

## **Scoliosis Clinical Pathway Synopsis**

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### **Objective of Clinical Pathway**

To establish care standards for patients presenting with suspected scoliosis. The Scoliosis Clinical Pathway is designed to provide clear decision support and guidance to both primary care and specialty clinic providers for the screening, evaluation, and management of scoliosis. Its purpose is to ensure timely identification of patients at risk for curve progression and to support appropriate referral to Orthopedic Surgery when specialty intervention is likely to be beneficial.

### **Background**

Scoliosis is a three-dimensional spinal deformity that most commonly presents as adolescent idiopathic scoliosis (AIS), affecting an estimated 1-3% of adolescents during the pubertal growth period.<sup>1,2</sup> Risk of curve progression is a central concern, with approximately two-thirds of patients experiencing progression before skeletal maturity. Treatment thresholds are guided by growth potential and curve magnitude, such that coronal curves exceeding 45–50° typically require surgical evaluation, whereas early detection and management aimed at maintaining curves below 30° can prevent long-term morbidity in adulthood.<sup>1,3</sup>

Early detection supports timely screening and referral, ensuring that patients who have not yet reached skeletal maturity receive appropriate evaluation and longitudinal follow-up to monitor curve progression.<sup>1,3,4</sup> Since the risk of progression depends on factors like residual growth, curve morphology, genetics, and biomechanical factors, the Scoliosis Clinical Pathway Committee aims to minimize variation in referral patterns and ensure that patients at high risk of progression are evaluated by Orthopedic Surgery at appropriate intervals.

### **Target Users**

- Physicians (Ambulatory Clinics, Community Physicians, Fellows, Resident Physicians)
- Nurse Practitioners
- Nurses

### **Target Population**

#### **Inclusion Criteria**

- Patients with signs of scoliosis (e.g., visible body asymmetry, clothes hanging unevenly, rib prominence on one side, leaning posture, history of back pain or fatigue)

### **Practice Recommendations**

In lieu of a clinical practice guideline fully addressing the screening, evaluation, and management of idiopathic scoliosis in pediatric and adolescent patients, guidance from pediatric scoliosis literature was used in conjunction with the expert consensus of the Scoliosis Clinical Pathway Committee to inform the assessment, acute management, and referral guidance in this pathway. <sup>1-11</sup>

### **Additional Questions Posed by the Clinical Pathway Committee**

No additional clinical questions were posed for formal literature review.

### **Updates from Previous Versions of the Clinical Pathway**

- The Scoliosis Clinical Pathway is a newly developed evidence-based pathway with no previous version for comparison.

### **Measures**

- Access of the Scoliosis Clinical Pathway (website hits)

### **Value Implications**

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This clinical pathway may increase value by reducing healthcare and non-monetary costs (e.g., missed school/work, loss of wages, stress) for patients and families, and by reducing costs and resource utilization for healthcare facilities.

- Standard guidance improves early detection and management to optimize outcomes
- Clear referral thresholds reduce both under-referral (missing progressive curves) and over-referral (sending patients with mild curves who can be observed)
- Decreased unwarranted variation in care

### **Organizational Barriers and Facilitators**

#### **Potential Barriers**

- Variability of the acceptable level of risk among providers
- Variability in experience among clinicians
- Need for effective communication and coordination among clinicians and specialties
- Challenges with access to healthcare and health literacy faced by some families

#### **Potential Facilitators**

- Collaborative engagement across the continuum of clinical care settings and healthcare disciplines during clinical pathway development
- Anticipated high rate of use of the clinical pathway

### **Bias Awareness**

Our goal is to recognize the social determinants of health and minimize healthcare disparities, while acknowledging that unconscious biases can contribute to them.

### **Order Sets/Order Panels**

- There are no order sets or order panels associated with this clinical pathway; however,
- Individual orders relevant to the Scoliosis Clinical Pathway include:
  - XR Spine Scoliosis AP (PA view preferred to reduce radiation exposure to breast tissue and thyroid) and Lateral Upright  
(Request Cobb angle when ordering)
  - For patients with neuromuscular disorders, seated imaging is preferred; otherwise, obtain supine films  
(Request Cobb angle when ordering)

### **Educational Materials**

- Provider Education for Scoliosis Evaluation (*under development*)
  - Intended to be an audiovisual resource for providers to demonstrate the scoliosis physical examination process and identify visible asymmetries necessary for early detection
  - Available for Children's Mercy employees and community healthcare professionals through this link  
(when available)

### **Clinical Pathway Preparation**

This pathway was prepared by the EBP Department in collaboration with the Scoliosis Clinical Pathway Committee, composed of content experts at Children's Mercy. If a conflict of interest is identified, the conflict will be disclosed next to the committee member's name.

### **Scoliosis Clinical Pathway Committee Members and Representation**

- Aaron Shaw, DO, FAAOS | Orthopedic Surgery | Committee Chair
- John Anderson, MD | Orthopedic Surgery | Committee Member
- Michael Benvenuti, MD | Orthopedic Surgery | Committee Member
- James Weihe, MD, FAAP | Orthopedic Surgery | Committee Member
- Denise Brewster, DNP, RN, CPNP | Orthopedic Surgery | Committee Member
- Katie Carpenter, MSN, RN, CPNP-PC | Orthopedic Surgery | Committee Member

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- Ryan Northup, MD | General Academic Pediatrics | Committee Member
- Sarah Dierking, MSN, RN, CPHQ | Clinical Practice and Quality | Committee Member

**EBP Committee Members**

- Todd Glenski, MD, MSHA, FASA | Anesthesiology, Evidence Based Practice
- Kelli Ott, OTD, OTR/L | Evidence Based Practice

**Clinical Pathway Development Funding**

The development of this clinical pathway was underwritten by the following departments/divisions: Orthopedic Surgery, General Academic Pediatrics, Clinical Practice and Quality, Evidence Based Practice

**Conflict of Interest**

The contributors to the Scoliosis Clinical Pathway have no conflicts of interest to disclose related to the subject matter or materials discussed.

**Approval Process**

- This pathway was reviewed and approved by the EBP Department and the Scoliosis Clinical Pathway Committee after committee members garnered feedback from their respective divisions/departments. It was then approved by the Medical Executive Committee.

**Review Requested**

Department/Unit	Date
Orthopedic Surgery	April 2026
General Academic Pediatrics	April 2026
Clinical Practice and Quality	April 2026
Evidence Based Practice	April 2026

**Version History**

Date	Comments
April 2026	Version one – <i>(developed Scoliosis Clinical Pathway and synopsis; provider educational materials are under development)</i>

**Date for Next Review**

- April 2029

**Implementation & Follow-Up**

- Once approved, the pathway was implemented and presented to the appropriate care teams:
  - Announcements made to relevant departments
  - Additional institution-wide announcements were made via the hospital website and relevant huddles
  - Community clinics affiliated with CM received announcements via "Progress Notes"
- The clinical skills patient care policy was reviewed to ensure alignment with the clinical pathway. The patient care policy outlines a nursing protocol for completing a musculoskeletal and neurologic assessment
- Care measurements may be assessed and shared with appropriate care teams to determine if changes need to occur.
- Pathways are reviewed every 3 years (or sooner) and updated as necessary within the EBP Department at Children’s Mercy. Pathway committees are involved with every review and update.

**Disclaimer**

When evidence is lacking or inconclusive, options in care are provided in the supporting documents and the order set(s) and/or order panel(s) that accompany the clinical pathway.

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