



Scoliosis Program

Scoliosis is an abnormal curvature of the spine that can be present at any age but is most commonly seen in adolescents. Normal spines have a gentle front-to-back curvature but any curve greater than 10 degrees from side to side is considered abnormal. The most common type of scoliosis is idiopathic scoliosis, which means the exact cause is unknown.

Physicians affiliated with Children's Memorial Hermann Hospital understand the importance of empowering patients and their families with knowledge about their condition. They spend hours helping patients and families learn about scoliosis so that they can participate knowledgeably in treatment decisions. Families of children who undergo surgery for scoliosis tour the hospital and meet the nursing and anesthesia teams before the day they are admitted for surgery. Affiliated pediatric orthopedic surgeons work with families to find the best time for surgery based on the child's

needs and the family's schedule. They are flexible and accessible and do their best to make families and children feel comfortable before, during and after surgery.

With 234 pediatric beds, Children's Memorial Hermann Hospital is one of the largest pediatric hospitals in the country. Physicians affiliated with the hospital are also faculty at McGovern Medical School at UTHealth.

ADOLESCENT IDIOPATHIC SCOLIOSIS

Adolescent idiopathic scoliosis (AIS), the most common form of scoliosis, is a three-dimensional abnormality of the spine that usually becomes apparent during adolescent growth spurts. The most common spinal curves are right thoracic (upper and middle back) and left lumbar (lower back).

Everyone's spine has natural curves that round the shoulders and make the back curve slightly inward. But some people have spines that also curve from side to side and may look like the letters C or S on an X-ray. Some bones may also have rotated slightly, making the waist or shoulders appear uneven.

When does adolescent idiopathic scoliosis occur?

AIS is usually seen between the ages of 10 and 18, during puberty, when children are at the highest risk for progression of the curve because their growth rate is fastest. Most curves of smaller magnitude slow or stop their progression when the skeleton is mature and the child's growth stops, but curves of greater magnitude may progress into adulthood. (over)

While AIS is seen with equal frequency in boys and girls at low curve magnitudes, girls are at significantly higher risk for curve progression. About 30 percent of AIS patients have a family history of scoliosis.

Telltale signs of scoliosis are uneven shoulders, an elevated hip, a prominent shoulder blade, a shift of the body to the right or left, or a hump in the back when the child bends forward. But often scoliosis has no visible signs, making diagnosis difficult without X-rays. Usually there is no pain associated with scoliosis.

Screening for Adolescent Idiopathic Scoliosis

Screening for scoliosis focuses on evaluation of trunk symmetry using the Adams forward bend test. When scoliosis is suspected, physicians request a standing posterior-anterior thoraco-lumbar spine X-ray on a single long film to review the full spinal column. They may also recommend additional studies, including a standing side view X-ray, CT scan or MRI. Once congenital, developmental and degenerative abnormalities have been ruled out, scoliosis is diagnosed and treatment is recommended based on the degree of progression.

Although it is not possible to predict the onset of scoliosis, early detection and monitoring may allow bracing to prevent progression.

TREATMENT

Overview of Treatment

Curves less than 10 degrees are considered normal. These curves usually do not warrant monitoring with regular X-rays. In very young children the treating physician may recommend a repeat exam every six months to a year.

Curves greater than 10 degrees are considered true scoliosis. These curves are monitored closely, especially during periods of rapid growth. Curves that approach 25 degrees or more may require the use of a custom brace to prevent further progression while the child is growing.

Curves over 50 degrees have a high probability of progressing even during adulthood. Surgery is recommended for correction and to prevent further progression.

How is treatment determined?

Affiliated Pediatric orthopedic specialists make treatment decisions based on the potential for progression, which depends on three things: skeletal maturity (age), curve magnitude and location of the curve. Children who are being followed by a doctor are usually seen every four to six months.

Degree	Treatment
Less than 20-25 degrees	Periodic exams to detect progression
20 to 45 degrees	Brace wear and monitoring
Greater than 45-50 degrees or progression past skeletal maturity	Surgical correction

Bracing for Scoliosis

Pediatric orthopedists affiliated with Children’s Memorial Hermann Hospital strive first for nonsurgical treatment of AIS, which is why early detection is so important. While most cases have little or no medical or cosmetic significance, about 2 percent to 3 percent progress enough to require brace wear to stop the progression or surgery to correct it.

Bracing is recommended for thoracic curves greater than 20 degrees and less than 45 degrees and lumbar curves greater than 25 degrees and less than 40 degrees. Most children and adolescents who qualify for bracing are fitted with a thoraco-lumbar-sacral orthosis (TLSO), constructed of advanced plastics and custom molded to exactly match the curve pattern of the spine. While there are many types of braces, the most common is the Boston brace, which

extends from below the breast to the beginning of the pelvic area in front and just below the shoulder blades to the middle of the buttocks in the back.

Children wear the brace until they have stopped growing. In girls, growth usually stops between 18 months and two years after the onset of menstruation. In both boys and girls, cessation of growth is determined by closure of growth plates of the pelvis and hand as seen on X-rays.

For more information about bracing, visit childrens.memorialhermann.org/scoliosis.

When is surgery recommended?

When curve magnitude reaches 45 to 50 degrees or greater in previously untreated children or in those who show no improvement with bracing, surgery is recommended. The primary goal of surgery is prevention of curve progression and restoration of spine balance in all planes.

Today, the majority of AIS cases are treated with a posterior spinal fusion of the affected areas and instrumentation that straightens the spine and supports the area of fusion. Posterior instrumentation may include multiple screws or hooks that attach to the bones and are connected to two alloy rods that correct the spinal deformity. Most patients do not require any external support after surgery, and most do not notice any change in the flexibility of their back after recovery from surgery.

What can we expect after surgery?

Most AIS patients do not require postoperative casting or bracing. They participate in physical therapy the morning after surgery, which allows for a quicker recovery.

The incision usually heals by the end of two weeks, and patients are allowed to start getting their back wet. Restrictions regarding bending and turning are kept in place for three months after the surgery. Most patients are allowed to return to sports and other activities by six months after surgery.



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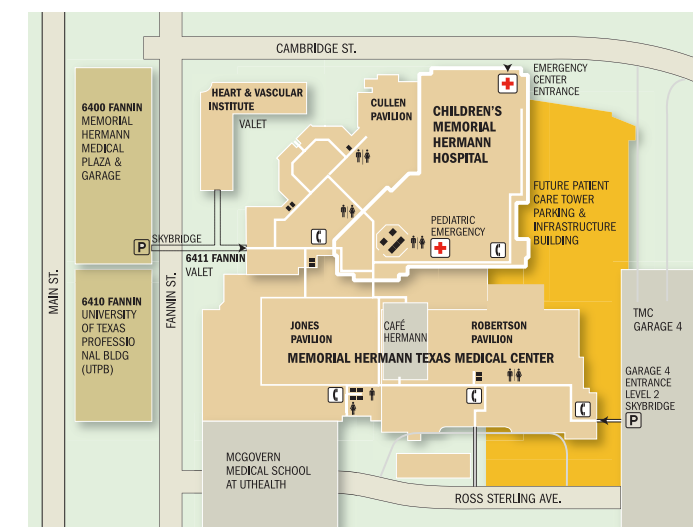
- Pediatric Orthopedic Surgery
- Trauma
- Limb Deformity
- Scoliosis / Spinal Deformity



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To schedule an appointment visit:
childrens.memorialhermann.org/schedulenow