**PURPOSE**

- Pediatric patients with right lower quadrant pain routinely were evaluated by CT across our quaternary Health System as our current ultrasound (US) was believed to be ineffective as a screening tool.
- Concern over increased radiation dose led to an initiative to improve right lower quadrant (RLQ) US.

**GOALS:**

- To improve technical skill of the sonographers and to increase confidence in the reporting of pediatric ultrasound.

**METHODS**

- In an effort to improve the diagnostic accuracy of pediatric right lower quadrant ultrasound across the quaternary health system for the diagnosis of appendicitis, we first provided didactic and technical education to the ultrasound technologists.
- A leading radiologist and his lead ultrasound technologist, from Nationwide Children’s Hospital, were invited to provide hands on instruction. A didactic lecture and live demonstration of ultrasound diagnosis of appendicitis, we first provided didactic and technical instruction. A didactic lecture and live demonstration of ultrasound across the quaternary health system for the pediatric population, and obtaining the commitment of the radiologists, thereby increase the confidence of our clinicians.
- Challenges included training the sonographers, particularly with a limited number of CT’s. The use of structured reporting increased and the use of CT following US decreased.

**RESULTS**

- 804 ultrasounds (793 patients) performed October 2017 - December 2018.
- Patient’s mean age at the time of US was 10.6 years (standard deviation: 4.3 years, range: 0 – 18 years).
- The proportion of ultrasounds being read with the new structured report steadily increased over time (Table 1).
- The proportion of ultrasounds requiring a follow up CT was significantly lower when the new structured report was used compared to when the old template was used.
- Of the 804 ultrasounds, 247 had a reference standard result (100 surgery, 147 CT).
- Patients who were positive on US were much more likely to have a reference standard result (98/103=95%) compared to patients who were negative or indeterminate on US (46/148 = 31%)(p=0.021).
- Of the 804 ultrasounds, 247 had a reference standard result (100 surgery, 147 CT).
- Sensitivity and specificity were 44% and 97% with the old template and 78% and 83% with the new template (Table 1).

**CONCLUSIONS**

- As a quaternary health system with multiple hospitals and sonographers, we faced the challenge of uniform improvement across the enterprise.1 Attendance was mandatory. Pediatric surgeons and pediatric Emergency Department (ED) staff were encouraged to attend.
- Further education was provided to pediatric radiology and ED staff including our goals of decreased CT use and how to read/interpret the new structured reporting.
- An updated technique was sent to sonographers requiring at least 20 minutes of scan time.
- A new structured report was created using the Nationwide Children’s Hospital scale (Figure 1). All radiologists were advised to use the new macro which automatically launched at the start of dictation.
- Ultrasound cases were reviewed at the end of the month and discrepancies between CT and/or surgical outcome with ultrasound report were sent to the lead sonographers for review. Discrepancies were reviewed with the interpreting radiologist.
- Methods for clustered proportions were used to compare the new structured report to the old template with respect to the proportion of cases requiring a follow up CT. The sensitivity and specificity of the structured report versus old template were estimated after correcting for verification bias. Pathology results were used as the reference standard when possible; CT results were used otherwise.

**REFERENCES**