

Spine Deformity Educational Curriculum

Endorsed by

AANS-CNS Joint Section on Disorders of the Spine and Peripheral Nerves
Pediatric Orthopaedic Society of North America
Scoliosis Research Society

Definition: Spine treatment whose indication or result is a change in the translational, coronal or sagittal contour of the spine.

Educational curriculum: The Spinal Deformity Educational Curriculum is a suggested ideal format for educational planning. It is recognized that some educational programs/fellowships may not incorporate all aspects of the curriculum.

I. Suggested Topics for Didactic Presentation:

- Clinical biomechanics of the spine
- Pain management
- Nutritional
- Spinal radiology
- Spine embryology, growth, development and genetics
- Pediatric and adult reading list – (To be determined)

II. The fellowship curriculum for spine deformity should include exposure to and familiarity with the pathogenesis, treatment principles, and surgical decision making, but not necessarily a comprehensive surgical experience in the following Diagnoses:

- a. Scoliosis: idiopathic, neuromuscular (cerebral palsy, muscular dystrophies, myelodysplasia, etc), congenital, degenerative, syndromic (neurofibromatosis, osteogenesis imperfecta, mucopolysaccharidoses, Down, etc.), pathologic, traumatic, iatrogenic, post-infectious, metabolic, and other etiologies
- b. Sagittal plane deformity: Scheuermann's, post-laminectomy, neuromuscular, degenerative, traumatic, pathologic, congenital, neoplastic, and other etiologies
- c. Spondylolisthesis

III. The fellowship curriculum for spine deformity should include exposure to and familiarity with the following non-operative spinal deformity evaluation and treatment methods:

- a. Orthotic and cast treatment options for spinal deformity
- b. Awareness of long term consequences of treatment and non-treatment options
- c. Knowledge of appropriate referral patterns for specialized care in ICU, nephrology, metabolic disorders, developmental pediatrics, pulmonology, genetics, and other specialties that relate to spinal deformity care.
- d. Knowledge of appropriate diagnostic evaluations for patients with spinal deformity

IV. The fellowship curriculum for spine deformity should include exposure to and/or familiarity with the surgical approaches listed below, performed either with an attending spinal deformity surgeon or access surgeon:

- a. Anterior, including extracavitary
 - i. cervical including cervicothoracic junction
 - ii. thoracic
 - iii. lumbar
- b. Posterior
 - i. midline including cervico-occipital

- ii. transpedicular
- iii. posterior lateral (TLIF, costotransversectomy)
- iv. sacropelvic exposure
- c. Techniques of bone graft harvesting
- d. Techniques of thoracoplasty

V. The fellowship curriculum for spine deformity should include exposure to and/or familiarity with the following surgical intra-operative spinal deformity correction techniques, decision making and post operative management:

- a. Instrumentation
 - i. spinal fixation with hook, screw and wire anchorage for the posterior occipital, cervical, thoracic, lumbar regions of the spine
 - ii. sacral and iliac fixation
 - iii. anterior fixation with plate and/or rod systems – cervical, thoracic and lumbar regions of the spine
 - iv. anterior column structural support, intradiscal and corpectomy
 - v. Techniques appropriate for the immature, deformed spine (growth rods, VEPTR, stapling, etc.)
- b. Osteotomies
 - i. Smith-Peterson
 - ii. Pedicle subtraction
 - iii. Vertebral body resection
- c. Principles of and indication for neuromonitoring
 - i. SSEP
 - ii. MEP
 - iii. Evoked EMG