



Enhancing Gout Diagnosis In Cancer Patients Through DUAL-ENERGY CT (DECT): A QI Initiative at MD Anderson Cancer Center

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INTRODUCTION

- Synovial fluid analysis, the gold standard of gout diagnosis is challenging in cancer patients with difficult joint access or contraindications for arthrocentesis.
- DECT is a noninvasive alternative to detect MSU deposition
- A rise in gouty arthritis incidence among cancer patients at MD Anderson Cancer Center with missed diagnoses, need for repeated imaging, prolonged hospitalization, and delayed treatment prompted the formation of a multidisciplinary team for our QI project.

METHODS

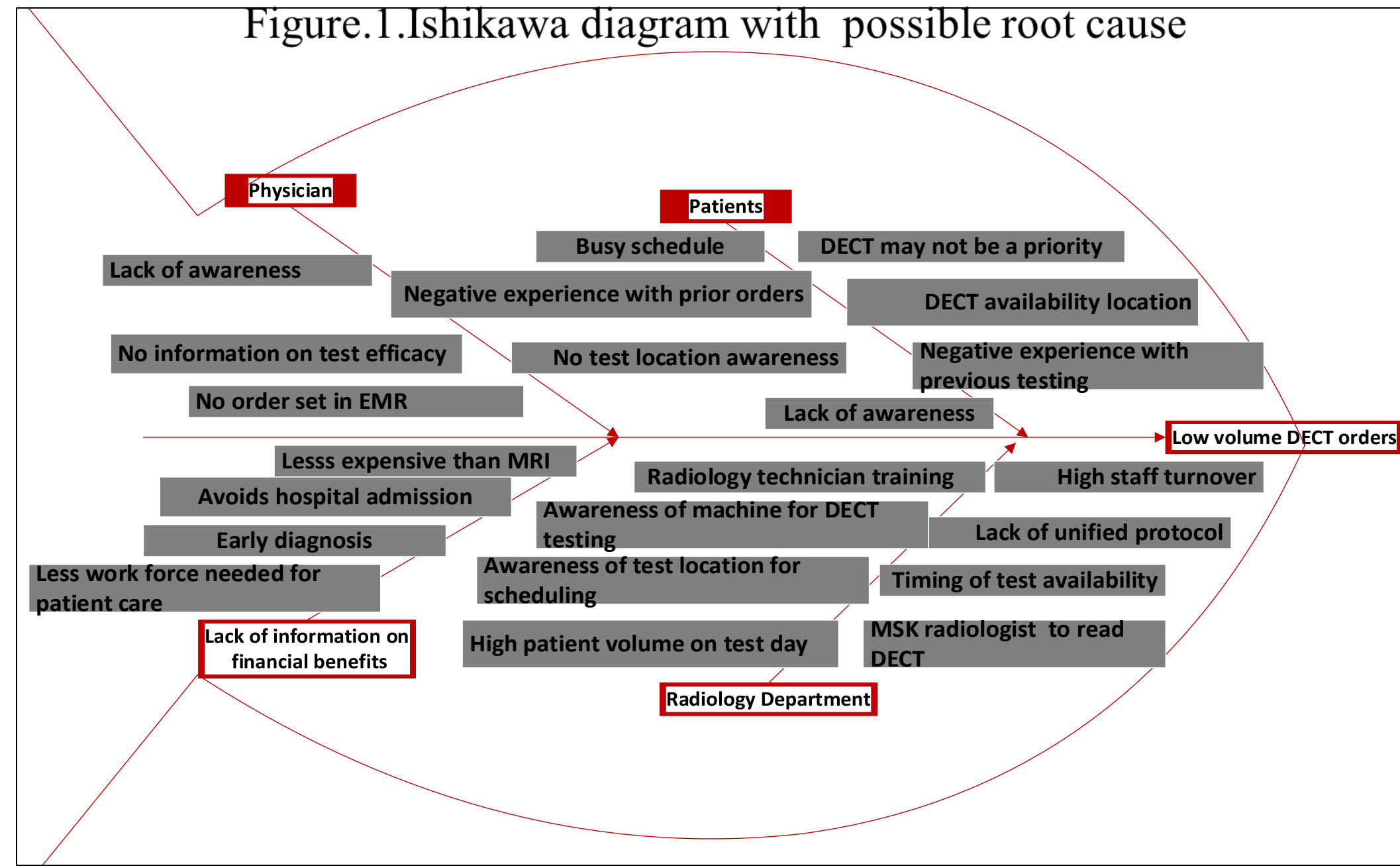
A multidisciplinary team met bi-weekly for six months.

Primary Aims;

- Increasing DECT for gout diagnosis by 50%
- Reduce errors of DECT ordering and image processing by 50%

Secondary Aims;

- Validate gout protocol in phantom
- Optimize workflow for enhanced patient outcomes.



INTERVENTIONS

- ✓ Worked with IT department to create order set in EMR
- ✓ Radiologist choose MSK gout, only perform on Siemens Equipment.
- ✓ Test available in all locations except West Houston.
- ✓ Staff & technician education about the test on the correct machines & software.
- ✓ Validated the new DECT gout protocol in phantom.

RESULTS

DECT VOLUME BEFORE AND AFTER INTERVENTION

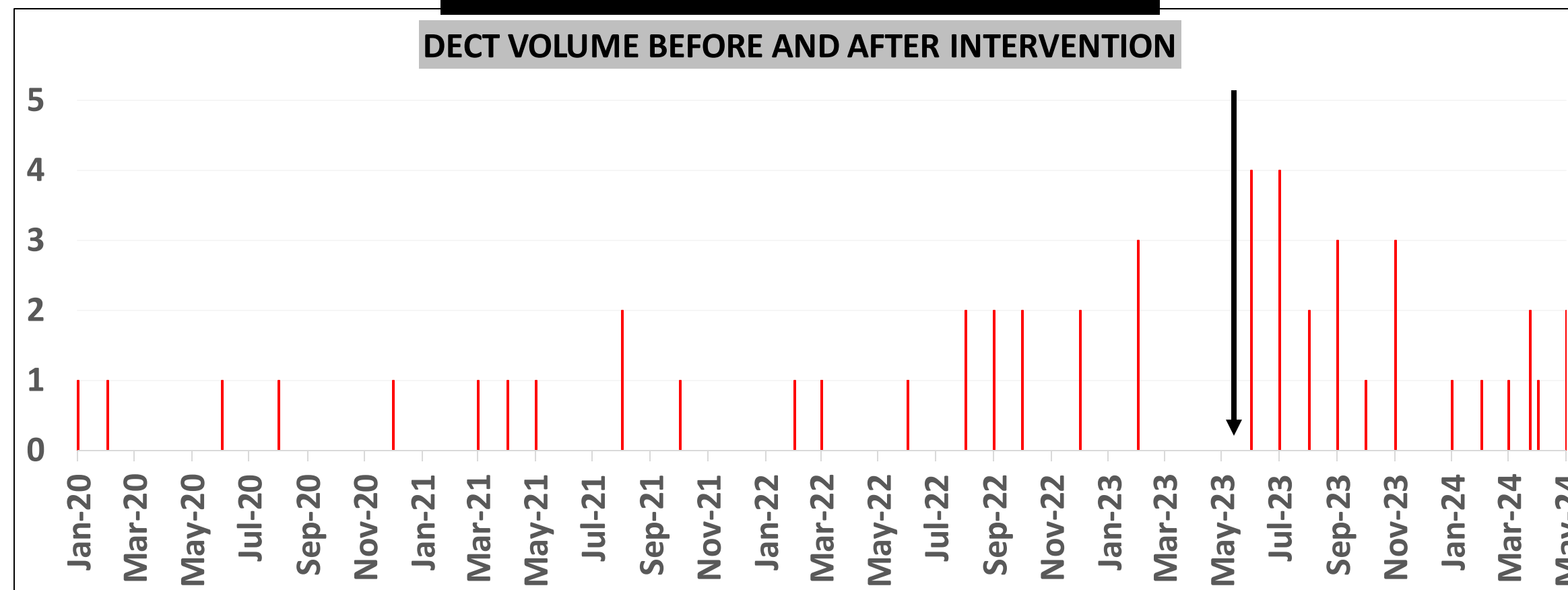
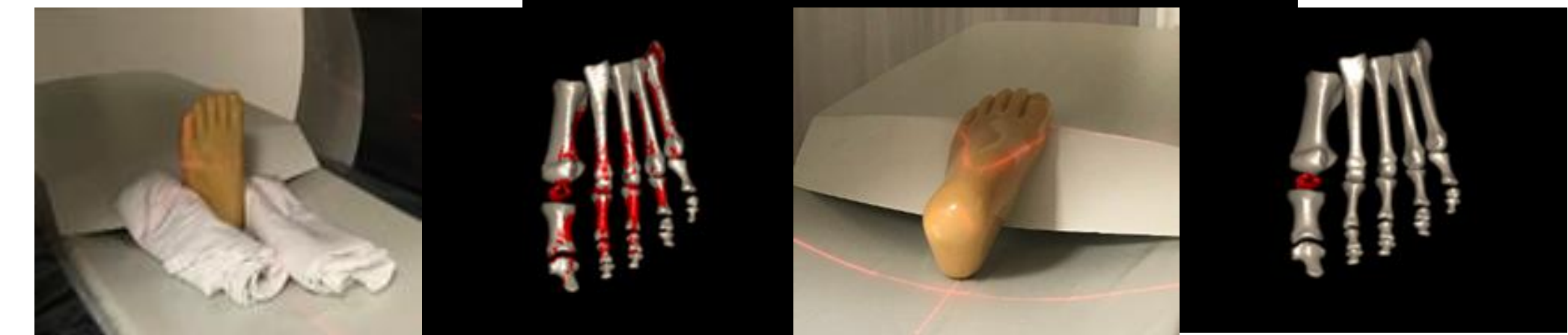


Figure.2. Impact - Effort Matrix

Impact	Effort	Item
HIGH	EASY	✓ Increased awareness
		✓ New order set in EMR.
		✓ Schedule CT at correct location and time
		✓ Image read in the correct machine
LOW	EASY	✓ Test & validate the new DECT Gout protocol in phantom
		➤ Patient education on DECT
		➤ Continued education of provider & radiologist & rad tech
HIGH	DIFFICULT	➤ Financial benefits from early diagnosis
		➤ Less hospitalization
		➤ Lesser chance of need of reimaging
		➤ Patient prioritizing imaging
LOW	DIFFICULT	➤ High staff turnover
		➤ High patient volume for testing
		➤ Lack of information on efficacy
LOW	EASY	➤ Apprehension with previous negative experience

GOUT PROTOCOL VALIDATION



- ✓ Started new DECT service for patients with gout.
- ✓ New order set in EMR
- ✓ Tested and validated the new DECT gout protocol in phantom.
- ✓ Monitored ordered studies with outcomes.
- ✓ We achieved our target in increasing the volumes by > 50%.
- ✓ We minimized the number of errors and safety events to surpass our goals.
- ✓ We increased awareness about the availability of this study among our faculties.
- ✓ A two-sample t-test confirmed a strongly significant increase in using the new process ($t(10) = -5.49, p = 0.000$)