Track changes come from ACR/CMS Measure Preview Meeting on June 11, 2025
Revised June 25, 2025

Measure Title: Top-to-Bottom Count of Spinal Levels on Spinal MRI with Anatomical Landmarks if Atypical

Measure Purpose	To improve diagnostic accuracy and reduce wrong-level spine surgery by ensuring MRI reports of the spine include a complete top-to-bottom vertebral count and anatomical landmark descriptions when atypical anatomy is present, supporting safer surgical planning and better communication, including care coordination.
Measure Description	All reports for MRI studies of the spine (total, thoracic, and lumbar) that include a statement of the top-to-bottom (full vertebral) count and description of anatomical landmarks if the count is atypical.
Rationale	**Care Gap** Despite the well-documented risks associated with inaccurate vertebral labeling, there is currently no widely accepted standard for labeling or evaluating the spine in MRI reporting. Many radiology practices rely on limited-field imaging, which may miss critical anatomical landmarks and fail to identify transitional vertebrae or other anomalies (Albano et al., 2024; Konin & Walz, 2010; Lian et al., 2018; Roteta et al., 2024). This lack of standardization can lead to communication breakdowns and increases the risk of wrong-level spine surgery (WLSS)—a preventable error with serious clinical and legal consequences (Schlobohm et al., 2017; Givens et al., 2025). To address these challenges, professional organizations such as the Academic Medical Center Patient Safety Organization (AMC PSO) have issued consensus guidelines. These include protocols such as the Time-Out for Level Localization (TOLL), a thorough preoperative imaging review, and close collaboration between radiologists and surgeons (Agolia et al., 2025; Givens et al., 2025). However, the adoption of these practices remains inconsistent, revealing a persistent gap between evidence-based recommendations and routine clinical implementation. **Clinical Justification** Standardized vertebral labeling in MRI reports is crucial for enhancing diagnostic accuracy and minimizing the risk of WLSS. Vertebral segmentation anomalies and numbering variants are present in nearly 30 percent of individuals (Tins & Balain, 2016) and are often missed in limited-field imaging, increasing the likelihood of spinal level misidentification (Akbar et al., 2010; Bressler, 2007). WLSS is estimated to occur in approximately one in 3,110 surgeries, with spinal procedures accounting for about 5 percent of wrong-site cases (Schlobohm et al., 2017; Givens et al., 2025). These figures underscore the importance of consistent imaging protocols, comprehensive spinal assessments, and the utilization of anatomical landmarks to ensure accurate localization. Whole-spine MRIs and review of prior imaging, such as abdominal CT scans, can help identify anomalies that might otherwise go unnoticed. Landmarks like the iliolumbar ligament are particularly useful for confirming vertebral levels and supporting surgical accuracy (Peckham et al., 2017; Javadnia et al., 2025). There is a strong professional consensus

	supporting WLSS prevention strategies, including TOLL, adherence to standardized protocols, and interdisciplinary collaboration (Agolia et al., 2025; Givens et al., 2025). **Health Care Cost Implications** Standardizing vertebral counting in MRI reports can enhance care quality while reducing healthcare costs. This approach helps avoid repeat imaging, unnecessary procedures, and medicolegal risk. A review of malpractice claims found that failure to follow established protocols (83.8%) and inadequate review of medical records (41.2%) were major contributors to WLSS. These issues not only compromise patient safety but also result in significant financial liability, with average closed claims exceeding $136,000 and over 60% resulting in settlements (Tan et al., 2023). Additionally, analyses and modeling studies emphasize the value of reviewing prior imaging for lumbar spine anomalies before ordering new MRIs. This practice supports informed decision-making, reduces redundant imaging, and improves diagnostic accuracy. Whole-body MRI assessments, which include comprehensive spinal evaluations, also provide a more efficient and cost-effective alternative to multiple regional scans, aligning with value-based care goals while maintaining high standards of patient care (Albano et al., 2024; Lian et al., 2018).
Denominator:	All patients, regardless of age, undergoing MRI studies of the spine (total, thoracic and lumbar). **Denominator Criteria (Eligible Cases):** All patients, regardless of age **AND** Patient procedure during the performance period (CPT): 72141, 72146, 72148, 72149, 72156, 72157, 72158, 72082
Exclusions:	
Exceptions:	Studies in which image quality is not sufficient to provide top-to-bottom count. E.g. Patient movement, issues with stitching.
Numerator:	All final reports include a statement of top-to-bottom count and a description of anatomical landmarks if the count is atypical. **Numerator Codes:** ***Performance Met:*** **PM0XX:** Final report includes top-to-bottom count AND, if the count is abnormal, a description of the anatomical landmark. **OR** ***Performance Not Met:*** **NM0XX:** Final report does not include top-to-bottom count, OR, if count is abnormal, does not include a description of the anatomical landmark.

	OR ***Denominator Exception:*** **PE0XX:** Documentation of technical or medical reasons for not including top-to-bottom count, such as studies in which image quality is insufficient to provide top-to-bottom count. **Numerator Note:** The landmarks used in the description should be visible on intraoperative x-ray such as: ribs, lowest fully-formed vertebral body, lumbosacral angle Denominator exception does not include instances of incomplete anatomical coverage. Sample Statements: Normal anatomy: "When counted from top to bottom, there is a normal complement of vertebral bodies. No additional statement required. Atypical anatomy: "When counted from top to bottom, there is an atypical complement of vertebral bodies. Additional statement: The vertebral bodies were labeled as follows based on radiographic landmarks: Examples of radiographic landmarks: • Ribs • Lowest fully formed intervertebral disc • Lumbosacral angle apex • Other descriptors (vertebral body shape, lowest transverse process etc.)
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