understand the etiology, diagnosis and treatment of sickle cell anemia & hemophilia
- 3) Understand the characteristics, pathogenesis, diagnostic features, and management of neuromuscular disorders
- 4) Recognize and treat, in conjunction with a multidisciplinary team, cerebral palsy, juvenile rheumatoid arthritis, and spinal deformities
- 5) Understand, recognize, and non-operatively and operatively manage upper limb, leg length, hip, and lower limb deformities and disorders
- 6) Understand the clinical manifestations, treatment, and long-term prognosis of complex gait disorder and fractures
- 7) Understand the characteristics, pathogenesis, management, and treatment of the complex trauma problems

Specialty Specific Psychomotor Skills

- 1) Interpret and synthesize patient history, clinical exam, and diagnostic tests into a differential diagnosis for the conditions listed above
- 2) Know the indications for an interpretation of various laboratory, radiologic, and other diagnostic tests for the condition listed above
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- 4) Perform or assist in surgical procedures required to address the conditions listed above (i.e. scoliosis surgery, limb length problems, tumors, fracture care, neuromuscular disease, cerebral palsy, myelomeningocele, developmental deformities, DDH, Legg Perthes disease, congenital anomalies)

E. Practice-Based Learning and Improvement

The resident will develop the ability to:

- 1) Assess one's own patient management skills and ability to make appropriate changes in practice
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2. Resident Supervision (Pediatric Orthopaedic Surgery)

Residents on the Pediatric Orthopaedic Rotation are supervised continuously. They see patients at least one day per week with an attending Pediatric Orthopaedic Surgeon. Each patient is seen by this staff member, and the plan is discussed.

They are also supervised in the OR. Each case is discussed at Indications Conference. Each surgical case is mentored by an attending surgeon, who performs or supervises the resident for the entire case or on occasion, the critical portions of the case.

Residents are supervised on rounds, which are made as a team each day.

Residents are supervised on call. There is an attending available from each specialty to discuss cases. There is a review of emergency cases performed at 7 am after each call day. Inpatient consultations are each staffed by a Pediatric Orthopaedic Attending.

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3. Clinical Activities

General Pediatric Orthopaedic clinic: at least one day per week for each resident

Cerebral Palsy Clinic: two days per week

Myelomeningocele clinic: two days per month

Scoliosis clinic: one day per week

Operating room: there are 9 full block Pediatric Orthopaedic days in the Operating room each week. Residents participate in these cases on an evenly divided basis.

Trauma: Johns Hopkins is the Premier Level-I trauma center for pediatrics.

4. Required Readings

Lovell and Winter Pediatric Orthopaedics: Read 1-3 assigned chapters, covering the text during the rotation

Flynn J, Skaggs D, Flynn J: Staying Out of Trouble in Pediatric Orthopaedics. Lippincott Williams and Wilkins 2006.

Core Readings in Pediatric Orthopaedics:

Weinstein SL: Natural History of Pediatric Orthopaedic Disorders. 2000 JBJS pp 980-990

Mubarak SJ: One-Stage Correction of the Spastic Hip JBJS 1992: 1347 }

Feiwell E: Effect of Hip reduction on function in Myelomeningocele. JBJS 60A: 169

Weinstein SL et al: Health and Function in Idiopathic Scoliosis 50 year F/U, JAMA 2003; 559-67
 Nachemson AL: Brace effectiveness in AIS JBJS 27A: 815-822, 1996
 McMaster MJ: Natural History of Congenital Scoliosis JBJS 64A: 1982
 Murray PM, Weinstein SL: Natural History of Scheuermann Kyphosis JBJS 75A: 236
 Zionts LE, MacEwen GD: Treatment of DDH between 1 and 3: JBJS 68A: 829
 Catterall A: Natural History of Perthes JBJS 52B: 37-62
 Stulberg SD: Natural History of Perthes JBJS 63A: 1095
 Herring JA: Effect of Treatment on Outcome of Perthes. JBJS 86A: 2121
 Gelberman RH: Femoral retroversion and SCFE. JBJS 69A: 1000
 Carney BT: Long-Term Follow up of SCFE JBJS 73A: 667
 Paley D et al: multiplier method JBJS 2000: 1432- 1445
 Ponseti IV: Current Concepts in Clubfoot JBJS 74A: 448
 Simons GW: Complete Subtalar release I & II JBJS 1044-1056
 Fredrickson BE: Natural History of Spondylolysis/lithesis JBJS 66A:699
 Phillips WE: Rotatory Atlantoaxial Subluxation. JBJS 1989: 664-667
 Salenius P: Development of Tibiofemoral angle JBJS 57A: 259
 Levine AM: Metaphyseal-diaphyseal angle. JBJS 64A: 1158-1163
 Pirone AM: Management of Supracondylar Humerus Fractures in Children 1988: JBJS 70A:641-649

5. Didactic Activities

There are conferences four of the five days per week: Monday and Wednesday are didactic lectures. Monday's lecture is given by an attending and Wednesday's lecture is given by a resident, mentored by an attending. Tuesday is the Physical Diagnosis conference, presenting physical examination on an instructive patient before the Pediatric Orthopaedic team, supervised by an attending. Thursday is Departmental Grand Rounds. Friday is Indications conference, covering the surgical cases for the upcoming week with discussion and references.

The following are the didactic lectures covered each rotation with assigned attending and assigned reading chapter in Lovell and Winter textbook of pediatric orthopaedics:

Principles of Pediatric Ortho; connective tissue disorders (PS) {Chapters 2,5,6};
 Skeletal Dysplasia (MA) {Chapter 8}
 Pediatric Bone and Joint Infections (PS) {Chapter 13}
 Cerebral Palsy (AL) {Chapter 15}
 Myelomeningocele (PS) {Chapter 16}
 TL Spinal Deformity (PS) {Chapter 18, 19,20} This is a 2-week topic
 DDH (JT) {Chapter 24}
 Perthes (MA) {Chapter 25}
 SCFE (AL) {Chapter 26}
 Leg Length Inequality (JT) {Chapter 29}
 Pediatric Foot Deformity (JT) {Chapter 30}

Resident Lectures (moderated by an attending)(Wednesday 6:15 am)

Localized Disorders of Bone and Soft Tissue (Ain) {Chapter 10}
 Spondylolysis and -lithesis (PDS){chapter 21}

Pediatric Cervical Spine and TL spine trauma (PS){chapter 22}
Angular Deformities of the Lower Extremity (JT) {Chapter 28}
OI (PDS) {chapter 6,7}
NF1 (NHM) {Chapter 6}
Fibrous Dysplasia (Leet) {Chapter 14}
Pediatric knee disorders (Discoid meniscus, popliteal cyst, OCD, ACL) (Leet) {Ch 32}
Fractures of the Humerus (upper, midshaft and lower) (PDS) {chapter 33}
Fractures of the radius and ulna (upper, midshaft and lower) (PDS) {chapter 33}
Lower Extremity Fractures (Leet){chapter 33}

In addition, there is a set of 12 questions to go with each topic, written by our division. Once per quarter, the residents take the Orthopaedic Self-Assessment Exam for Pediatrics and it is scored and reviewed by an attending.

6. Schedule

Monday

Didactic Conference 6-6:45 AM
Trauma review 6:45-7:15 AM
Inpatient Rounds 7:15-8 AM
Clinic 8-5 Johns Hopkins Outpatient Center (with Sponseller or Tis), or
General Operating Room (with Leet or Ain)

Tuesday

Physical Diagnosis Conference 6:45-7 AM
Trauma review 7-7:15 AM
Inpatient Rounds 7:15-7:45 AM

Clinic 8-5 at Johns Hopkins Outpatient Center (Ain) or
General Operating room (Sponseller)

Wednesday

Didactic Conference 6:15-7 AM
Trauma review 7-7:15 AM
Inpatient Rounds 7:15-7:45 AM
Cerebral Palsy Clinic 8-5 at Kennedy Krieger Institute (Leet) or
General Operating Room (Sponseller or Ain)

Thursday

Trauma review 6:00-6:15 AM
Inpatient rounds 6:15-7:00 AM
Departmental Grand Rounds 7-8 AM
Resident Lectures 8-12 followed by
Outpatient Operating Room (Tis) or
Clinic 12-5 Johns Hopkins Outpatient Center (Sponseller)

Friday

Indications Conference 6-7 AM
Trauma Review 7:00-7:15 AM

Inpatient Rounds 7:15-7:45 AM
General Operating Room 8-5 (Ain, Sponseller, Tis), or
Cerebral Palsy Clinic 8-12 or
Clinic Johns Hopkins Outpatient Center (Leet 8-12, Ain 13-5)
Spina Bifida Clinic (Kennedy Krieger Institute every other Friday afternoon 1-5)