

Developing Strategies to Reduce Radiation Exposure in Appendicitis Patients Using NSQIP-Pediatrics.

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Developing Strategies to Reduce Radiation Exposure in Appendicitis Patients Using NSQIP-Pediatrics

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INTRODUCTION

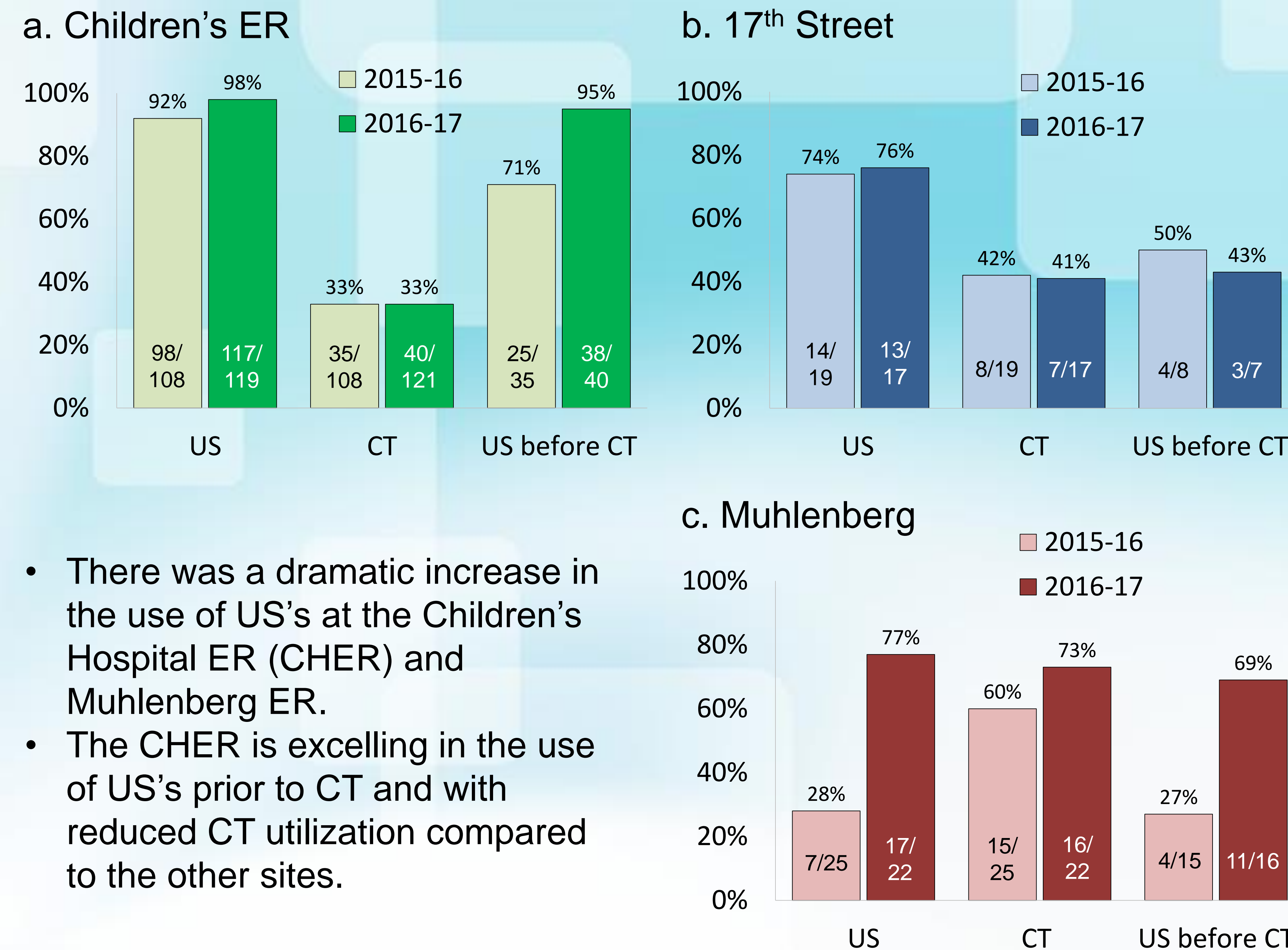
- Children are significantly more susceptible than adults to the negative effects of radiation exposure from computerized tomography (CT).
- Appendectomies are the most commonly performed pediatric abdominal procedure.
- American College of Radiology recommends that an US be performed before a CT 100% of the time in the diagnosis of appendicitis.
- The American College of Surgeons National Surgical Quality Improvement Program, Pediatrics (NSQIP-P) is a national database that provides high-quality, risk-stratified data for participating programs.
- Our 2016 study revealed an over-utilization of CT scanning in the diagnosis of appendicitis at some of our locations.
- The purpose of this quality improvement project was to review radiological utilization in the three local LVHN ERs during the past year and determine areas of further improvements.

METHODS

- Retrospective analysis of 200 pediatric patients from April 2016 to May 2017 using NSQIP-P, with comparison to results from Iobst et al. involving patients from January 2015 to April 2016.
- Outcomes reviewed:
 - Demographics
 - Pre-operative diagnosis
 - Radiological utilization
- Exclusion criteria:
 - Incidental, interval, and open appendectomies
 - Incomplete documentation
 - Radiological studies ordered by a primary care physician
 - Radiological studies ordered for a working diagnosis other than appendicitis

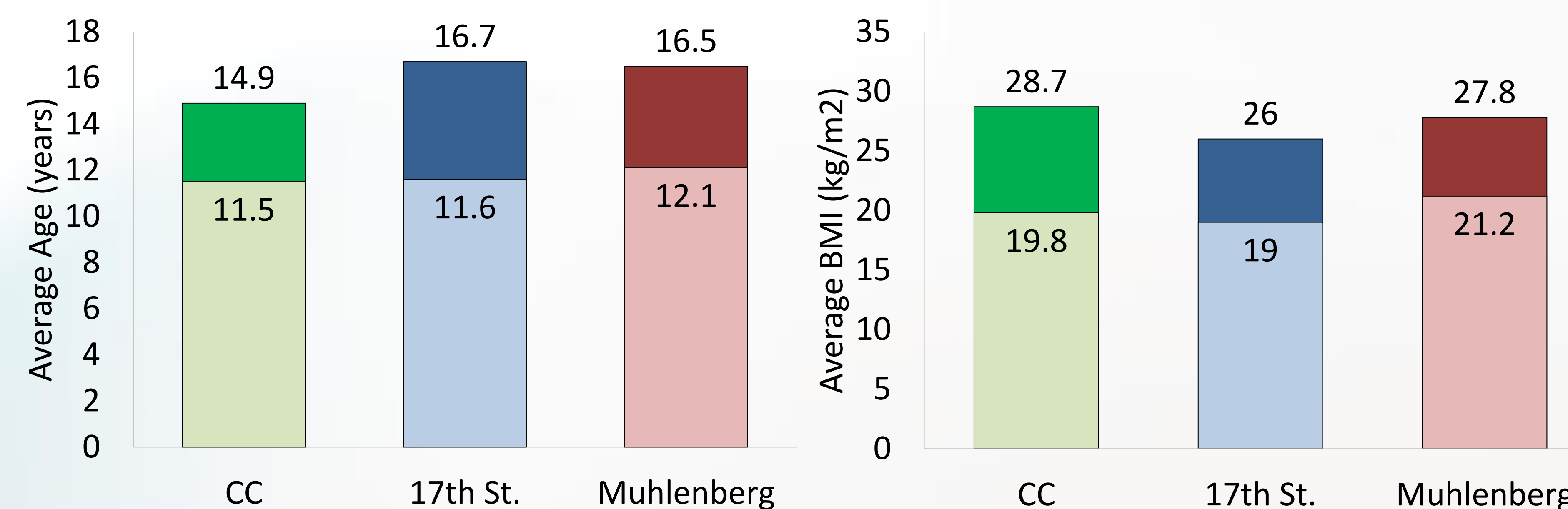
RESULTS

Figure 1. Radiological utilization



- There was a dramatic increase in the use of US's at the Children's Hospital ER (CHER) and Muhlenberg ER.
- The CHER is excelling in the use of US's prior to CT and with reduced CT utilization compared to the other sites.

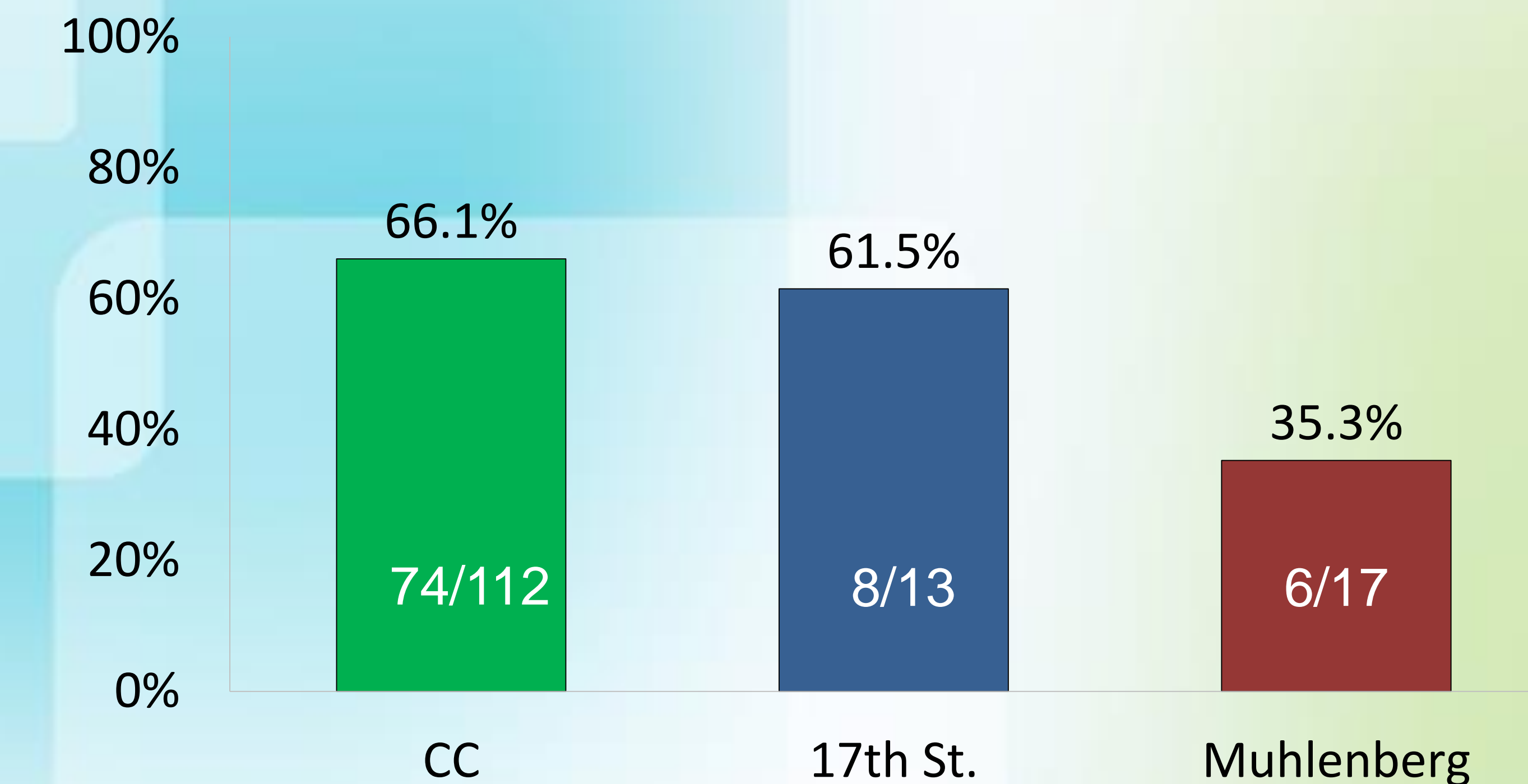
Figure 2. Age and BMI of patients receiving CT without US



(Light-colored area represents the average value for patients receiving an US at that location)

- On average, patients at each location that received a CT without an US were older with higher BMI's than patients that received an US alone or prior to a CT.

Figure 3. Percentage of US's resulting in diagnosis



- A diagnosis was not achieved in the majority of the US's performed at Muhlenberg. These patients were not older and did not have higher BMI's than those at Cedar Crest or 17th St.

CONCLUSIONS/FUTURE STUDIES

- CHER and Muhlenberg ER have shown dramatic increases in US usage.
- There still remains a difference in US prior to CT utilization or CT utilization alone in the sites outside the CHER.
- The ultrasounds at Muhlenberg were less likely to result in an appendicitis diagnosis, leading to a high rate of CT scanning. Further review is needed to assess the reason for the discrepancies between the sites.
- Meeting these goals will be an important step towards the network's goal of achieving **Better Health, Better Care, Better Cost.**

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