

# Screening for Idiopathic Scoliosis in Adolescents

## EFFECTIVE CLINICAL SCREENING

The American Academy of Orthopaedic Surgeons (AAOS), Scoliosis Research Society (SRS), Pediatric Orthopaedic Society of North America (POSNA) and the American Academy of Pediatrics (AAP) state the benefits provided by effective clinical scoliosis screening programs are significant, including, "the potential prevention of deformity progression by brace treatment and the earlier recognition of severe deformities requiring operative correction."<sup>\*</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 being hereditary, and current studies indicate that more than one major gene is responsible for scoliosis. Researchers are developing diagnostic tests using gene profiles to help predict curve severity.

Scoliosis affects males and females equally; however, females are five times more likely than males 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.

## RISK

The risk of further progression is low for curves measuring less than 30 degrees at the time the patient reaches skeletal maturity. For curves of greater magnitude there is a higher risk of progression after maturity. Some studies report an average of 1 degree of curve progression a year.

## SCREENING

Routine screening for scoliosis is important because it decreases the relative risk of curve progression into a surgical range by a factor of 8. 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.\*

Legal rules promulgated from the Georgia Code require screening "annually for a minimum of two grades occupied by the at-risk population."<sup>\*\*\*</sup>

## 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.

### Surgery:

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

<sup>\*</sup>AAOS, SRS, POSNA, AAP 2007

<sup>\*\*</sup>Authority O.C.G.A. 20-2-772; 290-5-47-.02 Provision for Screening

## Consequences of untreated progressive scoliosis

- Significant deformity of the spine, which may lead to perceived disability as an adult.
- Development of osteoarthritis of the spine.
- Development of chronic back pain.
- Risk during adulthood of an additional 23 degrees of progression for major curves.
- Potential for decreased vital lung capacity and pulmonary function due to restricted chest diameter in thoracic curves of more than 50 degrees.
- Shortness of breath and decreased pulmonary function in thoracic curves exceeding 80 degrees.
- Increased risk of death from pulmonary and cardiac failure in thoracic curves greater than 100 degrees.
- Potential for significant psychological burden from deformity due to societal emphasis on appearance and health.

## THE CHILDREN'S DIFFERENCE

The Children's Healthcare of Atlanta Scoliosis Screening Program partners with physicians, county health departments and school nurses to detect early signs of scoliosis in the at-risk population.

### Tertiary clinics:

- Children's offers free registered nurse-facilitated scoliosis tertiary 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 free tertiary clinic, have parents call 404-785-7553.

## ADDITIONAL SERVICES AND RESOURCES

### Services:

- Facilitate access to area pediatric orthopaedic surgeons and additional orthopaedic resources.

### Educational opportunities:

- The Scoliosis Screening Program's registered nurse coordinator provides inservice presentations at physician's offices in metro Atlanta. Call 404-785-7229 to schedule.

### Annual scoliosis screening conference:

- Speakers include pediatric orthopaedic surgeons, the program's registered nurse and board-certified orthotists.
- Training offered to county health department personnel, school nurses, volunteers, physical education teachers and school health workers about screening for scoliosis.

### Resources:

- Physician quick reference guide: Five Steps of Scoliosis Screening
- 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.

### Other resources:

- Scoliosis Research Society: [www.srs.org](http://www.srs.org)
- National Scoliosis Foundation: [www.scoliosis.org](http://www.scoliosis.org)
- AAOS, SRS, POSNA, AAP (Screening for Idiopathic Scoliosis in Adolescents): [www.srs.org/patients/adolescent/idiopathic](http://www.srs.org/patients/adolescent/idiopathic)

Visit [www.choa.org/scoliosis](http://www.choa.org/scoliosis) for more information about the Children's Scoliosis Screening Program.