

Reducing Variation in Pre-Surgical Testing for Hip Fractures

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Introduction

Methodist Hospital serves a patient population that is largely elderly with complex comorbidities. Methodist's Emergency Center receives a high volume of hip fracture patients, approx. 1 per day, with an average age of 84. Providing the highest quality care to our patients to keep them safe and have them enjoy positive outcomes is top of mind for the entire Park Nicollet organization.

Patients with hip fractures often require surgical intervention to begin their journey toward re-establishing quality of life. Data analysis revealed variation in both type and volume of testing done between admission to the emergency center and surgery. This variation does not appear to be necessary, and can have lasting impacts the time it takes to get them to the OR, impacting other aspects of the triple aim, including affordability/cost as well as patient experience.

Aim

Create patient-centered processes for hip fracture pre-operative care, based on evidence and expert consensus from stakeholders (anesthesia, emergency center, orthopedics, and hospital medicine).

Identify opportunities to improve the experience of our patients and care teams by driving down unnecessary variation in care, reducing cost and delays by eliminating unnecessary testing.

Methods

Using Lean and Six Sigma-based methodologies, process flows were assessed across the value stream for hip fracture patients. This included processes for pre-hospital care, emergency center treatment, inpatient care and surgical intervention. Opportunities for improvement were identified in terms of variation in care and potential delays in treatment.

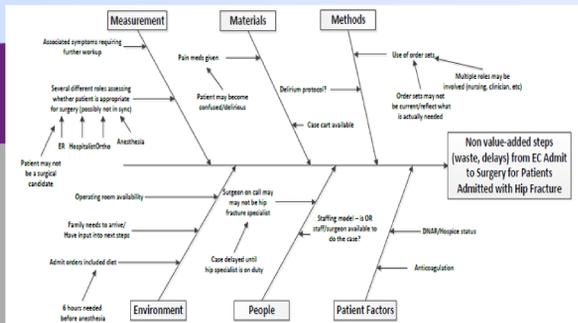


Figure 1. Fishbone diagram of potential causes for non-value added steps from emergency center admission to surgery for patients with hip fractures.

Methods cont'd...

Data analysis identified variation in the pre-surgical testing with one of the most frequent tests completed being chest x-rays.

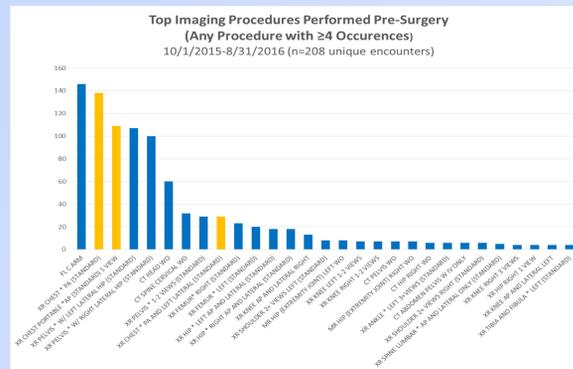


Figure 2. Top imaging procedures performed pre-surgery. Highlighted bars indicated chest x-rays of various types.

A multi-disciplinary team made up of emergency room physicians, orthopedic surgeons, hospitalists and anesthesiologist team members concluded that a routine chest x-ray is a test "we've always done" historically, but which did not add value for decision making from any of the providing physician groups.

We believed one way to reduce variation was to simplify and clarify order sets and processes used in these pre-surgical patients.

Actions Taken

A pilot was completed in our emergency center focused on reducing chest x-rays in hip fracture patients when not clearly indicated. The pilot ran for 2.5 weeks, with an n-size of 16 patients.

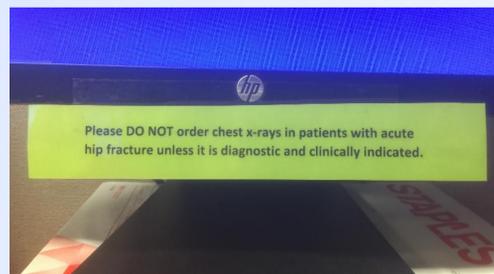


Figure 3. Photo of intervention used during pilot period, on the computer screens of emergency center physicians.

Results

The pilot results concluded that a chest x-ray was not found to be clinically indicated in any of the 16 patients seen during that timeframe, and none of them received that radiologic test. Additionally, those patients who did not receive a chest x-ray prior to surgery also saw the benefit of reduced time prior to surgical intervention.

An adjustment to pre-surgical order sets was made which deselected the automatic ordering of a chest x-ray in this patient population.

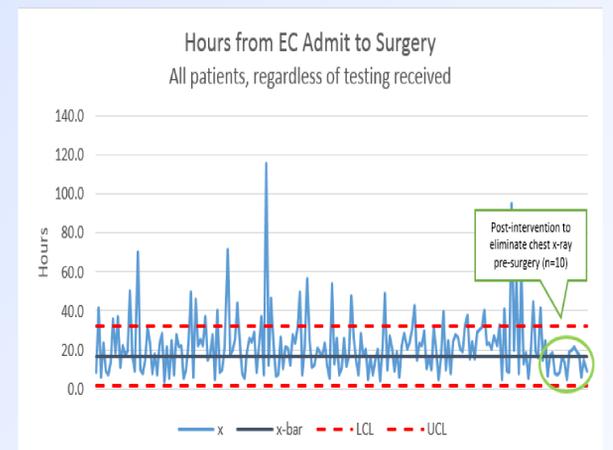


Figure 4. Control chart of hours from emergency center admission to surgery, including data during pilot period, physicians.

Conclusion

While physicians have the ability to change the ordering of radiologic imaging for pre-surgical cases as necessary, setting the default to a deselected chest x-ray was a way to improve the process for which care is provided, thus making the right thing to do the easy thing to do.

While the n-size does not result in a statistically significant change yet, the results are promising. At minimum we know these measures improved value for our patients.

Considerations for further improvement:

- Evaluate other diagnoses that require surgical interventions in order to spread the learnings discovered by this multi-disciplinary team.
- Continue to assess other opportunities to decrease waste of unnecessary lab and radiologic testing and also decrease time waiting in hospital prior to surgery
- Evaluate the criteria of patients who are ideal for hip fracture surgical intervention, as there can be adverse long term outcomes associated with this course of treatment.