

Quality Tools

Background

- Multiple US exams ordered by ED providers for individual patients presenting with abdominal pain
- Overloaded resources
- Increased technologist workload
- Increased radiologist workload
- Additional time spent in ED for patients and families
- Additional costs for patients and families
- Reduced throughput in ED

Aim

The aim of this project is to understand and identify the ordering practices of Ultrasound (US) exams from Emergency Department (ED) providers. The goal is to reduce the number of multiple US exams ordered to assess a specific acute indication. The primary purpose is identification and reduction of overloaded resources, including technologists, radiologists, patient time in the ED, and the financial burden to patients and families.

Methods/Materials

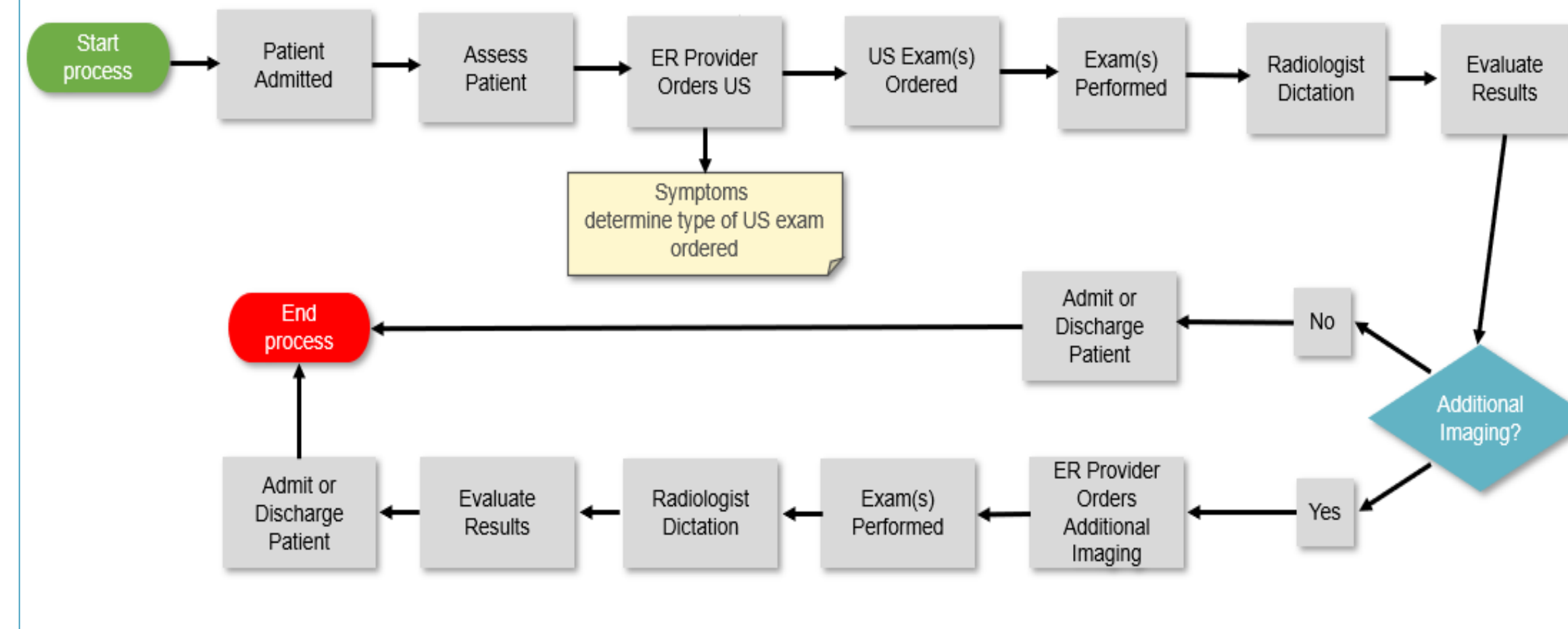
Outcome Measure: The accuracy of diagnosis without missed diagnosis
Process Measure: Reduction in the number of multiple US exams ordered by ED providers
Balancing Measure: Appropriate ordering of US exams by ED providers specific to acute indications

A manual chart review was performed to determine patients receiving multiple US exams, ordered within 30 minutes of one another, in addition to other imaging using ionizing radiation (X-rays and CT)

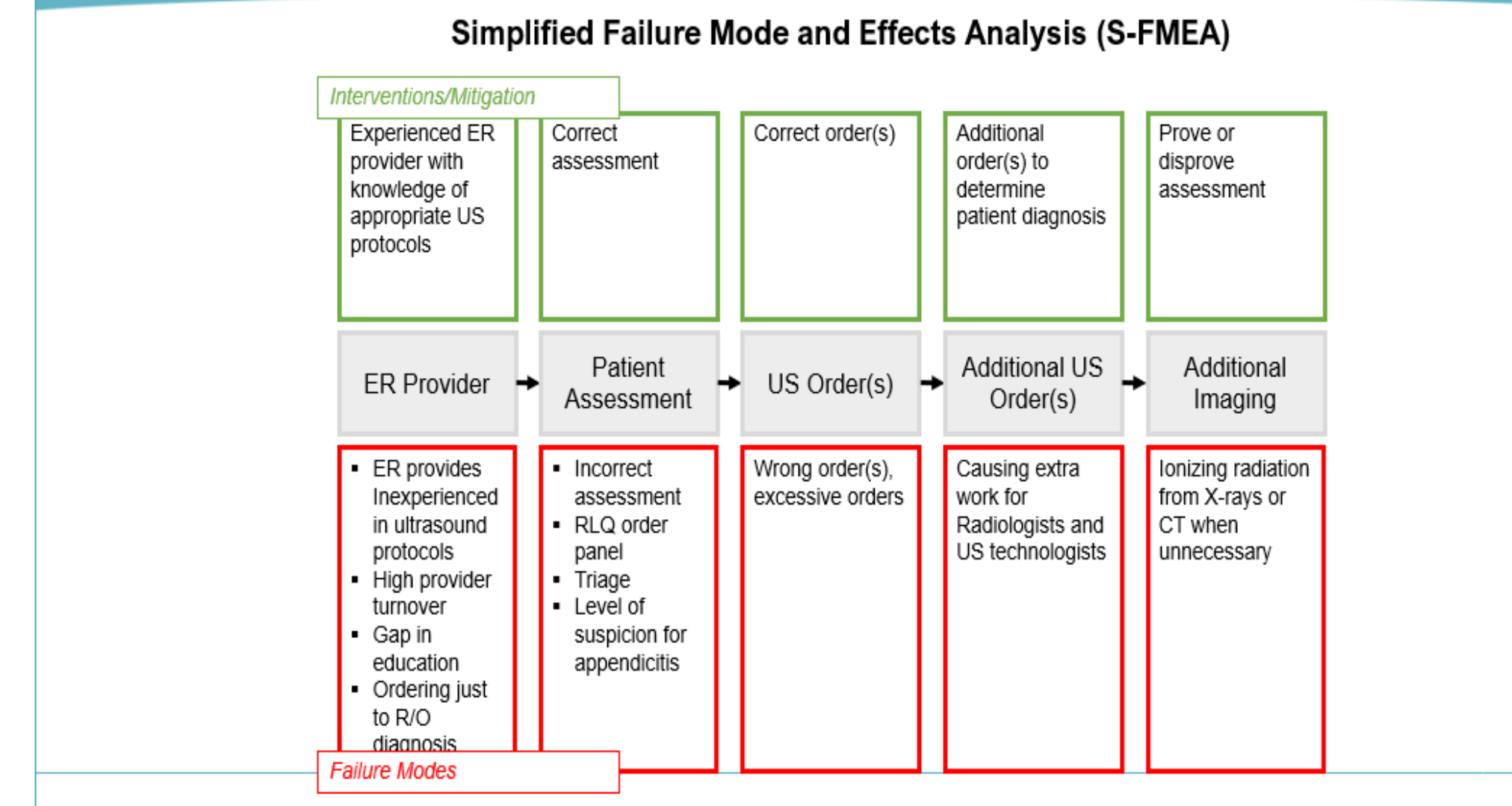
Definitions

- Dallas ED patients that had US exams in 2022
- Multiple US exams ordered within 30 minutes of one another
 - No time for dictation/results to come back before ordering next exam
- Any additional X-ray or CT imaging associated with visit
- US Appendix Impression
 - Negative or equivocal-low suspicion = Negative for Appendicitis
 - Equivocal-intermediate or high suspicion = Positive for Appendicitis
 - (Unless CT exam determines different finding)
- Stool Burden
 - M-Stool = Moderate stool burden
 - L-Stool = Large stool burden
 - (Not all X-rays have stool burden noted)

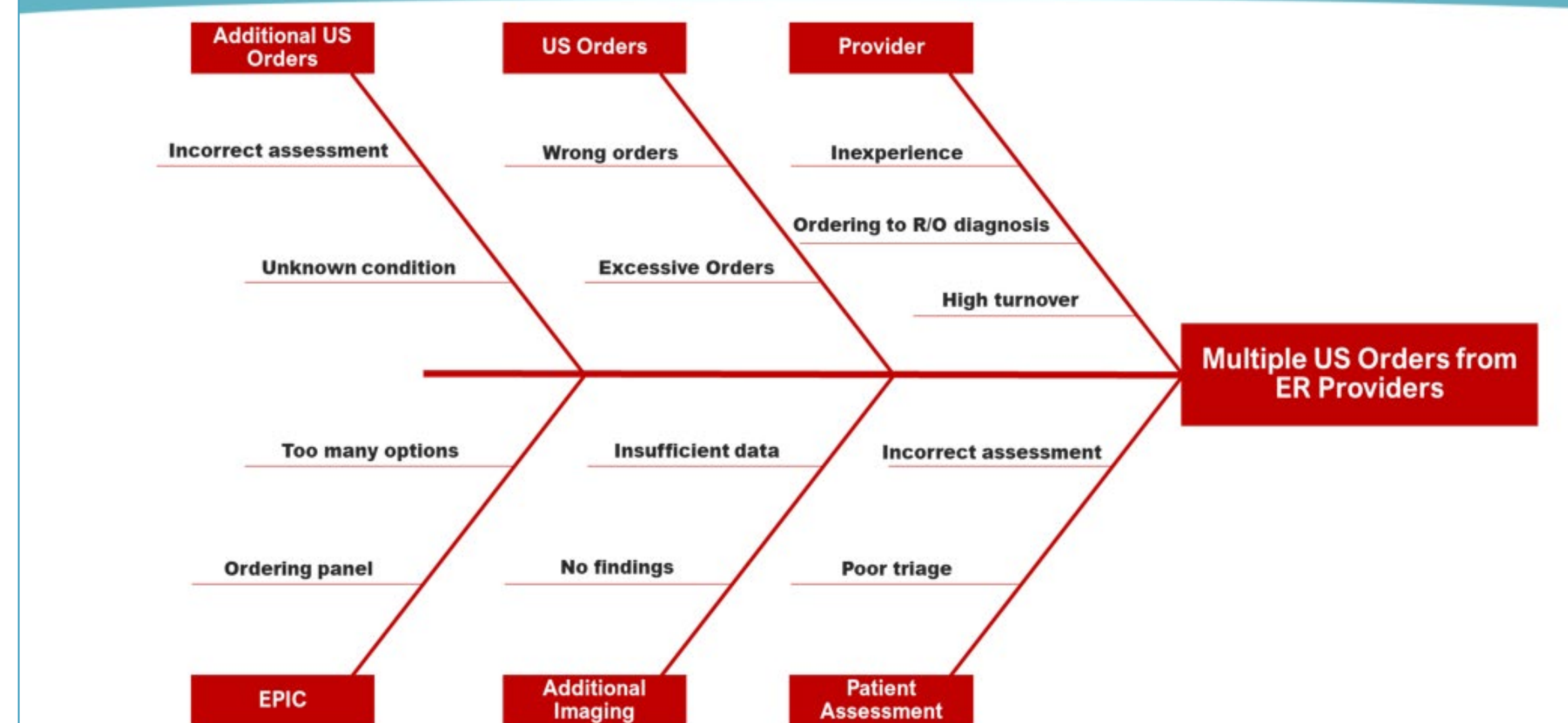
Process Map



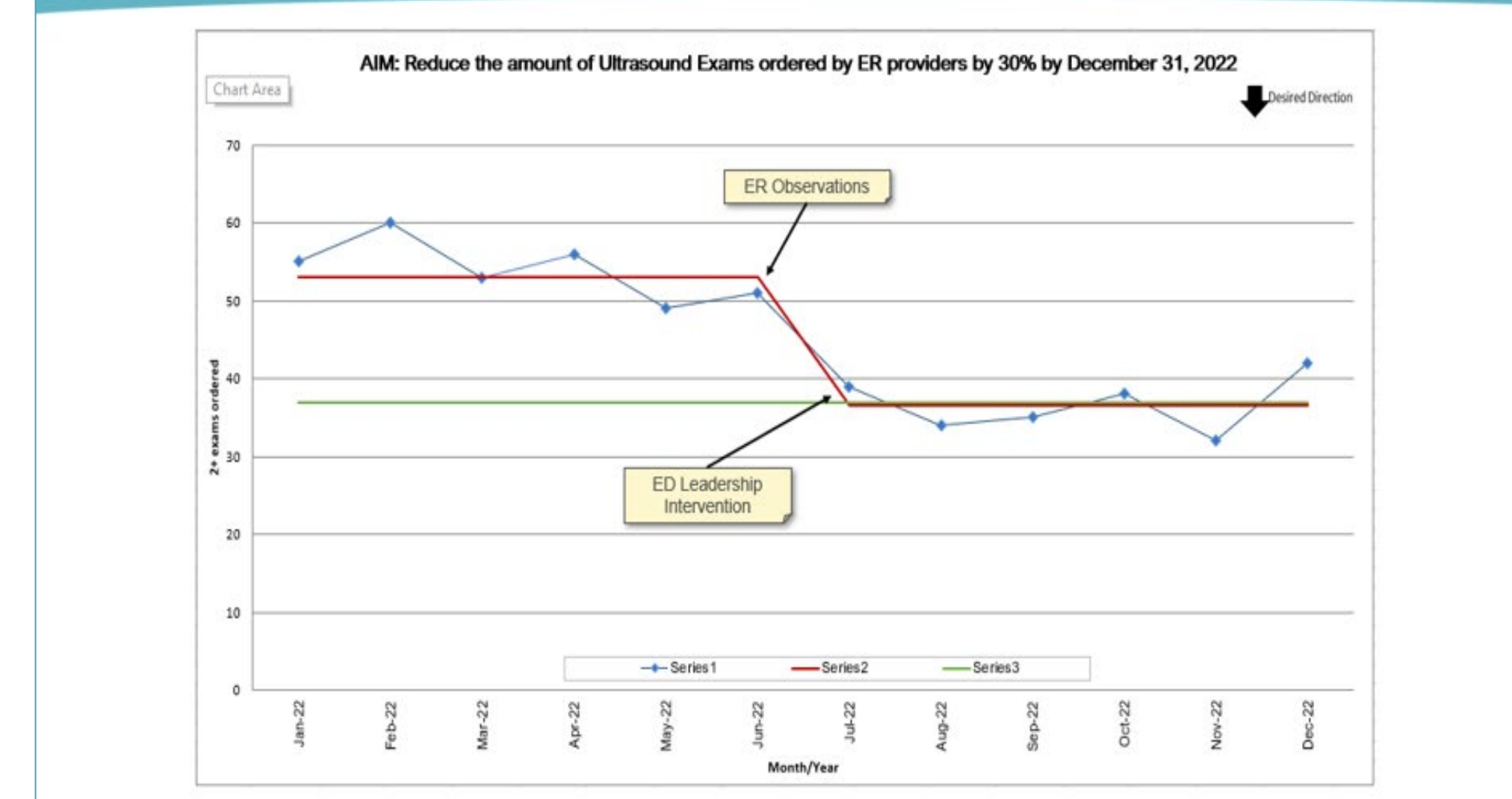
Failure Analysis: S-FMEA



Fishbone Diagram



Run Chart



Results

- Mid-level ED providers tend to order multiple US exams simultaneously that are not specific to the indication.
- Other imaging is typically performed (X-rays and CT) in addition to US.
- A significant number of patients have no findings from US exams.
- Many patients are found to have moderate to large stool burden that could have been the source of abdominal pain, easily discovered with a single abdominal X-ray prior to US exams.
- An intervention by ED leadership addressing the issue resulted in a reduction of multiple US orders by over 30%.**
- The results were readily identifiable following the intervention and maintained for the final 5 months of the study.

Key Takeaways

- Lessons Learned**
 - Gathering the data is time consuming.
 - Initial observation of data reveals the opportunity for change in the assessment and ordering process of US exams in the ED.
 - Specific providers have blanket ordering protocols when patients present with abdominal pain.
- Barriers**
 - Initial barrier with ED leadership.
 - New residents unfamiliar with ordering practices.
- Next steps**
 - Continue to gather the monthly data.
 - Maintain open communication with ED providers.
 - Revisit the issue if former ordering practices return.

Conclusions

- Mid-level ED providers may benefit from a more refined assessment of ED patients with abdominal pain that lack other indications of a more serious issue.
- Following the intervention, ordering practices in the ED changed immediately.
- Patient care has not suffered by reducing the number of US exams.
- Ongoing monitoring of ED provider ordering practices will continue.

About Children's Health

Children's Health is the eight-largest pediatric health care provider in the nation and the leading pediatric health care system in North Texas, providing a full spectrum of health care services – from daily wellness and primary care to specialty visits and critical care. Holding eight disease-specific care certifications from The Joint Commission, Children's Health has been consistently named one of the nation's top pediatric providers by U.S. News & World Report. The Children's Health system includes Children's Medical Center Dallas, as well as Children's Medical Center Plano, multiple specialty centers, physician services, and the Children's Medical Center Research Institute at UT Southwestern.