

# Screening for adolescent idiopathic scoliosis

Effective screening provides early intervention for an overlooked condition



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Scoliosis screening is aimed at identifying suspected cases of scoliosis that will be referred for diagnostic evaluation. The benefits provided by effective clinical scoliosis screening programs are significant, including the detection and referral of patients with adolescent idiopathic scoliosis (AIS) at an earlier stage of the clinical course<sup>1</sup> in addition to the potential prevention of deformity progression by brace treatment and the earlier recognition of severe deformities requiring operative correction.<sup>2</sup>

## Who is affected?

Scoliosis is a lateral deviation from the vertical line (sagittal plane) measured as greater than 10 degrees by X-ray. Vertebral rotation is an additional component.

Evidence supports scoliosis as being hereditary, and current studies indicate that AIS is a complex genetic disorder. The pathogenesis of scoliosis is not fully understood.

Scoliosis affects males and females equally. Females, however, are five times more likely to have a progressive scoliotic curve requiring treatment.

Because scoliosis has few physical symptoms, a patient complaining of back pain may be symptomatic of another condition.

## What are the risks?

The risk of further progression is low for curves measuring less than 30 degrees at the time the patient reaches skeletal maturity. Curves of greater magnitude have a higher risk of progression after maturity, requiring continued observation through the adult years. Some studies report an average of 1 degree of curve progression a year.

## When should a child be screened?

Routine screening for scoliosis is important because it decreases the relative risk of curve progression into a surgical range by a factor of eight. The most specific test for scoliosis is the Adams forward bend test.

The at-risk population is between the ages of 10 and 15. At minimum, females should be screened twice, at ages 10 and 12, and males should be screened once, at age 13 or 14.<sup>2</sup>

Georgia General Assembly Code requires screening of public school children for scoliosis.<sup>3</sup>

## What are the treatments?

### Observation

Minor curves less than 15 degrees with minimal or moderate risk for progressive deformity need to be observed with periodic clinical physical examination. Observation continues until the risk for progression decreases, usually when the patient reaches skeletal maturity.

### Orthotic intervention

Curves between 25 to 45 degrees with moderate or high risk for progression may be managed with a scoliosis brace to limit the risk of further progression until the patient reaches skeletal maturity. The National Institutes of Health (NIH) funded a study, published in 2013, that affirmed the efficacy of bracing and the need for early detection of scoliosis. The study conclusively demonstrated that bracing in appropriately indicated patients will result in less surgery.

### Surgery

Major curves greater than 45 degrees, or moderate curves with high risk for progression, may require a surgical intervention.

## What are the consequences of untreated progressive scoliosis?

- Significant deformity at the spine, which may lead to perceived disability as an adult, such as difficulty completing physical activities (more common in females)
- Development of osteoarthritis of the spine
- Development of chronic back pain, especially in lumbar curves of more than 50 degrees
- Risk during adulthood of additional progression for curves of more than 50 degrees at skeletal maturity
- Potential for decreased vital lung capacity and pulmonary function due to restricted chest diameter in thoracic curves of more than 100 degrees
- Shortness of breath and decreased pulmonary function in thoracic curves of more than 80 degrees
- Increased risk of death from pulmonary and cardiac failure in thoracic curves of more than 100 degrees
- Potential for significant psychological burden on self-image from deformity due to societal emphasis on appearance and health

## The Children's difference

Our Scoliosis Screening Program partners with physicians, county health departments and school nurses to detect early signs of scoliosis in the at-risk population.

### Scoliosis clinics

- We offer registered nurse-facilitated scoliosis clinics at several metro Atlanta locations with X-ray evaluation for children referred from both physicians and school screenings.
- X-ray results are sent to the families and their primary care physicians along with a treatment recommendation.

### Referral process

To refer a patient to the scoliosis clinic, have parents call **404-785-7553**.

## Additional services and resources

### Services

We facilitate access to area pediatric orthopaedic surgeons and additional orthopaedic resources.

### Educational opportunities

Our program's registered nurse coordinator provides in-service presentations at physicians' offices in metro Atlanta. Visit [choa.org/scoliservice](http://choa.org/scoliservice) to schedule.

### Annual scoliosis screening conference

- Speakers include pediatric orthopaedic surgeons, the program's registered nurse and board-certified orthotists.
- We offer presentations to healthcare professionals, county health department personnel and school nurses about best practices for scoliosis screening.

### Resources

- Physician quick reference guide: "Five Steps of Scoliosis Screening"
- Instructional materials for healthcare professionals and volunteers involved in school scoliosis screenings
- Educational materials for patients and families in both English and Spanish
- Direct line to the Scoliosis Screening Program's registered nurse at **404-785-6753** to answer questions about scoliosis

### Websites

- Scoliosis Research Society: [srs.org](http://srs.org)
- National Scoliosis Foundation: [scoliosis.org](http://scoliosis.org)
- AAOS, SRS, POSNA, AAP position statement on screening for Idiopathic Scoliosis in Adolescents: [srs.org/about-srs/quality-and-safety/position-statements/screening-for-the-early-detection-for-idiopathic-scoliosis-in-adolescents](https://www.srs.org/about-srs/quality-and-safety/position-statements/screening-for-the-early-detection-for-idiopathic-scoliosis-in-adolescents)



Visit [choa.org/scoliosis](http://choa.org/scoliosis) for more information about scoliosis and our Scoliosis Screening Program.

<sup>1</sup> American Academy of Orthopaedic Surgeons (AAOS), Scoliosis Research Society (SRS), Pediatric Orthopaedic Society of North America (POSNA) and the American Academy of Pediatrics (AAP)

<sup>2</sup> Hresko, M. T., Talwalkar, V. R., & Schwend, R. M. (2015, September 2). Screening for the Early Detection for Idiopathic Scoliosis in Adolescents: SRS/POSNA/AAOS /AAP Position Statement. Retrieved from <https://www.srs.org/about-srs/quality-and-safety/position-statements/screening-for-the-early-detection-for-idiopathic-scoliosis-in-adolescents>

<sup>3</sup> Authority O.C.G.A. 20-2-772