

# TOO MUCH INFORMATION?

A clinical audit on patient access to digital record system and discrepancies between clinical notes and radiology reports causing potential harm to pediatric scoliosis patients

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# Introduction

- The gold standard for measuring scoliosis curves is the Cobb Method, however like all radiographic measurements, it is still subject to measurement error
- Pediatric scoliosis patients at McMaster Children's Hospital are cared for by orthopedic surgery and receive serial radiographic assessments after a baseline radiograph to assess progression of the curve
- A difference in scoliosis measurements of  $5^\circ$  or less from baseline or previous is considered “stable” or “unchanged” and attributed to measurement error



# Introduction

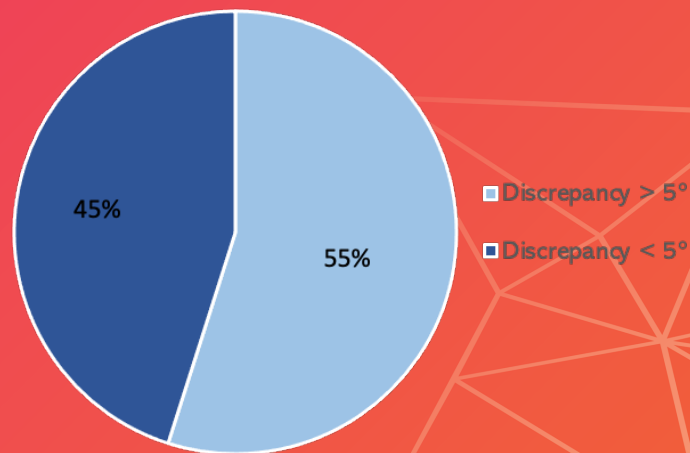
- At Hamilton Health Sciences, there has been a recent switch to using EPIC as the EMR, and patients now have online access to their medical records via MyChart
  - Pediatric scoliosis patients are presented with **2 sources of information:** *the orthopedic clinic note* and *the radiology report*
- Radiologists and Orthopedic Surgeons know a 5° measurement difference is insignificant, but **patients do not:** previous studies have shown these discrepancies can pose **emotional harm** to patients.
- Our goal was to perform a clinical audit to assess discrepancies in scoliosis measurements between the orthopedic clinic note and the radiology report

# Methods

- Search Parameters
  - All XR Scoliosis Surveys from July 2022 to September 2022
  - Patients < 18 years old
- Exclusions
  - Post-surgical patients
  - Curves described as “kyphosis”
  - Studies that did not include specific measurements in the radiology report and orthopedic clinic note
- Data Collected
  - Patient age and date of scoliosis measurement
  - Vertebral levels of curves
  - Upper, middle, and lower measurements of curves on radiology report
  - Upper, middle, and lower measurements reported in orthopedic clinic note

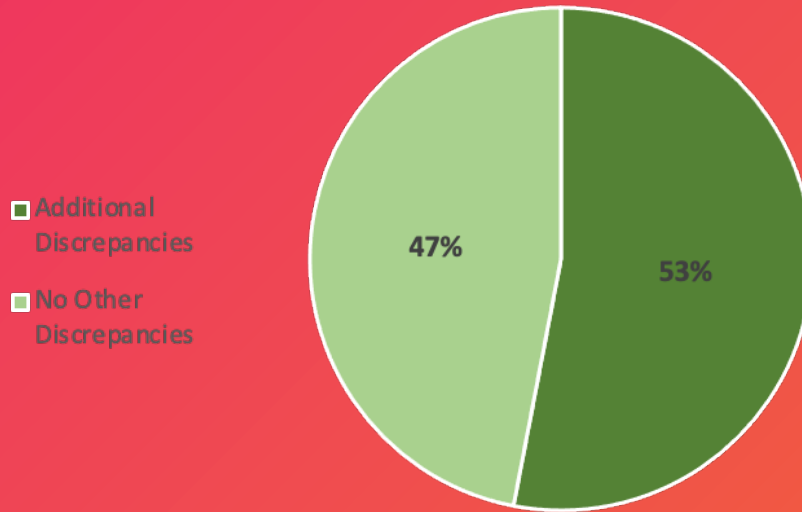
# Results – # of studies where measurements differed more than 5 °

- A total of 162 radiographs were reviewed of which 121 met our inclusion criteria
- Demographics
  - Ages ranged between 5 – 17 years old
  - Mean age of 14.34 years old
  - 33 males and 88 females
- In 54.5% of studies (66 of 121) the measurement on the radiology report and orthopedic clinic note differed by greater than 5°



# Results - # of studies with additional discrepancies between reports

- Of the 66 studies with discrepancies larger than 5°, 35 had additional discrepancies in reported vertebral levels or a difference in the number of curves reported



# Results – Mean discrepancies reported for upper, middle and lower curves

Curve	Range of Difference	Mean Difference
Upper	5.6° - 20°	9.85°
Middle	5.2° - 10.6°	6.79°
Lower	7.5° - 19°	13.25°



# Discussion

- Despite assessing the same radiograph, a large proportion of the Cobb angles differed between the radiology report and the orthopedic clinic note beyond the 5° accepted standard measurement error
- Measurement differences can be explained by equipment and context (time):
  - Radiologists use dedicated imaging-review PACS workstations with high resolution monitors and accurate measurement tools in reporting rooms
  - Orthopedic Surgeons use clinic issued standard resolution PC monitors in hectic clinics with the patient in real-time



# Discussion

- Differences between the radiology report and the orthopedic clinic note have always existed, but patients were unaware and for the reasons above, were usually clinically *unimportant*
- However if *treatment change* hinges on specific measurement thresholds, this creates potential confusion and anxiety for patients and their families
  - Even small differences in reports have previously been shown to induce anxiety in patients
- Can also increase the burden on physicians that may have to spend more time reassuring patients
  - In one study, 84% of physician respondents reported increased phone calls from patients after being given access to radiology reports

# Next Steps

- Consider inclusion of educational disclaimers at the end of reports on:
  - Acceptable measurement error
  - Reminder that this information is to be used in conjunction with their Orthopedic Surgeon's clinical assessment
- Conduct additional studies to investigate *actual* impact on patients.
- In view of > 50% cases exceeding allowable 5° measurement difference:
  - Liaise with Orthopedic Surgeons to gauge patient *feedback*, *review* standard measurement protocol to *improve consistency*.
  - Review *assumption* that despite accepting a degree of measurement difference between Radiologists and Orthopedic Surgeons, that ***actual clinically significant change from baseline*** will be equally recognized by both services.