Idiopathic scoliosis is the most common variety of scoliosis in the pediatric and adolescent population. Scoliosis is defined as a curvature of the spine, consisting of a side-to-side bending of the vertebral column of at least 10 degrees. This spinal curve is accompanied by vertebral and trunk rotation, making scoliosis a three-dimensional deformity. Idiopathic scoliosis is a separate entity and it does not include congenital scoliosis (abnormalities of the vertebrae), or neuromuscular diseases that may create a spinal curve. There is a clear genetic link for idiopathic scoliosis that continues to be defined and DNA testing is improving.

About scoliosis

- About 3 percent of the population has a curve greater than 10 degrees.
- Less than 1 percent of the general population will develop a curve greater than 30 degrees.
- Girls are three times more likely to have their scoliosis progress and require treatment than boys.
- Skeletally immature patients (patients with growth remaining) are at risk for curve progression and this risk is greatest during rapid spine growth.
- Idiopathic scoliosis does not typically cause significant cardiac or pulmonary problems unless the curves progress to 80 degrees or more.
- The incidence of back pain is the same in the scoliosis population as in the general population.
- Core strengthening and physical conditioning are key to long-term health and well-being.

Presentation

Primary care physicians may notice:

- Shoulder asymmetry.
- Waist shift or uneven waist line.
- Trunk rotation.
- Rib asymmetry. The trunk and rib rotation is most noticeable on forward bending exam with one side of the back higher than the other.
- Occasionally complaints of back pain. Pain is not usually a major component of the history of idiopathic scoliosis.
- Suspicion because of a family history of scoliosis.

Workup

Physical exam

- Shoulder asymmetry.
- Trunk rotation or rib asymmetry.
- Waist shift.
- Thorough neurologic examination.

Radiographs

- Standing posterior to anterior (PA) view of the thoracic and lumbar spine that includes the iliac crest on both sides of the pelvis.
- Lateral view of the spine should include the thoracic and lumbar spine.
- Preferably each one of these radiographs is taken on a 14" x 36" cassette so the PA and lateral view show the entire spine on one film each.
- An MRI scan is not routinely used unless there are abnormal neurologic findings, unusual curve patterns or unusual pain patterns. The use of an MRI for scoliosis is
Indications for referral to an orthopedic specialist

- Curves greater than 10 degrees in patients skeletally immature (remaining growth).
- Curves greater than 25 degrees in patients who are skeletally mature (no remaining growth) for at least one evaluation and discussion of any long-term recommendations.
- Curves that remain less than 10 degrees do not require referral and can be monitored on a biannual (six month) basis until skeletally mature. If there are any concerns, then a referral is warranted.

Treatment

- Visits every three to six months, with radiographs, to observe curve progression in patients that are skeletally immature
- Brace treatment
  - Custom made braces worn full-time or at night only for patients with curves 25-40 degrees when skeletally immature.
  - Prevents progression of the curve in about 75 percent of treated patients.
  - Does not provide permanent correction.
- Surgery
  Curves greater than 50 degrees (curves between 40 and 50 degrees may or may not be an indication for surgery depending on the curve pattern and patient preference).
  Surgical intervention involves fusion and instrumentation (placing rods and bone anchors such as screws or hooks in the bone).

Long-term natural history

- Curves less than 30 degrees as adults usually do not significantly progress (3 to 10 degrees on average) during adulthood.
- Curves more than 50 degrees as adults typically progress 20 degrees between the ages of 20 and 60.
- Activities are not restricted unless a surgical fusion has been done.
- The surgical group is restricted from contact sports and gymnastics.
- The incidence of back pain is the same in the scoliosis population as in the general population. Core strengthening and physical conditioning are key to long-term health.