

Pediatric Orthopaedic Fellowship Manual

Division of Pediatric Orthopaedic Surgery

Children's Hospital of Pittsburgh (CHP)

Academic Year 2014-2015

Introduction

This manual is a guide for fellows in the University of Pittsburgh Pediatric Orthopaedic Fellowship Program (Fellowship Program) and for individuals who have interest in becoming fellows. The manual includes sections on fellow selection criteria, goals and objectives of the program, policies, procedures, and department/hospital rules which govern the Fellowship Program. A section outlines the areas of current research at the Children's Hospital of Pittsburgh which are available to the fellow and another section describes the fellow evaluation process and the requirements for graduation. The final section describes some of the opportunities a fellow has to enjoy the unique cultural, athletic, and historic aspects of the city of Pittsburgh and the state of Pennsylvania.

The Pediatric Orthopaedic Fellowship Manual (online at www.chp.edu/CHP/pediatric+orthopaedic+fellowship), is also available through James W Roach MD, Fellowship Director (414 692-7818), Sue Sorbo, Pediatric Orthopaedic Office Manager (412 692-6868), and Roberta Moenich, Fellowship Coordinator (412 605-3262).

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A. The Selection Process

Fellows are chosen through the San Francisco Matching Process and must be graduates of a core orthopaedic surgery program accredited by the Accreditation Council on Graduate Medical Education (ACGME) or the Royal College of Physicians and Surgeons of Canada. In addition applicants must have three excellent letters of recommendation and passed USMLE parts 1, 2, and 3. One letter of recommendation must be from the chairman of the applicant's orthopaedic surgery residency program and the two other letters should be from orthopaedic surgeons/teaching attendings within the same residency training program. The Fellowship Program will contact each applicant's medical school and residency program to verify successful completion of that portion of their training.

All fellows will be required to obtain a Pennsylvania medical training license to participate in the fellowship. This license is required by Pennsylvania regardless of any unrestricted licenses the fellow may currently hold.

B. Goals and Objectives of the Program

The goal of the Fellowship Program is to produce independent practitioners who are capable of providing excellent pediatric orthopaedic care to children and also capable of pursuing an academic career which would include research. To achieve this, the Fellowship Program provides a structured training environment with clear goals and objectives and graduated responsibility for clinical care on all rotations and in all care settings. Faculty provide appropriate supervision of the fellow's patient care activities at all times.

The Fellowship Program goals and objectives are derived from the six core competencies: Medical Knowledge, Patient Care Skills, Interpersonal and Communication Skills, Professionalism, Practice Based Learning, and Systems Based Learning.

Goal 1 - This goal addresses the first two core competencies, Medical Knowledge and Patient Care Skills. It is a goal of the Fellowship Program that each fellow completing the program has gained the scientific knowledge, medical and surgical skills necessary to safely and efficiently care for children with pediatric orthopaedic conditions.

Objective 1 - Over the fellowship year the fellow must acquire a thorough understanding of the pathophysiology, diagnostic evaluation, medical and surgical treatment of the pediatric orthopaedic conditions listed in the Pediatric Orthopaedic Acquired Surgical Skills and Knowledge Assessment (POASSKA) and the Pediatric Orthopaedic Fellow Evaluation form (POFEF) which are in the appendix of this Fellowship Manual. In addition the fellow will be assessed using the ACGME Milestones document which is in the website with the Fellowship Manual (see www.chp.edu/CHP/ortho+fellowship+manual).

Objective 2 - The fellow is expected to make steady progress toward displaying effective investigatory and analytical thinking in their approach to diagnosis and treatment of the patients with pediatric orthopaedic conditions. They should demonstrate meticulous attention to detail that permits them to accumulate accurate and essential medical information about the patient which leads to correctly identifying and resolving the patient's problem and thus providing good overall quality of care.

Objective 3 - At the completion of the fellowship, the fellow must demonstrate good surgical skills with proper spatial concepts. Furthermore the fellow must have an understanding of appropriate indications for surgery.

Objective 4 - Over the fellowship year the fellow must acquire a fund of knowledge and technical surgical skills which are appropriate to a "fully trained" pediatric orthopaedic surgeon.

Four fellowship activities are described below which will assist the fellow in achieving these four objectives and thus Goal 1.

- Fellow attendance is required at each of the three weekly teaching conferences where lectures and case presentations reflecting the pediatric orthopaedic conditions described in the POASSKA and Milestones are given by various staff surgeons. These conferences are structured as both didactic and Socratic teaching experiences. Questions posed to the fellow during the Socratic portion of each conference will allow the staff to assess the fellow's progress as they master pediatric orthopaedics.
- During the fellowship year the fellow will be assigned 2 or 3 POASSKA/Milestone topics to present at these weekly conferences. Thus helping the faculty assess the fellow's teaching skills.
- The fellow will complete the self directed reading list and will attend pediatric orthopaedic journal clubs and the monthly department Mortality and Morbidity Conference.
- Fellow attendance in surgery and clinics will allow Faculty to teach and mentor as the fellow provides medical and surgical care to pediatric orthopaedic patients. These direct, supervised patient care activities will permit the staff pediatric orthopaedic surgeons to assess the fellow's learning progress.

The POASSKA, Milestones, and POFEF are the instruments used to assess the fellow's progress in achieving these objectives and Goal 1. The results of these three fellow assessment tools will be completed semiannually and shared by the Fellowship Director with the fellow in a formal evaluation session. The POASSKA/Milestones will also be used to advance the fellow's independence in patient care activities and resident teaching and supervision activities. For an explanation on the evaluation process and requirements for graduation, please see Section I in this manual.

Goal 2 - This goal address the third core competency, Interpersonal and Communication Skills. It is a goal of the Fellowship Program that by graduation fellows will have the interpersonal and communication skills necessary to be a good pediatric orthopaedic surgeon. There are four objectives the fellow must acquire to achieve Goal 2.

Objective 1 – The fellow must demonstrate good relations with residents, clinic personnel, operating room and ward staff. Good relations include maintaining rapport with hospital staff, clear communication, demonstrating appropriate acceptance of criticism, and perceived leadership skills.

Objective 2 – The fellow will be able clearly present lectures on pediatric orthopaedic topics that completely cover the assigned topic and impart knowledge that is instructive to a diverse audience including both pediatric orthopaedists and other health care professionals.

Objective 3 – The fellow will demonstrate good rapport with patients and family members.

Objective 4 – In a timely manner, the fellow will clearly and accurately document patient status and progress in the medical record.

Three fellowship activities are described below which will assist the fellow in achieving these four objectives and thus Goal 2.

- The fellow will gain experience in positive interactions with medical personnel, patients, and families as the fellow participates in surgery and clinics. These activities will also allow the pediatric orthopaedic staff and health care providers in the clinic and OR to directly observe the fellow's interpersonal skills with other care givers, patients and families. Deficiencies can be identified through the POFEF and discussed with the fellow. The staff can also mentor the fellow and demonstrate more beneficial techniques to enhance interpersonal relations. These direct, supervised patient care activities will permit the staff pediatric orthopaedic surgeons to assist the fellow's learning progress in interpersonal relations and communication.
- During the year the fellow will be required to develop and present two to three pediatric orthopedic topics for the weekly teaching conferences. These presentations and the staff's constructive criticisms will allow the fellow to improve their lecturing and communication skills.
- The self-study reading list includes a book entitled Crucial Conversations by Patterson K, Grenny J, McMillan R, Switzler A. McGraw-Hill; 1 edition (June 18, 2002) ISBN-10: 0071401946. This book provides a good framework to aid individuals in interpersonal relationships and effective negotiation skills. In addition a monograph entitled "A Pathway to Leadership" by Roach JW is included in the self-study reading list and is in the addendum of this Fellowship Manual.

The semiannual Clinical Competency Committee will be used to assess fellow performance and progress in achieving the above objectives and thus Goal 2. At least one non-physician personnel from the office, clinic, ward, or OR will be selected by the Fellowship Director to assess the fellow's capabilities using the POFEF. The Fellowship Director will discuss the results of the Clinical Competency Committee with the fellow and together they will develop a plan to implement improvements or address deficiencies.

Goal 3 - This goal address the fourth core competency, Professionalism. It is a goal of the Fellowship Program that by graduation fellows will demonstrate the professional behavior that is necessary to be a good pediatric orthopaedic surgeon. There are four objectives the fellow must acquire to achieve Goal 3.

Objective 1 – The fellow must display good professional characteristics by being well read, on time, and prepared for clinics and surgery.

Objective 2 – The fellow must be an emotionally mature role model for the residents, demonstrating compassion for patients and families, initiating medical interventions when needed and without being asked, and reflecting integrity in all patient care activities. The fellow will be able to maintain good rapport with other members of the healthcare team and avoid condescending or abusive behavior with co-workers.

Three fellowship activities are described below which will assist the fellow in achieving these two objectives and thus Goal 3.

- Fellow attendance with the staff pediatric orthopaedic surgeons in surgery and clinics will allow the fellow to learn the required commitment to promptness and preparation for these patient care activities.
- As the fellow participates in these patient care activities they will observe other medical personnel interacting in appropriate and constructive ways with patients and families. During the clinics and in surgery the pediatric orthopaedic staff will be able to assess the fellow's professional behavior and any deficiencies can be identified and discussed immediately with the fellow. The staff can also mentor the fellow and demonstrate more beneficial techniques to enhance interpersonal relations. These direct, supervised patient care activities will permit the staff pediatric orthopaedic surgeons to assist the fellow's learning progress in achieving desired professionalism.

The semiannual Clinical Competency Committee judgements will be used to assess fellow performance and progress in achieving the above objectives and thus Goal 3. The Fellowship Director will discuss with the fellow the results of the semiannual Clinical Competency Committee meeting and together they will develop a plan to implement improvements or address deficiencies.

Goal 4 - This goal address the fifth core competency, Practice Based Learning. It is a goal of the Fellowship Program that fellows will demonstrate the ability to enhance their patient care capabilities by continually improving through practice based learning. There are four objectives the fellow must acquire to achieve Goal 4.

Objective 1 - The fellow will demonstrate the use of outside reading to assist in medical and surgical decision making.

Objective 2 – The fellow will display the ability to utilize information technology to assist in medical and surgical decision making

Objective 3 – The fellow will apply evidence based medicine to provide the best medical and surgical care.

Objective 4 – The fellow will embrace the critiques provided during the semiannual reviews to improve their performance.

Three fellowship activities are described below which will assist the fellow in achieving these four objectives and thus Goal 4.

- Fellow attendance is required at each of the three weekly teaching conferences where lectures and cases presentations reflecting the pediatric orthopaedic conditions described in the POASSKA/Milestones are given by various staff surgeons. These conferences are structured as both didactic and Socratic teaching experiences. The questions posed to the fellow during the Socratic portion of each conference allows staff assessment of the fellow's progress in mastering pediatric orthopaedics. Deficiencies in knowledge will be addressed by having the fellow review the literature and internet on the subject in question and provide a short report at the next conference.
- The fellow will utilize the literature and the internet to prepare their assigned lectures on POASSKA/Milestone topics.
- Fellow attendance in surgery and clinics will allow staff teaching and mentoring as the fellow provides direct medical and surgical care to pediatric orthopaedic patients. These supervised patient care activities will permit the staff pediatric orthopaedic surgeons to critique the fellow's performance and learning progress.

The semiannual Clinical Competency Committee assessments will be used to assess fellow performance and progress in achieving the above objectives and thus Goal 4. The Fellowship Director will discuss with the fellow the results of the semiannual Clinical Competency Committee meeting and together they will develop a plan to implement improvements or address deficiencies.

Goal 5 - This goal address the sixth core competency, System Based Practice. It is a goal of the Fellowship Program that fellows will demonstrate the ability to provide high quality and cost efficient medical care to their patients. There are two objectives the fellow must acquire to achieve Goal 5.

Objective 1 - The fellow will demonstrate and understanding of good surgical indications, the proper use of laboratory testing, and appropriate ordering of advanced imaging.

Objective 2 – The fellow will display the ability to effectively coordinate care with other specialists.

The fellowship activity below will assist the fellow in achieving these two objectives and thus Goal 5.

Fellow attendance in surgery and clinics will allow staff teaching and mentoring as the fellow provides direct medical and surgical care to pediatric orthopaedic patients. These supervised patient care activities will permit the staff pediatric orthopaedic surgeons to critique the fellow's performance and learning progress as they help provide patient care. These clinics include General Pediatric Orthopaedic Clinics, twice monthly Cerebral Palsy Clinics, a monthly Amputee Clinic, and twice monthly Spina Bifida Clinics. Multidisciplinary (PT, OT, orthotics, prosthetics, urology, physical medicine/rehabilitation, and neurosurgery) staff are present in many of the General Orthopaedic Clinics and all of the CP and Spina Bifida clinics and will expose the fellow to the care provided by these other services. Prosthetics and orthotics are present in the Amputee Clinic.

The semiannual Clinical Competency Committee assessments will be used to assess fellow performance and progress in achieving the above objectives and thus Goal 5. The Fellowship Director will discuss with the fellow the results of the semiannual Clinical Competency Committee meeting and together they will develop a plan to implement improvements or address deficiencies.

Goal 6 – The fellowship has a goal that fellows will develop the skills necessary to accomplish clinical research and work in an academic institution. There are two objectives the fellow must acquire to achieve Goal 6.

Objective 1 – The fellow will work on a clinical research project during the fellowship.

Objective 2 – The fellow will submit an abstract of any completed clinical project to a national meeting for consideration of podium or poster presentation.

Objective 3 – The fellow will complete a manuscript of any completed clinical research project and submit it to a medical journal for consideration for publication.

The fellow will be provided the list of potential projects that have been collected by the staff pediatric orthopaedists and are ready for IRB approval and initiation.

C. Staff Supervision of Fellow, Clinic/Surgery Assignments, and Fellow Supervision of Residents

Supervision

Fellows should inform the patient and their family members of their role as a supervised fellow in the patient's care. Fellows will be supervised by faculty either directly or indirectly in all patient care activities. Fellows may write orders and give verbal orders. Fellows are expected to maintain patient medical records in an appropriate and timely manner and in accordance with the rules of the University of Pittsburgh Medical Center. In the clinic and the inpatient setting the fellow will first evaluate the patient, perform a physical exam, and formulate a treatment plan. The fellow will then relate these to the supervising faculty physician, who with the fellow in attendance will perform his or her own evaluation and then discuss the diagnosis and treatment recommendations with the patient and family. After leaving the patient room any discrepancies in the fellow's assessment are discussed and suggestions for educational opportunities are provided by the faculty. In all clinic and surgical settings the fellow will be supervised by the faculty attending for the appropriate portions of the patient encounter.

As the fellow gains knowledge and surgical skills (as demonstrated by their POASSKA/Milestones assessment), the fellow will have increased clinical decision making and more time as primary surgeon. The POASSKA provides the fellow with a grade indicating the level of achieved competence in each of the POASSKA pediatric orthopaedic conditions. Level A indicates the fellow has achieved a level of competence in that condition that permits the fellow to manage all aspects of the condition without seeking consultation. A Level B grade indicates the fellow is capable of assessing/managing the well-defined problems for the condition but lacks expert capabilities and thus will use others for the condition's complex aspects. A Level C grade indicates the fellow can triage the condition but is not yet able to provide independent care. A fellow who achieves a Level B status in any POASSKA condition is deemed qualified to provide direct patient care in the clinics with remote staff supervision. A Level B status also permits the fellow to provide clinic or emergency room supervision to the residents for that particular condition. A Level B status also indicates the fellow is ready to function as the primary surgeon with staff surgeon supervision for that particular condition. Thus as the fellow achieves competency with the POASSKA conditions, they will be awarded more clinical, surgical, and teaching independence.

Clinic/Surgery Assignments

Ambulatory experiences take place at CHP and on Tuesday at the Shriner's CHP Clinic in Erie. At CHP the clinics include ten weekly General Pediatric Orthopaedic Clinics; one monthly Cerebral Palsy Clinic, and one monthly Spina

Bifida Clinic. The Tuesday CHP clinics at the Erie Shrine include General Orthopaedic Clinics, a monthly Cerebral Palsy Clinic, a monthly Amputee Clinic, and a monthly Spina Bifida Clinic. The fellow will be driven by one of the attending staff Erie for the Shrine CHP Clinics.

The fellow will have the opportunity to operate on any day of the week. However if the fellow is not in the OR they will cover clinics on a rotating schedule. They will rotate in the clinic with each attending for two months and one two month rotation where they will be with Dr Roach and the other attending.

The fellow will work with the following schedule:

Monday – OR am, CHP SB Clinic pm

Tuesday – Erie Shrine CHP Clinic all day

Wednesday – am protected time for Grand Rounds, Core Curriculum Lectures, and research in pm.

Thursday – OR all day

Friday – OR am, CHP clinic in pm.

The fellow will manage the inpatient care of all patients that they see and admit from clinic as well as those patients whose surgery the fellow participated in.

Fellow Supervision of the Residents

The fellow leads the house staff team in assigning the residents and themselves to training level-appropriate clinical activities each week. After the Friday postoperative conference the fellow and the two senior residents will meet and assign house staff to the surgical cases for the following week. These assignments will account for the training level of each house staff and the complexity of the case. The fellow will make the assignments after considering the senior resident opinions. The fellow is also available for inpatient hospital rounds each morning, see all the ward patients with the residents, and serve as a source of advice and information to aid in the delivery of inpatient care. There are many more clinics than available house staff but if the fellow is with a resident in clinic, the fellow will involve the resident in the examination and discussion of any patient with especially interesting pathology. Likewise if the fellow is in a surgical case with a resident it is expected for the fellow to discuss the pertinent anatomy and surgical technique with the resident.

D. Education Conferences

The following are conferences for fellow, resident, and faculty attendance.

1. Monday morning 6:30-8:00 a.m. is the pre-operative CHP conference, when the indications for every scheduled surgical case for the upcoming week are discussed. This conference is held in the CHP 4th Floor Faculty Pavilion Donaldson Conference Room. Junior residents present the cases after reviewing the chart and radiographs. The staff lead the discussion focused on a complete understanding of the pathophysiology of the condition, the radiographic findings, surgical indications, surgical anatomy, and expected outcome from the proposed procedure. Questions appropriate to the training level of each house staff are directed to the various individuals.

2. The Tuesday morning conference is held from 6:30-7:30 a.m. in either the Hamot Auditorium or the Faculty Pavilion 8th floor conference room and telecommunicated as a live presentation between the Hamot orthopaedic resident program and the Pitt orthopaedic resident program. The link permits questions and answers from both the transmitting site and the receiving site. Over the course of the academic year each of the pediatric orthopaedic conditions in the POASSKA/Milestones are presented. Speakers are assigned by Dr Roach and will include the fellow, residents, and faculty. The topics in the POASSKA/Milestones cover the entirety of conditions within the specialty of pediatric orthopaedics and questions appropriate to the training level of each house staff are directed to the various individuals.

The following 33 topics were presented in the 2014 Tuesday Morning conference. Each lecture is designed to be a complete description of the current available knowledge regarding the topic, thus presenting material that is appropriate for at individuals in all levels of training, resident, fellow, or faculty. Lectures on the remaining Tuesday mornings were presented by Dr Roach as case unknowns. These were individual cases presented for discussion and covered the pediatric orthopaedic topic at a level appropriate for residents and fellows.

1. Normal and Abnormal Musculoskeletal Growth and Development and Genetics

- Cleidocranial Dysostosis
- Osteochondromatosis, Enchondromatosis, Dysplasia, Epiphysealis Hemimelia

- Neurofibromatosis with Congenital Pseudarthrosis of the Tibia
 - Mucopolysaccharidoses
 - Rickets
 - Metaphyseal Dysplasia
 - OI
 - Osteopetrosis
2. Normal and Abnormal Gait
 3. Skeletal Dysplasias
 - MED, SED, Morquio's, Achondroplasia, Diastrophic Dwarfism
 4. Leg Length Inequality
 - Fibular Hemimelia
 - Tibial Hemimelia
 - PFFD
 - Posterior Medial Bowing
 5. Conditions with Abnormal Collagen
 - Marfan's
 - Ehlers Danlos Syndrome
 - Down's
 6. Lesions of Bone, benign and malignant
 7. Upper Motor Neuron Conditions
 - Cerebral Palsy
 - Familial Spastic Paraparesis
 8. Lower Motor Neuron Conditions
 - Duchenne Muscular Dystrophy
 - Limb Girdle and FSH Dystrophy
 - Myotonic Dystrophy
 - Congenital Myopathy
 - Polio
 - SMA
 - Charcot Marie Tooth
 9. Spina Bifida
 10. Juvenile Arthritis and Hemophilia
 11. Torticollis, Klippel Feil, Sprengel's Deformity, Erb's Palsy
 12. Early Onset and Idiopathic Scoliosis
 13. Neuromuscular Scoliosis
 14. Kyphosis and Spondylolysis and Spondylolisthesis
 15. Congenital and Acquired Upper Extremity Conditions
 16. DDH
 17. LCP
 18. SCFE
 19. The Indications and Technique of Surgical Hip Dislocation
 20. Angular and Rotational Lower Extremity Conditions
 - Femoral Anteversion and Retroversion
 - Physiologic Bowing and Blount's
 - Tibial Torsion
 - Metatarsus Adductus
 21. Complex Congenital Lower Extremity Conditions
 - Knee Dislocation
 - Congenital Flexion Contracture
 21. Knee Conditions and Injuries
 - Meniscal Injuries (torn and discoid)
 - Ligament Injuries (ACL, PCL, and collaterals)
 - Acute Knee Dislocation

- Patellar Dislocation
 - Osgood Schlatters
 - Osteochondritis Dissecans
 - Patella Femoral Disorders
22. Disorders of the Foot
- Cavus Foot
 - Calcaneal Valgus Foot
 - Bunion
 - Tarsal Coalition
 - Flexible Flat Foot
 - Accessory Navicular
 - Overlapping Toes
23. Clubfoot and Vertical Talus
24. Amputee Care
25. General Trauma Care
- Multiply Injured Child
 - Child Abuse
 - Open Fractures
 - Physeal Fractures
26. Upper Extremity Trauma
27. Lower Extremity Trauma
28. Spine Trauma
29. Pelvic Trauma
30. The Avoidance and Treatment of Complications of Upper Extremity Trauma
31. Infections
- Osteomyelitis (acute and chronic)
 - Septic Joints
 - TB
 - Transient Synovitis
32. Practice Management
33. Snake Bite Management

3. Weekly didactic lectures and case presentations on orthopaedic conditions occur every Wednesday morning from 7:00-8:00 a.m. at Orthopaedic Grand Rounds. These are held in the Montefiore Hospital LHAS Auditorium and cover topics in both adult and pediatric orthopaedic surgery. The fellow is expected to attend these conferences and may be asked to prepare and present a lecture during the year.

4. Once a quarter on a Thursday afternoon at 4:00-5:00 p.m. a combined Peds Ortho/Radiology conference is held in CHP Pediatric Radiology 2nd Floor room 2524. Dr Roach from Pediatric Orthopaedics and Dr Shah from Radiology prepare cases to present to the orthopaedic and radiology residents and fellows. Each case is presented as an unknown and questions appropriated to the training level of each individual are directed to the various house staff.

5. Friday morning from 7:00-8:00 a.m. is the postoperative CHP conference where the surgical cases from that week are reviewed with the appropriate radiographs. This conference is also held in the CHP 4th Floor Faculty Pavilion Donaldson Conference Room.

6. A research conference occurs on many Fridays either just before the postoperative CHP conference at 6:00 a.m. in the CHP 4th Floor Faculty Pavilion Donaldson Conference Room or on Friday afternoon. The research conference allows a review of the progress of all current projects initiated by staff, residents, and the fellow. In addition new proposals for research are discussed and for those selected, a plan for funding and IRB approval is formulated. Individuals from the University of Pittsburgh School of Public Health with expertise in study design and statistics are present.

7. Orthopaedic Mortality and Morbidity (M&M) Conferences occurs quarterly at 8:00-10:00 a.m. Saturday morning in the Montefiore Hospital LHAS Auditorium. Complications and deaths for each service are discussed at this conference. Residents or fellows who are familiar with each case are assigned by Dr. Ward, Grand Moderator of M&M, to prepare and present it. The assigned house staff should be prepared to answer questions pertaining to the surgical indications,

anatomic considerations, and specific complications. All case presentations should include radiographs and any other appropriate imaging. The format is for Dr Ward to select 2-3 complications per service for discussion.

8. Journal Club is held just after Grand Rounds in the Montefiore Auditorium. Articles from the Journal of Pediatric Orthopaedics, JBJS, and Spine are selected by Dr Roach and assigned to the residents on service and the fellow for review and discussion. All available pediatric orthopaedic staff, residents, and the fellow are expected to attend.

The Spine Surgery Indications Conference is elective for fellow attendance but is attended by spine surgery faculty. It is held Wednesday morning from 6:00-7:00 a.m. in the LHAS Auditorium in Montefiore Hospital. This occurs prior to the 7AM Grand Rounds presentations.

The following conference is elective for faculty but required for resident attendance and available for fellow attendance. The Core Curriculum Orthopaedic Lecture Series occurs 8:00-11:00 a.m. Wednesday mornings in January just after Grand Rounds in the Montefiore LHAS Auditorium. Faculty speakers are rotated and the topics include both adult and pediatric orthopaedic conditions. The fellow should attend those lectures that pertain to pediatric orthopaedics. The areas covered are:

- Anatomy
- Basic Science
- Foot and Ankle Surgery
- Hand Surgery
- Hip and Knee Reconstruction
- Medical Economics
- Medical/Legal issues
- Pediatric Orthopaedics
- Shoulder and Elbow Surgery
- Spine Surgery
- Sports Medicine
- Orthopaedic Trauma

The 2014 pediatric orthopaedic topics in this Wednesday morning Core Curriculum series included the following topics:

- a. Upper Extremity Trauma
- b. DDH
- c. Cerebral Palsy
- d. Spina Bifida
- e. Leg Length Discrepancy
- f. Scoliosis
- g. Femoral-Acetabular Impingement
- h. Clubfoot
- i. Legg Calves Perthes Disease
- j. Torsional Deformities
- k. Septic Joints and Osteomyelitis
- l. Practice Management

E. Learning Resources

The Orthopaedic Library – Zimmer Education Center is located on 11th floor of the Kaufmann Building. In addition to the full spectrum of orthopaedic journals and textbooks, a variety of resources are available to the residents in this facility. These include: computers (6), laser printer, scanner, CD burner, multiple x-ray viewing boards, lounge with TV/VCR, lockers, and mailboxes. There is also work space for research and storage for research x-rays. It is everyone's job to take care of the library, as there is no librarian. If you read/use a book, please put it back. If you see new journals lying around, put them in their proper place. We all use the library and the cleaner and more organized it is the better for all in the program.

Connect@UPMC

The website address is essential throughout your fellowship so get this working early. It allows your home computer to be logged into the UPMC network so at home you can access everything you have at work. You can open the electronic medical record (Cerner), PACS (Stentor), the hospital library, the sharepoint website (see below), etc. The first time you

use the website you have to download a few files; just go to the website and follow the directions. If you have questions call 412-647-HELP. The website is: <https://connect.upmc.com/>

Health Science Library—Scaife Hall

Additional journals of interest can be found in this complete library. Many older journals not found in the Orthopaedic Library are found here and there is a librarian to assist.

Sharepoint Site

The residents maintain an online website that allows the sharing of important educational information such as past OITEs, grand rounds, and Core Curriculum readings for each rotation. The website address is: <http://spis.upmc.com/psd/home/ortho/residents/default.aspx>

To access the site you must be “in network” meaning you must be signed onto a hospital computer or signed in at home through your “Connect@UPMC” account. Everyone should have access to upload and download documents to this website. The goal of the Core Curriculum readings is to have a set of documents that are useful for pediatric orthopaedics.

Recommended Texts and Books for Self Study

Synthes offers textbooks through the Synthes resident website:

<http://us.synthesresident.com/>

Hoppenfeld’s Surgical Approaches

Hoppenfeld Examination of the Spine & Extremities

Trauma text—Rockwood and Green or Skeletal Trauma (available online through library)

Cambell’s Operative Orthopaedics (available online - library) (alternatively Champan’s)

Lovell and Winter’s Pediatric Orthopaedics (available online – library)

Tachjidian’s Pediatric Orthopaedic Textbook

Orthopaedic Knowledge Update Subspecialty Texts

Crucial Conversations by Patterson K, Grenny J, McMillan R, Switzler A. McGraw-Hill; 1 edition (June 18, 2002) ISBN-10: 0071401946

F. Children’s Hospital On-Call Responsibilities

The fellow does not take call. Nevertheless the following information is provided so the fellow understands the CHP process.

The call team consists of a junior resident, a CHP chief resident, and a pediatric orthopaedic attending.

CHP call:

- Day call is shared by the ortho junior residents on the Children’s rotation.
- Night and weekend call will be shared by the ortho junior residents at CHP as well as the ortho junior resident on the Sports service
- Junior resident call averages every fourth night.
- Senior resident take call from home and are available to the junior resident for consultation. Senior residents come to the hospital to evaluate patients if the junior resident is uncertain of the diagnosis or best management for the patient or if the patient requires surgery. Senior residents call averages every third night. The senior resident notifies the on-call staff for any cases that require surgery. The senior resident is encouraged to call the on-call staff if they need help or if they are uncertain about the best management for a particular patient.

Cross Coverage and Handoff

During the day, night, and weekends, the junior resident is the on-call resident for all orthopaedic inpatients. Prior to leaving the hospital the fellow must give the incoming on-call resident a face to face review of the medical status and treatment plan for all pediatric orthopaedic inpatients being managed by the fellow.

Answering Service

After 5pm, all department calls are forwarded to the answering service which will page the junior resident on call.

Narcotic Prescriptions

Fellows should not prescribe narcotics to unfamiliar patients unless the fellow has evaluated them in the ER. But there are exceptions. For example, a patient who has had surgery and the primary service forgot to give them pain pills. Contacting the operative team and verifying the situation can handle this. Nevertheless the fellow must be very cautious about narcotic prescriptions. Patients without straightforward pain medication issues in general have three options:

- 1) Wait until normal business hours and call their orthopaedic attending
- 2) Call their PCP who is familiar with them
- 3) Go to an ER to be evaluated for pain

G. General Policies

Work Hours

The mandated duty hour standards will be strictly enforced utilizing the MedHub duty hour tracking system. The fellow will not take emergency night call. However the fellows are required to log their hours daily. A report is printed each week showing the previous four weeks for each fellow and reviewed by the Program Coordinator. Any fellow who is found to be in violation of the rules are reported to the Program Director for action. The reporting system is audited by the GMEC Duty Hours and Work Environment Sub-committee to assure compliance. The core Residency Program Director is a member of this Sub-committee and is therefore aware of any new compliance issues throughout the system.

The program ensures that all fellows have at least 1 day in 7 free from all educational and clinical responsibilities and the appropriate time off between duty periods. Everyone in the department, all faculty and all fellows are aware of the specifics of the duty hour regulations, the importance of it for fellow and patient well-being, and the importance for the continued accreditation of the program. The fellows do not take in house call. Fellows are encouraged to speak with the Fellowship or Residency Program Director if they think they are not in compliance with the regulations.

The ACGME guidelines for Resident Work hours are described in detail at the web site www.ACGME.org. These should be reviewed prior to beginning the fellowship.

Moonlighting Policy

The fellow will not be permitted to moonlight.

Surgical Logs (Must be updated weekly)

These will be reviewed weekly by Drs Roach and Deeney Program Director and core Residency Director. The logs will be kept online at the Accreditation Council for Medical Education Web Site (www.acgme.org/residentdatacollection/). It is best to get a card from each case and note what was done at that time. To properly enter information onto the web site you will need: attending, hospital, date of procedure, procedure performed (must be entered as a CPT code).

Vacation Policy

1. 3 weeks (15 work days) in each academic year for vacation.
2. 5 additional work days for Continuing Medical Education conference attendance.
3. 5 additional job interview days.
4. Paternity/Maternity and sick time; even if you plan to use “vacation time” as paternity/maternity time you must carefully read the “absence from the program” section.

Any fellow absent from the program for greater than 6 work weeks (total time including vacation, conferences, interview time, sick leave, paternity/maternity) in one academic year will fail to meet the minimum clinical time required for completion of the fellowship program for that year. The 6 work weeks is defined as 30 working days. All vacations must be cleared through the Fellowship Director. To begin this process, please submit a request for time off to the Pediatric Orthopaedic Office Manager, Sue Sorbo.

Absence from Program

Sick Leave

Medical leave for up to 26 weeks is allowed in any 12 month period. Issues regarding sick leave time will be worked out on an as needed basis and UPMC policies on short and long term disability will apply. However, as stated earlier, GME

credit cannot be granted if actual participation in fellowship curriculum is less than 46 weeks (*more than 6 weeks of leave time*) out of an academic year.

Paternity/Maternity Leave

If you are going to take time off for childcare you must contact the Fellowship Director (Dr Roach), the GME office, and Alyssa Mullett (412-802-6257) in the UPMC Benefits Office.

Interview Days

For job interviews fellows may take up to five extra workdays for interviews. This is a one-time allotment of 5 days. These days do not count against vacation/conferences. If more than five workdays are needed for interviews they will be considered vacation days.

Graduation

The last day of work for all finishing fellows will be July 31st. The Graduation Dinner will occur before July 31st.

Benefits

Pay Periods, Direct Deposit, Health Insurance, Dental Insurance, Disability Insurance, Life Insurance, Medical Malpractice Insurance will all be set up with the Human Resources Department before beginning the fellowship. This requirement also includes mandatory drug testing, TB screening, child abuse query, FBI fingerprinting, and any needed immunizations.

Parking

Parking is provided to the fellow at all facilities within the UPMC system.

Stress/Fatigue Identification and Treatment

In the case of excessive stress or fatigue, fellows may self-refer to the Resident and Fellow Assistance Program (RFAP). This institutional resource connects trainees with confidential counseling, psychiatric, and learning assistance resources as indicated by the trainee's particular situation. During system-wide orientation, fellows are informed of this program. Contact information for RFAP is prominently included on the University of Pittsburgh's GME site, GME Knows. Fellows may meet with either the Pediatric Orthopaedic Fellowship Director or the Residency Director to strategize about how best to use RFAP resources and manage stress in other ways. Fellows meet quarterly with the program director and a faculty member to review performance and progress in training. These meetings also serve as a means to monitor stress and plan action if needed.

Grievance Procedures

Fellows with a grievance are asked to present a written explanation of the issues to the Director of the Fellowship and also to the Director of the Residency. These two individuals then meet with the fellow and discuss the problem and subsequently offer written suggestions for resolution. If the fellow believes the issue is not resolved, they then can seek a review by the Department Chair, Dr Freddie H. Fu. If the fellow is still unsatisfied, there is an ombudsperson available for anonymous consultation within the GME department. The fellow may utilize the institutional appeals process through UPMC Medical Education where appeals for both academic and non-academic grievances are available. This institutional program has resident and fellow representatives on the grievance committee.

H. Research

Clinical Requirements and Recommendations

Fellows are encouraged to complete and submit for presentation (national meeting) and publication (peer reviewed) at least one clinical or basic science project. Current areas of research expertise at CHP pediatric orthopaedics include long term follow up studies (scoliosis and DDH), ACL reconstruction in patients with open growth plates, early onset scoliosis and chest wall deformities, and coagulation studies during spinal fusions.

Pittsburgh Orthopaedic Journal (POJ)

This is the orthopaedics journal for the University of Pittsburgh and includes research generated from the department. The journal is edited by the chief resident from the laboratory rotation. Fellows are encouraged to submit their work for consideration of publication.

Basic Science

Research is available in the basic sciences. See the Fellowship Director, Dr Roach, to discuss topics.

I. The Fellow Evaluation Process and Requirements for Graduation

At the beginning of the fellowship year, the fellow receives the goals to be accomplished and the objectives to assist the fellow in accomplishing these goals. The goals include achieving specific surgical, inpatient care, ambulatory care, and scholarly capabilities.

The fellowship director uses the POASSKA, the Pediatric Orthopaedic Fellow Evaluation Form (POFEF), and the ACGME Milestones to document the fellow's performance. On a semiannual basis the fellowship director will have orthopaedic surgical faculty, other health care providers, and support personnel individually complete a POFEF. This measures fellow performance using the six core competencies. The fellowship director will also discuss the fellow's capabilities with each faculty member and then compile a summary POASSKA and Milestones that represents the fellow's current surgical and medical knowledge. The Clinical Competency Committee will use these three instruments to determine if the fellow is demonstrating adequate acquisition of the necessary skills and knowledge to practice as an independent pediatric orthopaedic surgeon. The judgements of the Clinical Competency Committee will be compiled as a written document by the fellowship director and presented and discussed with the fellow. If the fellow's progress is deemed inadequate, the fellow will be told that they must improve or they will not graduate. In this instance the fellowship director and the fellow will develop and implement a remediation plan to attempt to rectify the inadequacies. At any time, if a fellow's actions reflect poorly on any of the six core competencies, the fellowship director will inform the CCC and intervene with a remediation plan. The fellowship director will report the outcomes of the remediation plan back to the CCC.

At the end of the fellowship year the fellow will graduate if a majority of the members of the Clinical Competency Committee consider the fellow to have achieved the skills and knowledge necessary to independently practice pediatric orthopaedic surgery. If the majority of the members of the Clinical Competency Committee believe the fellow has not achieved the skills and knowledge necessary to independently practice pediatric orthopaedic surgery, the fellow will not receive a Fellowship Completion Certificate and therefore will not be considered as having successfully completed the fellowship.

During the fellowship year a fellow may contest poor scores on the POASSKA, POFEFs, or Milestones by soliciting the Grievance and Appeals Process.

J. The Program Evaluation Process

Pediatric Orthopaedic Faculty Evaluation Forms (POFE) are submitted anonymously by the fellow and the residents who have rotated on the pediatric orthopaedic service. The scores and comments from the POFE forms are incorporated into a summary and provided to the faculty. The POFEs are reviewed with each faculty member by the program director and suggestions given for possible improvements.

In addition, the University Of Pittsburgh School Of Medicine requires an annual performance evaluation, the Faculty Performance Evaluation (FPE), for each member of the faculty. This evaluation comprises: a description of accomplishments for the current year, objectives for the next year, and an interim review describing the accomplishments and progress toward achieving the current year's goals and objectives. Each faculty member meets annually with the Chairman of the Department of Orthopaedics to discuss their FPE and receive guidance for improvement.

An Annual Program Evaluation (APE) is conducted at the end of the fellowship. This meeting includes the entire faculty and the departing fellow. The teaching effectiveness of the program, curriculum, sufficiency of surgical and clinical case load, and suggestion for improvement are sought

Topics covered in this structured format include the following:

1. Review of the most current RRC program specific, common and institutional requirements;
2. Review of the most recent RRC Letter of Notification to ensure all concerns and citations have been addressed;
3. Review of the most recent Internal Review summary to ensure all concerns/citations have been addressed;
4. Review educational goals and objectives for the fellowship;
5. Review the didactic curriculum (including topics on resident/fellow stress/fatigue);

6. Review the clinical curriculum - effectiveness of inpatient and ambulatory teaching experience, and surgical case mix);
7. Review data on the volume and variety of patients and procedures (review case logs if applicable);
8. Discuss participating training sites to ensure educational objectives are being met. (Review Letters of Agreement and Master Affiliation Agreements to ensure they are current);
9. Review a summary of overall program evaluations completed by both faculty and fellow;
10. Review results from internal or external resident surveys, if available;
11. Review issues of financial and administrative support;
12. Review the quality of supervision;
13. Review the performance/effectiveness of faculty members (based on summary of trainee evaluations of faculty including clinical knowledge, teaching ability, scholarly activity, professionalism, and commitment to the program);
14. Review and track program's efforts regarding faculty development;
15. Review quality improvement efforts with fellow involvement (track all quality initiatives, including fellow participation on departmental and/or any hospital committees);
16. Review postgraduate performance tools, including results of certification exam and summary of postgraduate evaluations;
17. Review recruitment results and selection process;
18. Review duty hour reports and discuss issues of compliance;
19. Review and track research and scholarly activities of faculty and fellows.

K. Local Culture and Social Activities Available to the Fellow

Pittsburgh, sitting at the confluence of the Allegheny and Monongahela Rivers as they form the Ohio, is an exciting place to live and work. It has a rich history, as it was a prominent site during the American Colonial era and then capitalized, in the 1800's, on the region's abundant coal to become a center for manufacturing, especially of glass and steel. That storied past has turned into a successful present for the city—in 2010 Forbes declared Pittsburgh to be “Most Livable City in America” and again in 2011 Pittsburgh was named “Most livable City in America” by the London Economist Unit. The New York Times has called Pittsburgh “the only city with an entrance”: be sure to drive into town on I-376 via the Fort Pitt tunnel and be prepared to marvel at the breathtaking view of downtown and its many bridges.



The “Burgh” is a great place for athletics and the outdoors. There are 22 miles of riverfront trails for running, walking, and cycling. Just beyond the city lies the new 141-mile Great Allegheny Passage, railway easements that have been converted to a bicycle trail that goes unbroken all the way to the Maryland border. The Laurel Highlands, with hiking, biking trails, backpacking and camping, lies just to the southeast. Kayaks and rowing shells are on the rivers almost every

day during good weather. You can abandon the gym's stairclimber if you like, and walk outside, climbing one or all of the 712 staircases that connect the lower and upper neighborhoods on the city's many hills. If spectator sports are more interesting you can enjoy the three professional sports teams, who all sport black and gold colors—the Pittsburgh Steelers (football), The Pittsburgh Penguins (hockey), and the Pittsburgh Pirates (baseball). The many colleges and universities, including the University of Pittsburgh also field teams for competitive sports including football and basketball. The city's early wealth produced industrial titans who left profound philanthropic marks on their hometown. Carnegie libraries are in every neighborhood. The Carnegie Museums of Art and Natural History, the Carnegie Science Center, the Phipps Arboretum, and many others are also wonderful. Today's philanthropists have given us the Children's Museum, the PPG Aquarium, the Pittsburgh Zoo, the Senator John Heinz History Center, the Pittsburgh Ballet, the Pittsburgh Symphony Orchestra, and the Pittsburgh Opera. There are jazz clubs, farmer's markets and arts festivals. Frank Lloyd Wright's Fallingwater, one of the most famous houses ever built, is within easy driving distance and is especially beautiful in the fall. There are so many things to do here; the hardest part will be choosing what to see and do during your busy fellowship year.

L. Addendum

PEDIATRIC ORTHOPAEDIC ACQUIRED SURGICAL SKILLS AND KNOWLEDGE ASSESSMENT (POASSKA)

The goals and objectives of the University of Pittsburgh Pediatric Orthopaedic Fellowship are to provide the fellow with the educational experience necessary to acquire the knowledge and surgical skills to expertly manage the pediatric orthopaedic conditions described in the POASSKA. The fellow's ability to manage pediatric orthopaedics conditions is judged based on their knowledge of the conditions and their acquired surgical skills in treating the condition. Their understanding of the basic science pertinent to pediatric orthopaedics is judged only from the standpoint of their knowledge. Subject matter in the knowledge base assessment includes disease process (classification, natural history, incidence, and genetics), anatomy, and pathophysiology. The fellow's ability to manage the care of the pediatric orthopaedic patient and their family is expected to increase through the year-long fellowship and will be assessed on a quarterly basis using both the POASSKA and the POFEF. Each pediatric orthopaedic faculty will complete these two forms and a summary of the average scores will be provided to the fellow. The strengths and weaknesses described in the quarterly summation of the POASSKA and the POFEF will be discussed with the fellow and suggestions for improvement given. Guidelines for scoring the POASSKA are as follows:

PROCEDURE FOR GRADING BASIC SCIENCE KNOWLEDGE

Grades A-C:

- A. The fellow has mastered a full understanding of the science and is capable of managing problems in this area alone, without need for consultation or assistance.
- B. The fellow is capable of assessing/ managing well defined problems in this area, but lacks expert capabilities; uses others for complex problems.
- C. The fellow is capable of triaging problems in this area, leaving complete patient assessment and/or management to those who have complete knowledge and expertise in this area.

Knowledge of:	Proficiency Level Attained
Skeletal Growth and Development	
Neural Growth and Development	
Muscular Growth and Development	
Growth Rate of Skeleton	
Timing of Ossification Centers	
Developmental Milestones	
Development of Secondary Sexual Characteristics	
Genetics	
Gait Mechanics	

PROCEDURE FOR GRADING MANAGEMENT AND SURGICAL ABILITIES

- A. The fellow is capable of assessing/ managing the condition alone, without need for consultation or assistance.
- B. The fellow is capable of assessing/ managing well defined problems with the condition, but lacks expert capabilities; uses others for the more complex aspects.
- C. The fellow is capable of triaging, leaving complete patient assessment and/or management to those with complete knowledge and expertise in this condition.

- “Patient assessment” includes obtaining a history, performing a physical exam evaluating the underlying problem, and the ordering and interpreting of appropriate diagnostic studies (lab, imaging, etc).
- “Management” includes both operative and non-operative care.
- “Long-term” management includes rehabilitative modalities.
- “Complications” includes management of complications resulting from previous treatment.

Condition	Assessment		Management		
	Patient Evaluation	Non-op	Op	Long Term	Complications
Failure of Formation of the Cartilage Anlage or the Primary Center of Ossification	*****	*****	*****	*****	*****
PFFD					
Cleidocranial Dysostosis					
Fibular Hemimelia					
Tibial Hemimelia					
Failure of Formation of the Secondary Center of Ossification	*****	*****	*****	*****	*****
Multiple Epiphyseal Dysplasia					
Spondyloepiphyseal Dysplasia					
Diastrophic Dwarfism					
Failure of Chondroblast Function within the Physis	*****	*****	*****	*****	*****
Achondroplasia					
Mucopolysaccharidoses					
Enchondromatosis					
Failure of the Groove of Ranvier	*****	*****	*****	*****	*****
Dysplasia Epiphysealis Hemimelia					
Osteochondromatosis					
Ricketic Failure of Chondroid Calcification in the Physis	*****	*****	*****	*****	*****
Vitamin D Dependant Rickets					
Vitamin D Resistant Rickets					
Renal Osteodystrophy					
GI Rickets					
Failure of Bony Remodeling (osteolysis)	*****	*****	*****	*****	*****
Metaphyseal Dysplasia					
Gaucher's Disease					
Osteopetrosis					
Pyknodysostosis					

Melorheostosis					
Failure of Connective Tissue Development	*****	*****	*****	*****	*****
Marfan's Syndrome					
Ehlers Danlos Syndrome					
Down Syndrome					
Neoplasia	*****	*****	*****	*****	*****
Fibrous Cortical Defect					
Unicameral Cyst					
Aneurysmal Bone Cyst					
Eosinophilic Granuloma					
Chondroblastoma					
Osteoid Osteoma					
Giant Cell Tumor					
Fibrous Dysplasia					
Ewing Sarcoma					
Osteosarcoma					
Soft Tissue Sarcoma					
Upper Motor Neuron Conditions	*****	*****	*****	*****	*****
Cerebral Palsy					
Familial Spastic Paraparesis					
Lower Motor Neuron Conditions	*****	*****	*****	*****	*****
Duchenne Muscular Dystrophy					
Limb Girdle and FSH Dystrophy					
Friedreich Ataxia					
Myotonic Dystrophy					
Congenital Myopathy					
Polio					
Spinal Muscular Atrophy					
Erb Palsy					
Charcot-Marie-Tooth					
Mixed Upper and Lower Motor Neuron Abnormalities	*****	*****	*****	*****	*****
Spina Bifida					
Arthritis	*****	*****	*****	*****	*****
Juvenile Arthritis					
Hemophilia					
Cervical Spine	*****	*****	*****	*****	*****

Torticollis					
Klippel Feil Deformity					
Rotatory Subluxation					
Cervical Scoliosis					
Cervical Spine Instability					
Scoliosis, Kyphosis, and Spondylolisthesis	*****	*****	*****	*****	*****
Congenital Scoliosis					
Early Onset Scoliosis					
Neuromuscular Scoliosis					
Idiopathic Scoliosis					
Scheurmann Kyphosis					
Congenital Kyphosis					
Spondylolysis					
Spondylolisthesis					
Upper Limb Abnormalities	*****	*****	*****	*****	*****
Sprengel Deformity					
Elbow Osteochondritis Dissecans					
Panner Disease					
Congenital Radial Head Dislocation					
Radioulnar Synostosis					
Hip Conditions	*****	*****	*****	*****	*****
DDH newborn					
DDH Older Infant					
DDH Walking Child					
Teratologic Hip Dislocation					
Coxa Vara					
SCFE					
LCP					
Transient Synovitis					
Idiopathic Chondrolysis					
Femoral Acetabular Impingement					
Labral Pathology					
Leg Length Discrepancy	*****	*****	*****	*****	*****
Less than 2cm					
2cm to 6cm					
Greater than 6cm					
Lower Limb Abnormalities	*****	*****	*****	*****	*****

Femoral Ante/Retro Version					
Genu Varum/Genu Valgum					
Blount's Disease					
Patellar Femoral Pain					
Osgood Schlatters Disease					
Knee Osteochondritis Dissecans					
Discoid meniscus					
Torn Meniscus					
Knee Dislocation/Subluxation					
Congenital Tibial Pseudarthrosis					
Tibial Posterior Medial Bowing					
Clubfoot					
Congenital Vertical Talus					
Metatarsus Adductus					
Calcaneal Valgus					
Flexible Flat Foot					
Tarsal Coalition					
Bunions					
Accessory Navicular					
Curly (overlapping) toes					
Cavus Foot					
Polydactyly					
Amputations					
General Trauma	*****	*****	*****	*****	*****
Physeal Fractures					
Child Abuse					
Open Fractures					
Multiply Injured Child					
Fractures and Dislocations					
Hand and Wrist					
Forearm					
Galeazzi					
Monteggia					
Radial Head/Neck					
Elbow Medial Epicondyle					
Elbow Lateral Condyle					
Supracondylar Elbow					
Elbow Dislocation					
Humeral Shaft					

Proximal Humeral Fracture					
Genohumeral Dislocation					
A-C Joint Dislocation					
Clavicle Fracture					
S-C Dislocation					
Cervical Spine Fractures					
Thoracic Spine Fractures					
Lumbar Spine Fractures					
Pelvic Fractures					
Femoral Acetabular Dislocation					
Femoral Neck Fractures					
Femoral Shaft Fractures					
Distal Femoral Fractures					
Knee Dislocations					
Knee Osteochondral Fractures					
Knee Ligamentous Injury					
Patellar Fractures					
Patella Dislocations					
Tibial Spine Fractures					
Tibial Tubercle Fractures					
Proximal Tibial Metaphyseal Fractures					
Tibial Shaft Fractures					
Distal Tibial Fractures					
Ankle Fracture/Dislocations					
Calcaneous Fractures					
Subtalar Dislocations					
Talus Fractures					
Other Tarsal Fractures					
Lisfranc Fracture/Dislocations					
Metatarsal Fractures					
Foot Phalangeal Fractures/Dislocations					
Infections	*****	*****	*****	*****	*****
Acute Osteomyelitis					
Subacute Osteomyelitis					
Chronic Osteomyelitis					
Hip Septic Arthritis					
Other Joint Septic Arthritis					

LEVELS OF COMPETENCY

Using the scores from the abilities grading, there are several potential levels of competency that a fellow might achieve. These vary from a complete caregiver for complex pediatric orthopaedic conditions to a “screen and refer” all but the

most straight forward conditions. Unless they have focused sub-specialized training, surgeons who are mostly complete caregivers will often still refer patients with very sub-specialized problems such as osteosarcoma, complex spinal deformities, congenital hand abnormalities, sports injuries, or hip preservation problems.

For simple problems, a lower level of knowledge base will be adequate for a “complete caregiver” pattern. As problems become more complex, a higher knowledge base is necessary. Thus, patterns of care for pediatric orthopaedic surgeons appropriate to their training can be graphically depicted as follows:

Pattern of Care	Expertise				
	Assessment	Management			
	Patient Evaluation	Non-op	Op	Long Term	Complications
Complete Caregiver	A	A	A	A/B	A/B
Discretionary Caregiver	A	A	A/B	A/B	B/C
Co-Caregiver (share with tertiary center)	A/B	A	A/B/C	A/B/C	C
Screen and Refer Caregiver	A/B	A/B/C	C	C	C

The Pediatric Orthopaedic Surgery Milestone Project

A Joint Initiative of

The Accreditation Council for Graduate Medical Education

and

The American Board of Orthopaedic Surgery



December 2013

The Pediatric Orthopaedic Surgery Milestone Project

The Milestones are designed only for use in evaluation of fellows 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 fellow 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.

Pediatric Orthopaedic Surgery Milestones

Chair: Steven L. Frick, MD

Working Group

Laura Edgar, EdD, CAE

William L. Hennrikus, MD

Lori A. Karol, MD

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Advisory Group

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Milestone Reporting

This document presents milestones designed for programs to use in semi-annual review of fellow 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 fellow performance as a fellow moves from entry into fellowship through graduation. In the initial years of implementation, the Review Committee will examine Milestone performance data for each program's fellows as one element in the Next Accreditation System (NAS) to determine whether fellows overall are progressing.

For each period, review and reporting will involve selecting Milestone levels that best describe each fellow'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 in the subspecialty. These levels do not correspond with post-graduate year of education.

Selection of a level implies that the fellow substantially demonstrates the milestones in that level, as well as those in lower levels (see the diagram on page v).

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

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

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

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

Level 5: The fellow has advanced beyond performance targets set for fellowship 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 fellows will reach this level.

Additional Notes

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 fellowship program director. Study of Milestone performance data will be required before the ACGME and its partners will be able to determine whether milestones in the first four levels appropriately represent the developmental framework, and whether Milestone data are of sufficient quality to be used for high-stakes decisions.

Examples are provided with some milestones. Please note that the examples are not the required element or outcome; they are provided as a way to share the intent of the element.

Some milestone descriptions include statements about performing independently. These activities must occur in conformity to ACGME supervision guidelines, as well as to institutional and program policies. For example, a fellow who performs a procedure independently must, at a minimum, be supervised through oversight.

Answers to Frequently Asked Questions about the Next Accreditation System and Milestones are posted on the Next Accreditation System section of the ACGME website.

The diagram below presents an example set of milestones for one sub-competency in the same format as the ACGME Report Worksheet. For each reporting period, a fellow’s performance on the milestones for each sub-competency will be indicated by selecting the level of milestones that best describes that fellow’s performance in relation to the milestones.

Pediatric Orthopaedics Lower Extremity Deformity — Patient Care				
Level1	Level2	Level3	Level4	Level5
<ul style="list-style-type: none"> • Performs history and physical examination • Measures radiographic mechanical axis and angular alignment • Measures clinical alignment and rotational profile 	<ul style="list-style-type: none"> • Orders correct radiographic examinations for genu varum/valgum • Orders correct studies to evaluate a post-traumatic growth arrest • Calculates remaining growth • Identifies radiographic location of deformity, center of rotation of angulation (CORA) – location of osteotomy and effect on mechanical axis 	<ul style="list-style-type: none"> • Performs hemiepiphysiodesis and epiphysiodesis, temporary and permanent • Prepares pre-operative plan of simple limb deformity correction • Writes physical therapy prescription following limb deformity surgery • Recognizes complications of limb deformity surgery • Demonstrates ability to evaluate imaging studies for growth potential - classification of Blounts disease ; size of physeal bar- implications for treatment 	<ul style="list-style-type: none"> • Performs limb osteotomy and demonstrates ability to apply fixation (internal or external) • Manages post-surgical complications • Performs bar resection and interposition 	<ul style="list-style-type: none"> • Performs multi-level and multi-planar limb deformity surgery to include lengthening • Salvages severe complications of lengthening /deformity correction
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

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).

Pediatric Orthopaedics Idiopathic Scoliosis — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Performs basic scoliosis examination (e.g., trunk position, skin, neuro) • Measures Cobb angles • Assesses skeletal maturity • Demonstrates use of basic spinal instruments • Closes spine wound 	<ul style="list-style-type: none"> • Performs abdominal reflex test • Uses scoliometer accurately or prominence quantification • Identifies congenital scoliosis on radiographs • Safely positions patient on operating room [OR] table • Exposes and dissects posterior spine 	<ul style="list-style-type: none"> • Performs plumb line test • Analyzes sagittal spinal balance/deformity • Interprets bending and/or stretch films • Evaluates brace efficacy - clinical/radiographic • Inserts spinal implants • Interprets normal neuromonitoring • Interprets intra-operative imaging • Provides post-operative management 	<ul style="list-style-type: none"> • Recognizes physical findings that may predict complications (e.g., acne, obesity, lordosis) • Evaluates post-operative films (immediate and follow-up) • Completes case (e.g., instrumentation, deformity correction, bone grafting, closure) with staff as scrubbed assistant • Interprets and acts on abnormal neuromonitoring 	<ul style="list-style-type: none"> • Works in complex referral center for spinal deformity
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric developmental dysplasia of hip [DDH] prior to walking age — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Performs appropriate hip examination to include Ortolani and Barlow • Identifies physical signs of DDH in older infant 	<ul style="list-style-type: none"> • Applies and monitors Pavlik harness • Interprets radiographs (age appropriate) • Identifies physical signs of bilateral DDH 	<ul style="list-style-type: none"> • Interprets ultrasound imaging • Identifies an adequate ultrasound examination • Identifies failure of Pavlik treatment • Formulates plan of care for failed Pavlik harness treatment 	<ul style="list-style-type: none"> • Performs and interprets arthrogram • Performs adductor tenotomy, closed reduction, and spica cast application • Performs open reduction approach and spica cast application • Manages failed closed or open reduction 	<ul style="list-style-type: none"> • Demonstrates skill in management of multiple failed DDH treatments
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric orthopaedics slipped capital femoral epiphysis [SCFE] — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Performs history and physical exam • Orders and interprets appropriate radiographs • Performs in-situ pinning of stable SCFE 	<ul style="list-style-type: none"> • Evaluates and interprets intra-operative images • Provides post-operative management of stable vs. unstable SCFE 	<ul style="list-style-type: none"> • Performs hip arthrotomy/capsulotomy • Interprets magnetic resonance imaging [MRI] for pre-slip • Performs surgical pinning of severe/unstable SCFE • Evaluates painful hip following pinning (e.g., pin penetration, chondrolysis, osteonecrosis) 	<ul style="list-style-type: none"> • Performs proximal femoral osteotomy, and manages patient post-operatively • Performs open head-neck contouring via anterior approach 	<ul style="list-style-type: none"> • Performs reduction of SCFE via surgical hip dislocation approach
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric Orthopaedic Clubfoot — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Applies, molds, and safely removes casting material • Provides surgical management of contracted musculotendinous unit 	<ul style="list-style-type: none"> • Applies and molds clubfoot cast • Performs physical examination and assessment of clubfoot deformity 	<ul style="list-style-type: none"> • Applies all in series of sequential clubfoot casts, from initial to final • Performs tendo Achilles tenotomy • Performs open tendo Achilles lengthening • Applies and monitors clubfoot bracing post-casting 	<ul style="list-style-type: none"> • Performs casting for complex clubfoot • Performs casting for relapse • Performs tibialis anterior transfer • Performs posteromedial and lateral release [PMLR]/certified specialist in trauma registry [CSTR], comprehensive clubfoot repair/osteotomies 	<ul style="list-style-type: none"> • Performs salvage procedures for complex, recurrent clubfoot • Performs combination procedures
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric Orthopaedics Lower Extremity Deformity — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Performs history and physical examination • Measures radiographic mechanical axis and angular alignment • Measures clinical alignment and rotational profile 	<ul style="list-style-type: none"> • Orders correct radiographic examinations for genu varum/valgum • Orders correct studies to evaluate a post-traumatic growth arrest • Calculates remaining growth • Identifies radiographic location of deformity, center of rotation of angulation (CORA) – location of osteotomy and effect on mechanical axis 	<ul style="list-style-type: none"> • Performs hemiepiphysiodesis and epiphysiodesis, temporary and permanent • Prepares pre-operative plan of simple limb deformity correction • Writes physical therapy prescription following limb deformity surgery • Recognizes complications of limb deformity surgery • Demonstrates ability to evaluate imaging studies for growth potential - classification of Blounts disease; size of physeal bar- implications for treatment 	<ul style="list-style-type: none"> • Performs limb osteotomy and demonstrates ability to apply fixation (internal or external) • Manages post-surgical complications • Performs bar resection and interposition 	<ul style="list-style-type: none"> • Performs multi-level and multi-planar limb deformity surgery to include lengthening • Salvages severe complications of lengthening/deformity correction
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric Orthopaedics Cerebral Palsy — Patient Care				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Obtains pertinent history, including developmental milestones • Performs physical exam of lower extremity • Performs age-appropriate neurologic examination 	<ul style="list-style-type: none"> • Obtains focused history and physical exam, including hip (e.g., able to identify hip subluxation, lower extremity contractures/spasticity, spinal deformity) • Interprets radiographic findings of hip subluxation • Understands when to obtain appropriate neurology and developmental pediatrics consults 	<ul style="list-style-type: none"> • Identifies gait pattern (e.g., crouch, jump, di/hemiplegia) • Differentiates between spasticity and tone from contractures • Prescribes lower extremity orthotics as indicated 	<ul style="list-style-type: none"> • Performs hip subluxation surgery to include muscle release and femoral and pelvic osteotomies • Performs single-event, multi-level surgery, including osteotomy, tendon lengthenings , and transfer • Manages complications of surgery • Manages post-operative recovery and rehabilitation 	<ul style="list-style-type: none"> • Performs revision surgery for complications (redislocation) • Performs surgery for symptomatic non-reconstructible hip • Performs revision surgery for the adolescent with severe contractures
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric Orthopaedics Idiopathic Scoliosis — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Identifies signs and symptoms of idiopathic and non-idiopathic scoliosis • Describes curve types and natural history of each curve • Describes radiographic signs of skeletal maturity • Describes treatment options of non-operative vs. operative scoliosis • Describes catastrophic risks of surgical correction 	<ul style="list-style-type: none"> • Describes radiographic signs of adolescent idiopathic scoliosis [AIS] vs. non-AIS • Applies classification of curve type with awareness of both Lenke and King-Moe • Understands the correlation of peak height velocity [PHV] and risk for scoli progression • Describes indications for bracing • Knows different brace types for different patterns • Describes surgical indications • Describes major risks for surgery (e.g., infection, re-operation, and implant failure) 	<ul style="list-style-type: none"> • Describes indications for MRI and referral to neurology or genetics • Understands implications of classification system • Describes bone ages and correlation with peak height/growth velocity (PHGV) analyzes brace efficacy (literature) • Creates surgical plan by curve type • Describes risks of patient dissatisfaction (e.g., scar, trunk imbalance, pain, cosmesis) 	<ul style="list-style-type: none"> • Understands genetic research in etiology and prognosis • Counsels families who choose non-brace or bracing options • Describes level selection, type of instrumentation, deformity correction techniques, and surgical approaches • Describes management of catastrophic complications 	<ul style="list-style-type: none"> • Performs primary research and published findings in a peer-reviewed journal
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric Orthopaedics DDH prior to walking age — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands role of screening for DDH • Understands normal hip anatomy • Understands risk factors for DDH • Demonstrates knowledge of associated conditions • Understands natural history of untreated DDH 	<ul style="list-style-type: none"> • Differentiates developmental from teratologic hip dysplasia • Understands use and risks of Pavlik harness treatment • Understands choice of imaging studies by age of child • Demonstrates knowledge of vascular anatomy of the developing hip 	<ul style="list-style-type: none"> • Understands ultrasound anatomy and implications • Understands physical exam and imaging signs of Pavlik treatment failure • Understands indications for closed versus open reduction • Understands anatomic blocks to reduction 	<ul style="list-style-type: none"> • Understands anatomy of surgical approaches - medial and anterior • Understands classification and implications of avascular necrosis of hip 	<ul style="list-style-type: none"> • Performs primary research on infantile DDH, and publishes findings in a peer-reviewed journal • Is an invited expert/nationally-recognized expert
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric Orthopaedics SCFE — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of SCFE pathoanatomy and terminology • Demonstrates knowledge of risk factors • Demonstrates knowledge of clinical signs and symptoms • Demonstrates knowledge of basic radiographic findings (subtle, severe) • Demonstrates knowledge of treatment concepts - stable vs. unstable 	<ul style="list-style-type: none"> • Demonstrates detailed knowledge of epiphyseal blood supply • Understands natural history of SCFE in-situ pinning • Understands the controversy in treatment of severe/unstable SCFE • Understands details of correct screw placement • Understands decision making for prophylactic pinning of contralateral hip 	<ul style="list-style-type: none"> • Understands complications of surgical treatment • Understands evaluation of at-risk or pre-slip patient • Understands natural history of gait disturbance and bone impingement after SCFE 	<ul style="list-style-type: none"> • Understands surgical options for late reconstructive surgery • Understands indications for proximal femoral osteotomy • Understands methods and risks for acute reduction of SCFE 	<ul style="list-style-type: none"> • Performs primary research, and publishes findings in a peer-reviewed journal
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric Ortho Clubfoot — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of tarsal bone and joint anatomy • Demonstrates knowledge of muscles and tendons of foot • Demonstrates knowledge of foot biomechanics in normal gait • Demonstrates knowledge of innervation/neuroanatomy of leg and foot 	<ul style="list-style-type: none"> • Demonstrates knowledge of components of clubfoot deformity cavus, forefoot adduction, heel varus, and equinus (CAVE) • Demonstrates knowledge of different types and classifications of clubfoot • Demonstrates knowledge of pathologic anatomy of clubfoot 	<ul style="list-style-type: none"> • Demonstrates knowledge of the Ponseti principles of clubfoot casting • Demonstrates knowledge of the indications for tendo Achilles tenotomy • Demonstrates knowledge of post-casting bracing protocol • Understands demographics, risk factors, associated conditions, and hereditary patterns • Demonstrates knowledge of pathologic gait deviations in clubfoot 	<ul style="list-style-type: none"> • Understands indications for relapse casting, tibialis anterior tendon/tendon Achilles lengthening, tendon transfer, joint releases, osteotomies • Recognizes complex clubfoot • Demonstrates knowledge of segmental analysis of relapse/recurrent deformity • Demonstrates knowledge of different surgical approaches for clubfoot – a la carte, posteromedial and lateral releases, complete subtalar release, tibiotalar release • Demonstrates knowledge treatment options for syndromic clubfoot 	<ul style="list-style-type: none"> • Demonstrates knowledge of genetics of clubfoot • Compares and contrasts theories of pathogenesis • Understands tarsal and lower extremity [LE] kinematics • Manages neglected, older clubfoot • Manages multiply operated clubfoot • Performs primary research, and publishes findings in a peer-reviewed journal
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric Orthopaedics Lower Extremity Deformity — Medical Knowledge				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Demonstrates knowledge of mechanical and anatomic axes of lower extremities (age-based) • Understands physeal growth • Understands post-traumatic remodeling • Understands the natural history of rotational profile (e.g., tibial torsion/femoral anteversion) 	<ul style="list-style-type: none"> • Demonstrates knowledge of conditions producing pathologic angular deformity (e.g., Blount’s, rickets) • Demonstrates knowledge of angular deformity resulting from post-traumatic growth disturbance • Demonstrates knowledge of measures of remaining skeletal growth • Demonstrates knowledge of consequences of limb length differences 	<ul style="list-style-type: none"> • Demonstrates knowledge of growth modulation techniques (e.g., indications, surgical techniques, and complications) • Demonstrates knowledge of rehabilitation needs and potential problems during deformity correction • Demonstrates knowledge of classification of Blount’s disease and prognosis 	<ul style="list-style-type: none"> • Demonstrates knowledge of surgical options to include osteotomies (acute vs. gradual) with internal vs. external fixation • Demonstrates knowledge of lower extremity deformity in skeletal dysplasias • Demonstrates knowledge of treatment options for post-traumatic growth arrest 	<ul style="list-style-type: none"> • Performs primary research, and publishes findings in a peer-reviewed journal • Demonstrates knowledge and understands basic science research in physeal physiology
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric Orthopaedics Cerebral Palsy [CP] — Medical Knowledge

Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands the pathophysiology of CP • Differentiates between spastic quad, hemi, and diplegia 	<ul style="list-style-type: none"> • Understands gross motor function classification system [GMFCS] of CP child • Differentiates between spastic/athetoid/mixed CP • Understands the musculoskeletal implications of differing GMFCS levels of neurological involvement • Demonstrates knowledge of the indications for imaging studies • Evaluates medical co-morbidities and anesthetic/post-operative risks 	<ul style="list-style-type: none"> • Demonstrates understanding of hip/spine surveillance • Demonstrates understanding of non-surgical tone management and contracture • Demonstrates knowledge and ability to analyze gait and contractures via physical exam and observation • Explains the consequences of inappropriate surgery 	<ul style="list-style-type: none"> • Demonstrates knowledge of surgical options for hip subluxation, ambulatory contractures • Develops surgical plan for multi-level surgery in ambulatory patients • Demonstrates knowledge of accepted and alternative treatment methods for CP • Demonstrates knowledge of indications and methods of CP spinal deformity correction 	<ul style="list-style-type: none"> • Performs primary research, and publishes findings in a peer-reviewed journal
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Systems thinking, including cost-effective practice — Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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) 	<ul style="list-style-type: none"> • Orders and schedules tests in appropriate systems for individual patients balancing expenses and quality • Manages transfers of patient care from OR to inpatient environment or to home 	<ul style="list-style-type: none"> • Effectively manages clinic team and schedules for patient and workflow efficiency • Uses evidence-based guidelines for cost-effective care 	<ul style="list-style-type: none"> • Leads systems change at micro and macro levels (e.g., OR team and patient flow in a multi-case OR day)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

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
<ul style="list-style-type: none"> • Recognizes importance of complete and timely documentation in teamwork and patient safety 	<ul style="list-style-type: none"> • Uses checklists and briefings to prevent adverse events in health care 	<ul style="list-style-type: none"> • Participates in quality improvement or patient safety program and/or project 	<ul style="list-style-type: none"> • Maintains team situational awareness and promotes “speaking up” with concerns • Incorporates clinical quality improvement and patient safety into clinical practice 	<ul style="list-style-type: none"> • Develops and publishes quality improvement project results • Leads local or regional quality improvement project
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Uses technology to accomplish safe health care delivery – Systems-based Practice				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> Explains the role of the electronic health record [EHR] and computerized physician order entry (CPOE) in potential medical errors 	<ul style="list-style-type: none"> Appropriately and accurately enters patient data in EHR Effectively uses electronic medical records in patient care 	<ul style="list-style-type: none"> Reconciles conflicting data in the medical record 	<ul style="list-style-type: none"> Contributes to reduction of risks of automation and computerized systems by reporting system problems 	<ul style="list-style-type: none"> Recommends systems re-design for faculty computerized processes
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Self-Directed Learning — Practice-based Learning and Improvement

- 1. Identifies strengths, deficiencies, and limits in one’s knowledge and expertise.**
- 2. Assesses patient outcomes and complications in your own practice.**
- 3. Sets learning and improvement goals.**
- 4. Identifies and Performs appropriate learning activities.**
- 5. Uses information technology to optimize learning and improve patient outcomes.**

Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 • Reads classic articles and texts in pediatric orthopaedic surgery 	<ul style="list-style-type: none"> • Performs self-directed learning without external guidance • Critically evaluates and uses patient outcomes to improve patient care • Demonstrates knowledge about classic articles and texts • Reads current literature • Incorporates practice change based upon new evidence 	<ul style="list-style-type: none"> • Teaches and mentors colleagues on incorporating practice change based on new evidence

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Comments:

Locates, appraises, and assimilates evidence from scientific studies to improve patient care — Practice-based Learning and Improvement				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Describes basic concepts in clinical epidemiology, biostatistics, and clinical reasoning • Categorizes the study design of a research study 	<ul style="list-style-type: none"> • Ranks study designs by their level of evidence • Identifies bias affecting study validity • Formulates a searchable question from a clinical question 	<ul style="list-style-type: none"> • 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, including from colleagues, experts, and patients 	<ul style="list-style-type: none"> • Demonstrates a clinical practice that incorporates principles and basic practices of evidence-based practice and information mastery • Cites evidence supporting several common practices • Is scientifically skeptical of new therapeutic options and surgical procedures 	<ul style="list-style-type: none"> • Independently teaches and assesses evidence-based medicine and information mastery techniques
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Demonstrates compassion, integrity, and respect for others, as well as sensitivity and responsiveness to diverse patient populations, including to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation. Demonstrates 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
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Demonstrates and understands 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 these in common and frequent clinical situations, including socioeconomic variances in patient care 	<ul style="list-style-type: none"> • Exhibits these attitudes consistently in complex and complicated situations • Recognizes how own personal beliefs and values impact medical care • Is knowledgeable about the beliefs, values, and practices of diverse patient populations and their potential impact on patient care • Recognizes ethical violations in professional and patient aspects of medical practice 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Demonstrates leadership and mentoring regarding these principles of bioethics • Manages ethical misconduct in patient management and practice
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comments:

Demonstrates accountability to patients, society, and the profession; demonstrates personal responsibility to maintain emotional, physical, and mental health — Professionalism				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> • Understands when assistance is needed, and is 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 • Is aware of the basic principles and aspects of the general maintenance of emotional, physical, and mental health, and issues related to fatigue/sleep deprivation 	<ul style="list-style-type: none"> • Recognizes limits of knowledge in common clinical situations and asks for assistance • Recognizes value of humility and respect towards patients and associate staff members • Demonstrates adequate management of personal, emotional, physical, and mental health and fatigue 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Mentors and models personal and professional responsibility to colleagues • Recognizes signs of physician impairment, and demonstrates appropriate steps to address impairment in colleagues • Takes ownership of patient care responsibilities 	<ul style="list-style-type: none"> • Develops organizational policies and education to support the application of these principles in the practice of medicine
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Communication — Interpersonal and Communication Skills				
Level 1	Level 2	Level 3	Level 4	Level 5
<ul style="list-style-type: none"> Communicates with families about routine care (e.g., actively seeks and understands the patient’s/family’s perspectives) Focuses on the patient’s chief complaint, and asks pertinent questions related to that complaint 	<ul style="list-style-type: none"> Communicates competently within systems and with other care providers, and provides detailed information about patient care Begins to master child-family-physician communication triad 	<ul style="list-style-type: none"> 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 family-based decision making, incorporating patient and family/cultural values and preferences 	<ul style="list-style-type: none"> Communicates competently in complex/adversarial situations (e.g., parental conflict, custody disputes, child abuse, drug seeking) 	<ul style="list-style-type: none"> Demonstrates leadership in communication activities (e.g., coaches others to improve communication skills) Engages in self-reflection on how to improve communication skills
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

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
<ul style="list-style-type: none"> 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 members Responds to requests for information <p><i>Examples:</i> Lab results, accurate and timely progress notes, answers pages in a timely manner</p>	<ul style="list-style-type: none"> Supports and respects decisions made by the team Actively participates in team-based care; supports activities of other team members, and communicates their role to the patient and family <p><i>Examples:</i> Hand-offs, transitions of care, communicates with other health care providers and staff members</p>	<ul style="list-style-type: none"> Able to facilitate, direct, and delegate team-based patient care activities Understands the OR team leadership role and obligations <p><i>Examples:</i> Leads daily rounds, communicates plan of action with OR personnel</p>	<ul style="list-style-type: none"> Leads team-based care activities and communications Able to identify and rectify problems with team communication <p><i>Example:</i> Organizes and verifies hand-off rounds, coverage issues</p>	<ul style="list-style-type: none"> Seeks leadership opportunities within professional organizations Able to lead/facilitate meetings within organization/system
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:				

Pediatric Orthopaedic Fellow Evaluation Form (POFEF)

Please return to:
 James W Roach MD
 Children's Hospital of Pittsburgh
 4401 Penn Ave Faculty Pavilion 4th Floor
 Pittsburgh, PA 15224

Fellow Name:

Dates:

Evaluator:

COMPETENCY	Never	Rarely	Sometimes	Almost Always	Always	Unable to Evaluate
Numeric score for each category	1	2	3	4	5	0
PATIENT CARE						
Identifies problem correctly						
Resolves problem						
Pays attention to detail						
Gathers accurate and essential patient information						
Demonstrates good surgical judgment						
Demonstrates understanding of appropriate surgical indications						
Has good spatial concepts						
Demonstrates technical skills appropriate with level of training						
Provides good overall quality of care						
MEDICAL KNOWLEDGE						
Grasps basic concepts						
Demonstrates investigatory and analytical thinking						
Demonstrates fund of knowledge appropriate with level of training						
INTERPERSONAL AND COMMUNICATION SKILLS						
Maintains good staff relationships						
Demonstrates leadership						
Communicates clearly						
Accepts criticism						
Has good patient rapport						
Documentation in the medical record is complete and accurate						
PROFESSIONALISM						
Shows initiative						
Is punctual						
Is prepared for surgery						
Demonstrates integrity						
Demonstrates emotional stability/maturity						
Refrains from being abusive or condescending to others						
Demonstrates compassion						
PRACTICE BASED LEARNING						
Does outside reading						
Uses feedback to improve performance						
Uses information technology to increase fund of knowledge						
Applies evidence based medicine to patient care						
SYSTEMS BASED PRACTICE						
Coordinates care with other specialists						
Practices cost effective care that does not compromise quality						
GOALS AND OBJECTIVES						
Able to accomplish rotation-specific goals and objectives						

Comments:

Summation of all numeric scores from above _____

Any Recommended Corrective Actions:

Staff signature: _____

Fellow signature: _____ Date: _____

I acknowledge the disclosure of this report and my option to respond. This report is confidential and is to be shared by staff and the individual resident/fellow.

University of Pittsburgh Pediatric Orthopaedic Faculty Evaluation Form (POFE)

Faculty being evaluated: _____

Dates covered in the Evaluation: _____

Assign a value 1 - 5 (1-Poor, 2-Fair, 3- Good, 4-Excellent, 5-Superb)

I - CLINICAL EXPERIENCE SCORE	
Performs a careful and thorough pre-anesthesia assessment	
Demonstrates effective clinical skills in the management of patients	
Checks patients post-operatively and reviews care with housestaff	
Maintains high standards for self and housestaff	
Comments:	
II - CLINICAL TEACHING SCORE	
Engages housestaff in perioperative case discussions	
Applies knowledge of the literature with cases in the OR	
Explains procedures and demonstrates them effectively	
Provides appropriate constructive criticism	
Comments:	
III - DIDACTIC TEACHING SCORE	
Gives well prepared and organized lectures	
Shows interest in teaching	
Participates in Grand Rounds, Journal Club, and Conferences	
Comments:	
IV - AVAILABILITY SCORE	
Is available when needed	
Intervenes when appropriate	
Permits appropriate housestaff autonomy	
Comments:	
V - PROFESSIONALISM SCORE	
Interacts professionally with all members of the healthcare team	
Has the respect of surgeons and nurses	
Establishes a relationship of mutual respect with all housestaff	
Comments:	

VI - ROLE MODEL/MENTOR SCORE	
Encourages and counsels housestaff to achieve their maximal potential	
Gives me a sense of reassurance having him/her as my attending	
Represents a role model that housestaff respect and admire	
Comments:	
AVERAGE SCORE	
AVERAGE SCORE ALL FACULTY	

A Pathway to Leadership in the Scoliosis Research Society

James W Roach MD
Professor of Orthopaedic Surgery
University of Pittsburgh

This paper was presented at the Oct 2010 Scoliosis Research Society Cabinet Meeting in Dallas, Texas at the request of the Presidential Line

Effective leaders are responsible for two things, to guide the mission, vision, and values of an organization and to develop new leaders. Is it really necessary to worry about leadership skills within the Scoliosis Research Society (SRS)? Is not the organization successful without spending time on such a pedantic, business school issue? In actuality, over the years the SRS has benefited greatly by placing very talented people in leadership positions where they performed well without formal leadership training. However, the membership has grown considerably and the environment of medicine has become very complicated. The SRS now has surgeons from all over the world, making it more difficult to judge an individual's capability and thus making the selection of leaders more difficult. Finally, while the SRS has achieved a great deal, perhaps a more structured "pathway to leadership" might produce an even more accomplished organization. This paper strives to provide a framework for obtaining the desired leadership skills that members and the organization will find beneficial.

Leaders often display their skills in early childhood, making it seem that they acquired these skills at birth. These people are viewed by others as "natural leaders". However, everyone can expand the abilities they possess and even those with natural leadership skills must make an effort to use them. Leadership is an evolving process and training and consistent practice of the skills benefits everyone. This paper summarizes various personal characteristics that make people good leaders and some ways of improving leadership skills. We will first describe the common types of organizations and the leadership style associated with each.

- Command and Control Organizations – military – this is positional leadership and leverage over followers occurs because of autocratic dictates.
- Focused Goal Organizations – business – this is also positional leadership and leverage over followers occurs because of salary, bonuses, and other economic incentives.
- Volunteer Organizations – this is the most difficult organization to lead but ultimately the best leaders in the other two types of organizations rely heavily on volunteer organization techniques. Volunteer leaders' only form of leverage is the ability to influence others. The best military commanders and business executives understand this and lead mostly by influence rather than relying on their position within their organization. Because leaders add value by service, other members of an organization follow the leader's example and provide their own service to the organization. This unfortunately can also work in a negative way, as others can also mimic less desirable activities of leaders, both in and outside of the organization. Because of this, leaders carry significant responsibility to consider the effects of all of their actions.

True leaders, especially in volunteer organizations, don't require impressive stature. They don't need titles or rank or to tell you that they are leaders. To find the true leaders within an organization look for individuals who have an ability to influence others. The leader's ability to influence others arises from the leader's character, existing relationships, and knowledge.

Those who would lead should have or acquire certain attributes, including:

- Enhanced people skills
- Planning and strategic thinking abilities
- A history of organizational accomplishments that others will emulate
- A clear vision of the needs of the organization

Enhanced People Skills

The feats of the early twentieth century polar explorers provide examples of both good and bad leadership. Ernest Shackleton provides a perfect example of a leader with superb people skills. He was the epitome of a non-coercive leader. His ability to lead through influence was evident even in his advertisement for his famous expedition. He wrote: "Men

wanted for hazardous journey, small wages, bitter cold, long months of complete darkness, constant danger, safe return doubtful, honour and recognition in case of success”.

The expedition attempted a crossing of Antarctica from sea to sea and became a disaster when their ship was first trapped and eventually crushed in the ice pack. Against all odds he rallied his men by established routines, including sports and lectures, which gave them hope to persevere. When their ship “Endurance” was destroyed, they pulled heavy lifeboats towards the open ocean 250 miles away. At the edge of the ice pack they were able to row to a small, barren piece of land called Elephant Island. After a short rest Shackleton and 5 others sailed 900 miles in an open lifeboat to get help from a whaling station on South Georgia Island. He returned several months later to rescue the other members of his party. Incredibly, no one died. Ernest Shackleton had wonderful people skills and was able to inspire and motivate his men to achieve success against enormous odds. Another polar explorer later remarked: “When things go bad you get down on your knees and pray for a Shackleton”.

Personal actions of leaders may also interfere with the goals of the organization. These include a lapse of professionalism and other activities that cause the membership to lose trust in the leader. Finally, the best leader achieves success by empowering others. Excellent leaders don’t constantly require credit for successes and thus are secure in their positions, readily add value and encouragement to others. Good skills in dealing with people and good character are the most important part of leadership.

Planning and Strategic Thinking Abilities

A contrast in planning and strategic thinking capabilities can be drawn between the two teams in the 1911 race to reach the South Pole. Both Roald Amundsen and Robert Scott were well known leaders and neither had trouble recruiting men to follow them. Amundsen was a very careful planner. Paying great attention to detail, he studied the methods and apparel of the Eskimos and concluded that dogsleds, clothes made of animal skins, and proper placement of supplies along the intended route would maximize the chance of success. Amundsen and his men successfully completed the trip without the loss of a single life.

Scott on the other hand was also a charismatic leader but spent little time selecting optimal equipment and travel arrangements. Without substantial testing under arctic conditions, Scott elected to use motorized sledges and ponies for transportation, poorly constructed clothes and goggles, and inadequate amounts of food supplies. In the first five days the motors on the sledges froze and the men struggled with frost bite and snow blindness. Scott and his exhausted men, pushing their heavy sledges, reached the South Pole on January 17, 1912 and found a letter from Amundsen dated a month earlier. On the return trip the entire Scott group perished from inadequate food and exposure to the severe cold. Scott and his remaining two men spent their last hours writing in their diaries. Scott wrote: “We shall die like gentlemen. I think this will show that the spirit of pluck and power to endure has not passed out of our race”. Scott had excellent people skills but did not develop sufficient planning and strategic thinking skills. His inadequacy resulted in losing the race to the pole, his life, and the lives of his men.

A History of Accomplishments

A properly chosen leader will have had many previous accomplishments. Optimally, these will come through effective work at the Council and Committee level. The vigor of the SRS is expressed in reliable and timely organizational work. If an individual fails to successfully complete committee or council assignments the organization must limit his or her future leadership opportunities.

A Clear Vision for the Organization

The historic vision of an organization usually provides a good guide for new leaders. New members of committees or the board learn by watching the vision in action as the organization pursues its goals. However these new leaders will be more effective if they receive instruction from current chairs on the structure and function of the organization, the interaction between committees, and especially the organizational expectation of how they should perform as individuals.

Suggestions for Formalizing SRS Leadership Training

1. The Entire SRS Membership

There is an opportunity for the entire SRS membership to lead the organization in a new direction. Recent disclosures regarding some spine surgeons’ consulting relationships have created credibility issues for the SRS. If this continues the ability of the SRS to recommend treatment guidance to society and the government may be reduced. Consulting

relationships which only bond a surgeon to a company are inappropriate and should be avoided by SRS members. Relationships that develop new innovative products are valuable to society, should be encouraged by the SRS, and warrant appropriate physician compensation.

There may not be uniform agreement from the membership regarding consulting and conflicts of interest but in the 2008 membership survey, the question “Is there anything else we should have asked?” provoked many questions about inappropriate physician-industry relations. In addition the question “What is the single most pressing issue facing your practice today?” generated “inadequate reimbursement” as the most common answer. Loss of credibility with the public and government will not help advocacy efforts to maintain appropriate reimbursement.

2. Junior Committee Member

The majority of the work in the SRS is accomplished at the committee level. New committee members should have a formal orientation from the committee chair which will provide them with an understanding of the role of the committee, how it relates to the larger goals of the organization, how the committee interacts with other organizations, and what expectations exist for individual committee member performance. Orientations at the annual meeting would allow committee chairs to achieve these goals. Existing committee members will benefit from the review as much as new committee members. Each committee chair should construct their committee’s orientation and allocate appropriate time for the process.

3. Senior Committee Member

Members should receive training in conflict resolution and ethics as they progress upward in the committee structure. Individuals can acquire these skills by either taking a business school course or reading an appropriate text. The Kellogg School of Management has excellent modules including conflict resolution, ethics, and governance that are offered under the auspices of the American Orthopaedic Association (AOA). For those unable to attend a course, there are superb books on conflict resolution including Crucial Conversations and Crucial Confrontations by Patterson, Grenny, McMillan, and Switzler. These authors also hold worldwide training courses on conflict resolution. The SRS should consider education stipends to provide these skills to selected individuals. The course costs approximately \$1000.00 and is offered periodically in most large cities, eliminating the need for expensive travel. Another possibility is to develop an SRS member with expertise in conflict resolution, ethics, and governance. This person could then provide a yearly lecture to new committee and board of director’s members.

4. Committee Chair

The ability to conduct an effective meeting and to understand group dynamics is an important skill set for new committee chairs. Dissenting opinions must be encouraged and should be considered respectfully and without bias. Understanding dissenting opinions always leads to better decision making. A well conducted meeting should allow a wide range of discussion but at the same time the leader must guide the group to keep the discussion focused on the agenda and on time. Two examples of books to help Committee Chairs are How to Conduct Productive Meetings: Strategies, Tips and Tools to Ensure Your Next Meeting Is Well Planned and Effective and Groupthink: Psychological studies of policy decisions and fiascoes.

4. Specialized Committee Chairs (Finance, Governance)

These committees require some specialized knowledge, accounting, finance and the requirements of not-for-profit governance. These skills can be obtained through weekend seminars which are offered by all business schools. Individual reading can also be sufficient for many who already have some understanding of the processes. Accounting for Dummies is actually a very good overview for accounting and Governance as Leadership is excellent as well, both cited in the bibliography.

5. Members of the Board of Directors

Many people elected to the board of directors will be experienced in the committee process and should gain the previously mentioned skills as they move through the committee structure with any gaps addressed through the previously mentioned methods. During the Fall Leadership Meeting the Board of Directors should consider devoting a half day to leadership issues deemed important to the organization. This might require the occasional outside speaker.

In summary formalized leadership training will enhance the effectiveness of both the new leaders and the SRS. The useful skills are relatively easy to obtain without completing a business degree.

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