INTRODUCTION

- Appendicitis is the most common childhood surgical emergency.
- CT scans usage has continued to increase over the last 3 decades.5
- In the United States at least 600,000 abdominal and head CT are performed on children <15 years old.1,5
- Based on this lifetime risk, a rough estimate of 500 of those patients will die from cancer attributable to radiation from CTs.

STUDY DESIGN / METHODS

- This was a quality improvement project to decrease ionizing radiation at Saint Peter’s University Hospital by 20%.
- Retrospective chart review from January 2020 – December 2021.
- Inclusion Criteria:
  - <18 years old admitted to SPUH.
  - Diagnosis of acute appendicitis.
- Exclusion Criteria:
  - None.
- After 2020 data was collected, ER providers were shown the results and pathway was introduced to the ER providers.
- Providers were encouraged to always start with an ultrasound when evaluating appendicitis.
- If the appendix was not visualized or the ultrasound was not diagnostic, providers were encouraged to (prior to ordering a CT scan):
  - Calculate pediatric appendicitis score.
  - Consult surgery
  - Re-examine the patient
  - Repeat US or discuss with radiology

RESULTS (2020)

- During the diagnostic work-up of appendicitis:
  - 91.4% of patients had an US performed.
  - 49.1% of patients had a CT scan performed.
  - 15 patients had a tubular structure visualized on US and went on to have a CT performed.

RESULTS (2021)

- During the diagnostic work-up of appendicitis:
  - 95.2% of patients had an US performed.
  - 42.0% of patients had a CT scan performed.
  - 10 patients had a tubular structure visualized on US and went on to have a CT performed.

DISCUSSION

- Overall, the number of patient receiving only an US when diagnosing acute appendicitis increased 7%, with a reflected decrease in CT usage by the same amount.
- Solely by focusing on the ER physicians there was an ionizing radiation reduction of 7% from 2020 to 2021.
- A study was done in the Seattle metropolitan area developed a pathway model incorporating the pediatric appendicitis score (PAS) with US to optimize diagnostic accuracy while decreasing CT usage.8
- Overall, the usage of US increased significantly from 29% to 47%, although CT usage did not decrease (14% to 17%).2
- Moderate risk PAS patients whose providers had used the pathway had a much lower rate of CT.2
  - 2.4% compared to 23%
- Better incorporation of the PAS in the diagnosis pathway should lead to more significant decreases in ionizing radiation.3,4

REFERENCES