

Pediatric orthopaedics and rehabilitation

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Pediatric orthopaedic surgeons commonly interact with PM&R specialists as part of the rehabilitation team. This invited communication is intended to present the residency and fellowship education requirements for a pediatric orthopaedic surgeon and give a review of current work-force issues.

Pediatric orthopaedic and PM&R collaboration may be in an acute setting, e.g., post injury or post surgery but more commonly occurs with management of chronic conditions, e.g., CP, myelodysplasia and other neuromuscular disorders. In the non-acute setting, even the pediatric orthopaedic surgeon must shift mental gears from a common “acute cure” mode, e.g., post idiopathic spinal deformity reconstruction or fracture treatment, to the less common “management” mode of a long term disease which necessitates a change of treatment pace, expectations, and continuity of care. Despite this change, the goal remains the same – maximization of remaining function.

In the US, a pediatric orthopaedic surgeon first completes a highly competitive 5 year orthopaedic residency program in one of 152 accredited programs with ~ 2850 residents. Post medical school graduation, first year rotations include critical care, burn management, surgery, trauma, neurosurgery, pediatric surgery and emergency medicine. The remaining 4 years are spent on clinical rotations involving acute care and elective reconstruction with increasing responsibility. Rotations of varying length are assigned in trauma, joint arthroplasty, sports orthopaedics, pediatric orthopaedics, adult spine, hand/upper extremity, foot/ankle, and orthopaedic oncology. Didactic train-

ing in musculo-skeletal basic science, e.g., biomechanics, molecular genetics, and pathology as well as research are integral parts of the curriculum.

There has been a significant reduction over the past 2 decades in required rotation time for pediatric orthopaedics during the residency years with limited time (4–6 months) currently given to this subspecialty. The transition from the “buckle and brace” days of orthopaedics, in general, and pediatric orthopaedics, in specific, with their prolonged patient hospitalizations, often while encased in large casts, have been replaced with a focus on early mobilization and ambulation, with a surgical emphasis to diminish the de-conditioning impact of immobilization. The pediatric in-patient census has decreased as a reflection of this reduction in length of stay and much of the elective non-spinal surgery is now done in the out-patient or short-stay setting.

Post residency training in pediatric orthopaedics was one of the first orthopaedic subspecialties. A one year fellowship in pediatric orthopaedics at a major center provides experience in the full spectrum of pediatric musculoskeletal conditions utilizing a didactic and clinical curriculum. A research project is also commonly expected during this year. Judgement decisions relative to the impact of the diagnosis and treatment on growth and development are stressed during this time of continuity of care with family involvement. Being part of the rehabilitation team occurs frequently.

Pediatric orthopaedic workforce issues are of concern given the recent progressive decrease in numbers of pediatric orthopaedic fellows and fellowship programs. In 2001–2002, 25 fellowships filled 34 of 36 positions. In 2005–2006, 22 programs filled 24 of 36 available slots. For 2006–2007, 21 programs had only 22 fellows enrolled, a 33% reduction from 5 years ago. To put things in perspective, there are ~ 640 orthopaedic grads annually, about two-thirds of whom go

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on to fellowship training. Pediatric orthopaedic fellows represent but 3% of the total number of graduates [1]. Fellowships in pediatric subspecialties in urology, ENT and radiology, although not exactly burgeoning, have not seen the percentile decline found in pediatric orthopaedics [1]. Our residents routinely tell us that, although they find pediatric orthopaedics a fascinating area, it requires too much knowledge, is too high risk, requires often time-consuming parental involvement and has poor fiscal reimbursement, and they head off to the more popular sports, arthroplasty and adult spine fellowships.

The Pediatric Orthopaedic Society of North America (POSNA) is an active, representative group of 584 active members, 16 associate members, and 70 candidate members mostly from the US but with significant contingents from Canada and Mexico. Eight new members were initiated in 2007. There are also 66 corresponding members [2]. Members act as advocates for improvement of pediatric musculoskeletal care and have on-going liaisons and exchanges with similar societies world wide.

Pediatric orthopaedics has a long history of rehabilitation involvement. Nicholas Andry, a Parisian pediatrician and Dean of the Faculty, coined the term "Orthopaedia" ("straight child") in a 1741 treatise, "The Art of Correcting and Preventing Deformities of Children".

The musculoskeletal deformities and loss of function he witnessed were primarily due to infectious diseases (polio, TBC, syphilis, etc.) trauma, nutritional disorders (scurvy, rickets) and unrecognized birth trauma sequelae. "To make straight the crooked child" has been an orthopaedic mandate since that time.

Combined management of musculoskeletal disorders by orthopaedic surgeons and PM&R physicians is common, especially for a multitude of neuro-muscular conditions with each specialty playing key roles at various stages of the disorder. Team treatment also occurs for pediatric amputees, for children post poly trauma, during and post limb equalization, status post upper extremity and hand reconstruction and in the emerging subspecialty of pediatric and adolescent sports medicine. We continue to be active parties in patient habilitation to maximize available function whatever the disease.

References

- [1] Accreditation Council of Graduate Medical Education, Graduate Medical Education Information, 2007. <http://www.acgme.org/>.
- [2] Pediatric Orthopaedic Society of North America, Sharon Goldberg, Executive Director, 2007. Personal communication.