Scoliosis and Deformity Screening

A program approved by the Botswana Department of Education

PowerPoint presentation: Courtesy of the American Red Cross of Northeast Tennessee. Modified by WSC.
World Spine Care
Scoliosis Screening Program

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Current Status of WSC Scoliosis Screening Program

- Permission for program received from the Botswana Department of Education
- 2 schools in Shoshong and 2 in Mahalapye. Students ages: 10-15 years old
- Scoliometers: donated by Sally Valentine
- Student gifts: pens and flashlight key chains donated by Don and Sharon Komorous (USA). Notepads by Sally Valentine (USA)
- Coordination: Geoff Outerbridge and Joan Haldeman
Goal of the WSC Scoliosis Program

- Educate and train teachers and nurses
- Identify children at risk
- Manage early so that spinal problems are dealt with prior to adulthood (refer to WSC clinic)
- Improve quality of life of children with scoliosis
- Determine the incidence of scoliosis in Botswana
Scoliosis is defined as:
- Sideways curvature of the spine
- Spine turns on its axis like a corkscrew
- Normal spine has a “I” appearance
- Scoliosis produces an “S” or “C” appearance
Degrees of Curvature

Scoliosis is a lateral deviation of the normal vertical line of the spine which, when measured by an X-ray, is greater than 10 degrees.

- **MILD**
  - 10 - 15°

- **MODERATE**
  - 16 - 23°

- **SEVERE**
  - 24 - 44°
Causes of Scoliosis

- **Congenital**
  - Problem with the formation of vertebrae or fused ribs during prenatal development

- **Neuromuscular, Connective Tissue & Chromosomal Abnormalities**
  - Cerebral palsy, muscular dystrophy, spinal bifida, paralysis
  - Marfan’s Syndrome
  - Down’s Syndrome

- **Idiopathic**
  - Structural spinal curvature with no established cause
  - Appears in a previously straight spine
  - 80-85% of cases are idiopathic
Incidence (USA)

- 10% of adolescents will have some degree of curvature
- Affects approximately 1 million children in the US
- 3-5 out of every 1,000 cases are severe enough to require treatment
- 25% will require medical attention to monitor for progression
- Affects 2-3% of the general population (can affect adults, most seen in adolescents)
Girls Vs. Boys

- Primary age of onset – 10-15 years
  - During the last major growth spurt of adolescence

- Time of greatest risk:
  - Girls: 6 months before & after onset of menstruation
  - Boys: Time when their voices deepen

- Mild scoliosis
  - 1 in 10 girls
  - 1 in 25 boys

- More serious curves (< 30 degrees) are 8-10X greater in girls than in boys
Scoliosis facts

- Race, ethnic background and socioeconomics do not appear to be factors
- Tends to occur in families
- Usually painless and without symptoms. Child is generally unaware of curvature
- Untreated scoliosis of greater than 30 degrees can lead to back pain in adults
- 60% of curvatures in rapidly growing prepubertal children will progress
- Increased risk for osteoporosis and gall bladder problems later in life
- Poor nutrition may play a role
Diagnosis

- Scoliomter measurements
- Physician Physical Exam
- X Ray
- MRI
Treatment for adolescent scoliosis

- Minor curvatures
  - Observation and repeated assessment
  - Exercises may help to maintain surrounding muscular strength and mobility
  - Treatment of spinal pain if present

- Mild or slowly progressive curvatures
  - Bracing to help hold spine in place while it grows
  - Can be removed for sports

- Severe or rapidly progressive curvatures
  - Surgery
Screening

- Screening is not meant to be a diagnostic exam
- Diagnosis will be made after an examination at the WSC clinics
- Purpose- to identify the child at risk for postural deviation, excessive or abnormal curvatures of the spine
- 10-15 year old students should be screened
Screening

- Schedule date for screening, training, parent permission, follow-up and reports

- Provide overview with teachers & students

- Location for privacy

- Screen males and females separately and individually; barefooted; males without shirts on; females with blouses on backwards (may suggest wearing a bathing suit)
Screening Process

- Observe the student walk toward you and then away
- Note leg length discrepancies
- With bare back, have student stand straight, feet together and looking straight ahead, with arms at his/her side
- Have student bend forward (Adam’s position)
- Observe student from back, side and front
- Use scoliometer for accurate measurement
Step 1  Front View

- Shoulders should be level and at the same height
- Distance between arm and torso equal on both sides
- Crest of hips level on horizontal plane
- Head straight and centered
Step 2 Back Standing View

- Shoulders should be level and the same height
- Distance between arm and torso equal on both sides
- Crest of hips level on horizontal plane
- Head straight and centered
- Scapula level on both sides
Adam’s Bending Technique

- Feet slightly apart
- Palms together
- Arms outstretched with straight elbows
- Head down
- Bend forward at waist
- Place hands between legs at knee level
Step 3 Back Bending View

Look For:

- Rib prominence
- Lumbar Prominence
- Differences in height of hip crests
Step 4  Side View

Look for exaggerated rounding of the back
Kyphosis
Step 5  Bending Front View

• Shoulders level?

• Is one side of torso more rounded than the other?

• Look for lumbar prominence
Step 6

Scoliometer Measurement

- Patients in Adam’s flexion position
- Screener uses scoliometer to measure degree of curvature
- Measurement taken at upper thoracic, lower thoracic and lumbar levels
Action steps for positive findings

• Students with scoliometer readings over 10 degrees or visible deformity:

• Refer to WSC clinic for:
  • Detailed clinical examination
  • Consideration for x-rays to measure degree of curvature
  • Treatment plan: observation, pain management, bracing or surgery
Additional considerations

• No student can be screened without permission from parents or guardian

• All results to be maintained at the WSC clinic records

• Permission slip from parent permits data but no names to be used for statistical analysis

• Results of statistical analysis to be reported to the Botswana Ministry of Health and the Department of Education
Thank you for your attendance and attention