A Comprehensive Lean Strategy to Improve Patient Access to MRI Examinations in an Integrated Multispecialty Practice

Daniel Bor, BS
Kaiser Permanente Intern

Richard Sharpe, Jr, MD, MBA
Radiologist
Department Value Advisor, Kaiser Permanente Colorado
Chair, Interregional Clinical Practice Group for Radiology
Permanente National Federation

Richard.E.Sharpe-Jr@KP.org
RichSharpeJr@gmail.com
720-383-0789

Team:
Eric K. Bode, MD
Kandace Hunt, RT
Brian L. Moore, MBA
Wendolyn S. Gozansky, MD,MPH
George Payan, BS
Don Rueschhoff, BA
Janet Larkins, MHA, RT
Benji D. Berg, MBA
Craig Livorsi, MBA
Kim Coe

 Copyright © 2018 Kaiser Foundation Health Plan, Inc.

PERMANENTE MEDICINE® KAISER PERMANENTE®

Purpose

- MRI is a high cost imaging resource that requires detail-oriented processes to ensure safe, high-quality care.
- The complexity of managing MRI resources is often a utilization challenge; however, timely access to MRI can be a major satisfier for patients and referring providers.
- In our integrated multispecialty practice, we noticed an insidious prolongation of our MRI access metrics.
- **To address this issue, we assembled a cross-functional team and utilized lean principles to improve MRI access.**

Methods - Outcomes

- The primary outcome was patient access to MRI measured by average days wait (the number of days from when the patient calls to schedule an MRI examination to the day of the patient's appointment).
- Secondary outcomes included: time to the third available appointment (a lead metric for patient access measured each Tuesday at 4pm), availability of same day and next day appointments, MRI scan time lengths, MRI patient volumes, the number of provider outreaches performed by medical imaging for order changes, the number of technical call-back scans, and overall patient satisfaction.
- Differences were compared using an unpaired t-test with an alpha level of 0.05.

KAISER PERMANENTE®

Methods

- Data collection
  - The project team analyzed:
    - The process for obtaining and interpreting an MRI
    - The metrics regarding MRI scan times separated by exam type and imaging subspecialty
  - Benchmarking data and best practices were obtained from several peer institutions and from medical literature review.

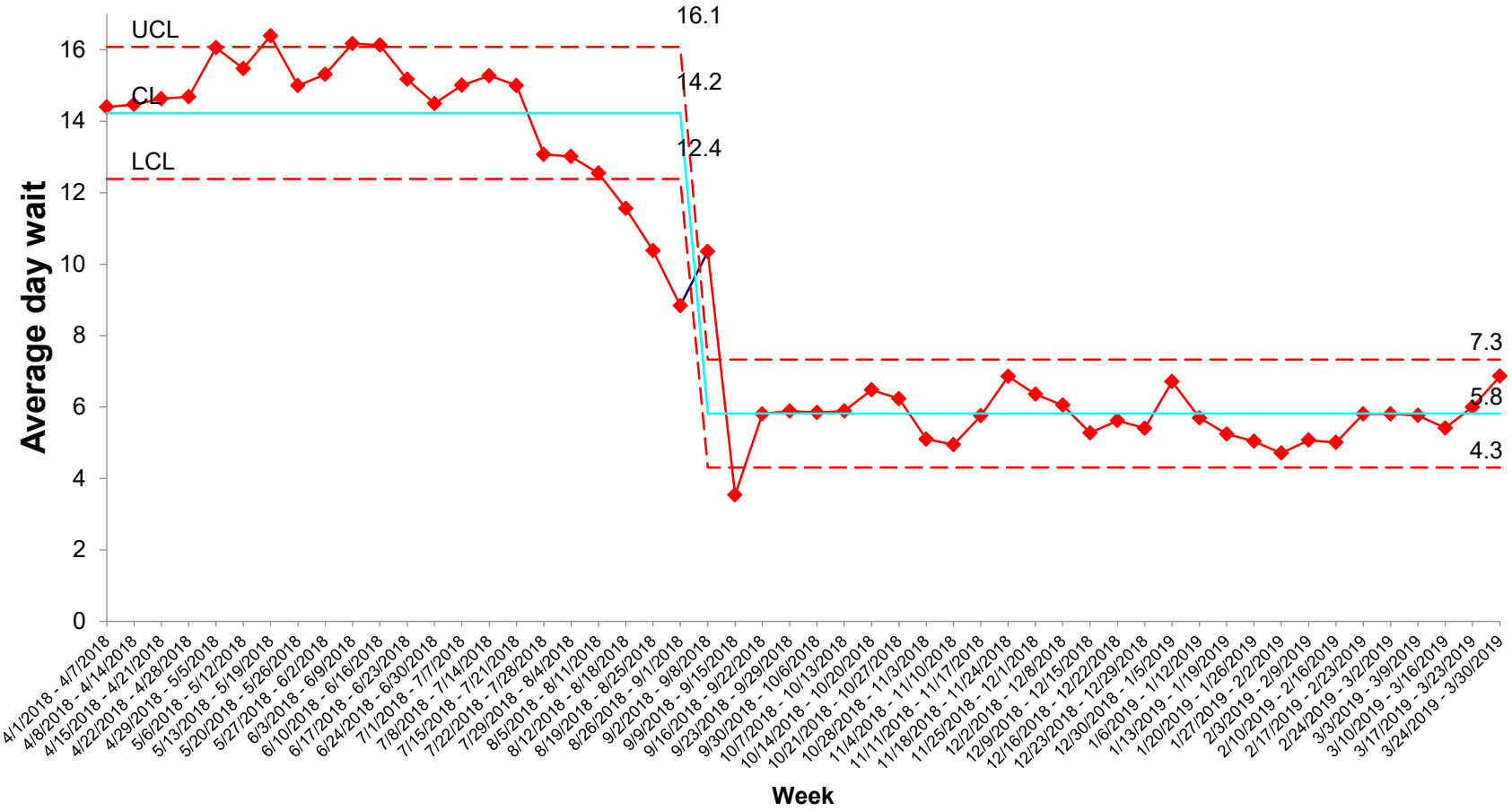
- Working group
  - Tasked to identify and capture opportunities to create standardized work, increase practicing to top of scope, removing waste, improving communication, reducing rework, and improving patient experience in every aspect of our MRI process.
  - Included key stakeholders: ordering providers, schedulers, imaging managers, business analysts, MRI technologists, radiologists and patients.

Methods- Overview of Interventions

Strategy	Implementation example
Practice at top of scope	MRI protocol assignments were codified and then transitioned from radiologists to MRI technologists
Improve patient experience	Reduced appointment times from 40/60 minutes to 30/45 minutes
Reduce waste	Radiologists eliminated nonessential imaging sequences from MRI scan protocols
Meet or exceed best practice	MRI scan times were evaluated against peer institutions and scan lengths were minimized while maintaining high quality standards
Reduce excessive processing and decrease waiting	Created a process for MRI technologists to independently adjust MRI orders rather than contacting the ordering provider, waiting for new orders to be placed, and delaying patient care
Reduce costs	Appointment times reduced from 40/60 minutes to 30/45 minutes MRI technologists review orders and assign protocols instead of radiologists MRI technologists now change incorrect orders instead of involving ordering providers, their staff, and other stakeholders
Improve communication	Created daily huddle email and load balancing management strategies
Reduced overproduction, improve patient experience	Converted previous predesigned schedule to an open schedule allowing patients to insert when is convenient for their schedule rather than predetermined blocks in our systems
Create structured work, effective documentation	Created a cross functional care pathway for the management of patients with osteoarthritis
Create clear standards	Level set expectations regarding allowed MRI unit down time for staff meetings, maintenance, schedule holds, etc.

Results- Primary Outcome

The lag metric for MRI access, average days wait, decreased from 14.2 days to 5.8 days after intervention (-8.4 days, -59.2%, P<0.0001).

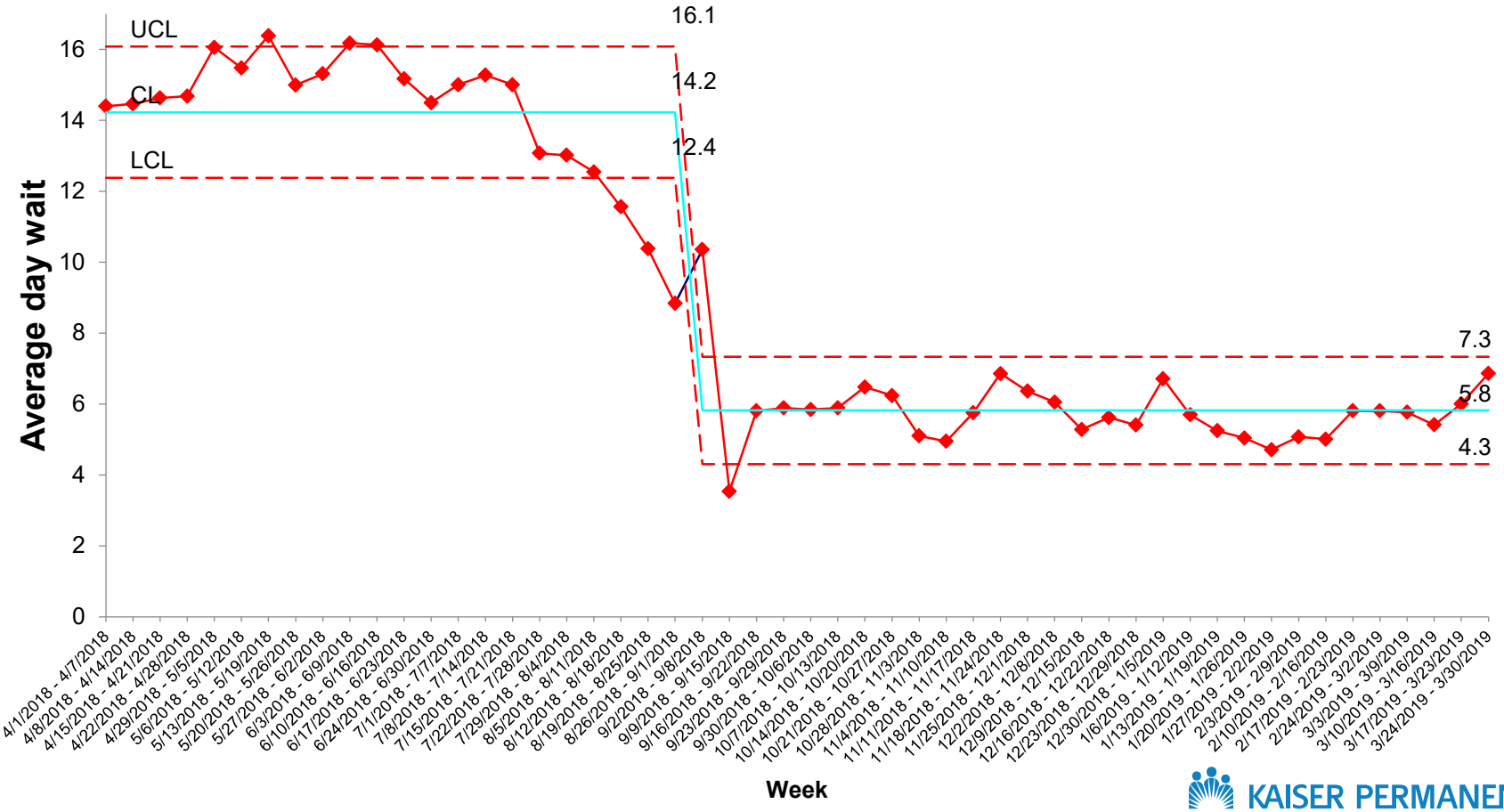


The lead metric for patient MRI access, third available appointment, decreased from 18 days on May 1, 2018 to 0 days and was sustained from January through March 2019 (-16 days, -100%).

KAISER PERMANENTE®

Results- Secondary Outcomes

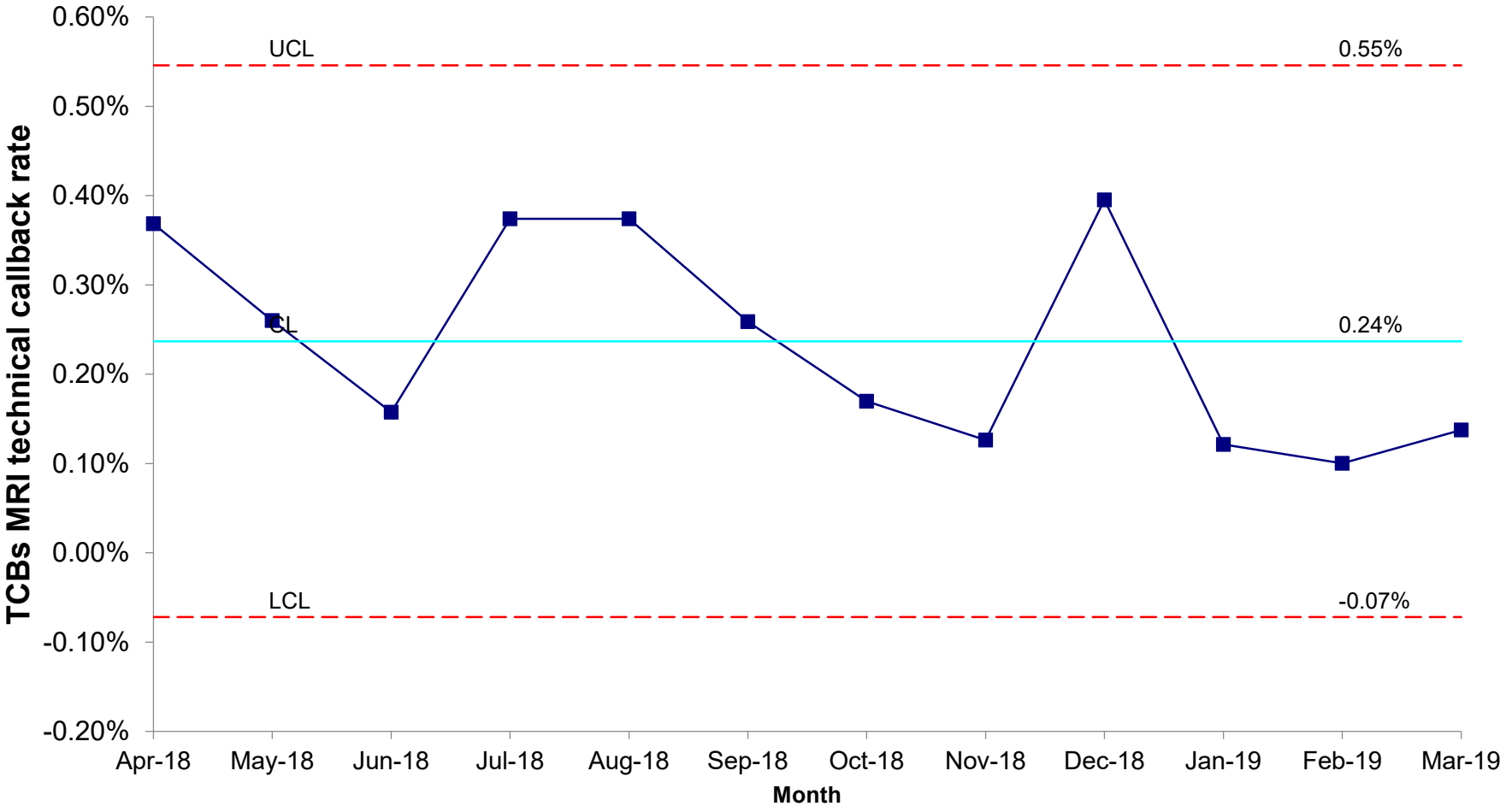
The lag metric for MRI access, average days wait, decreased from 14.2 days to 5.8 days after intervention (-8.4 days, -59.2%, P<0.0001).



KAISER PERMANENTE®

Results- Balancing measure

Technical callback rate did not change during the intervention.

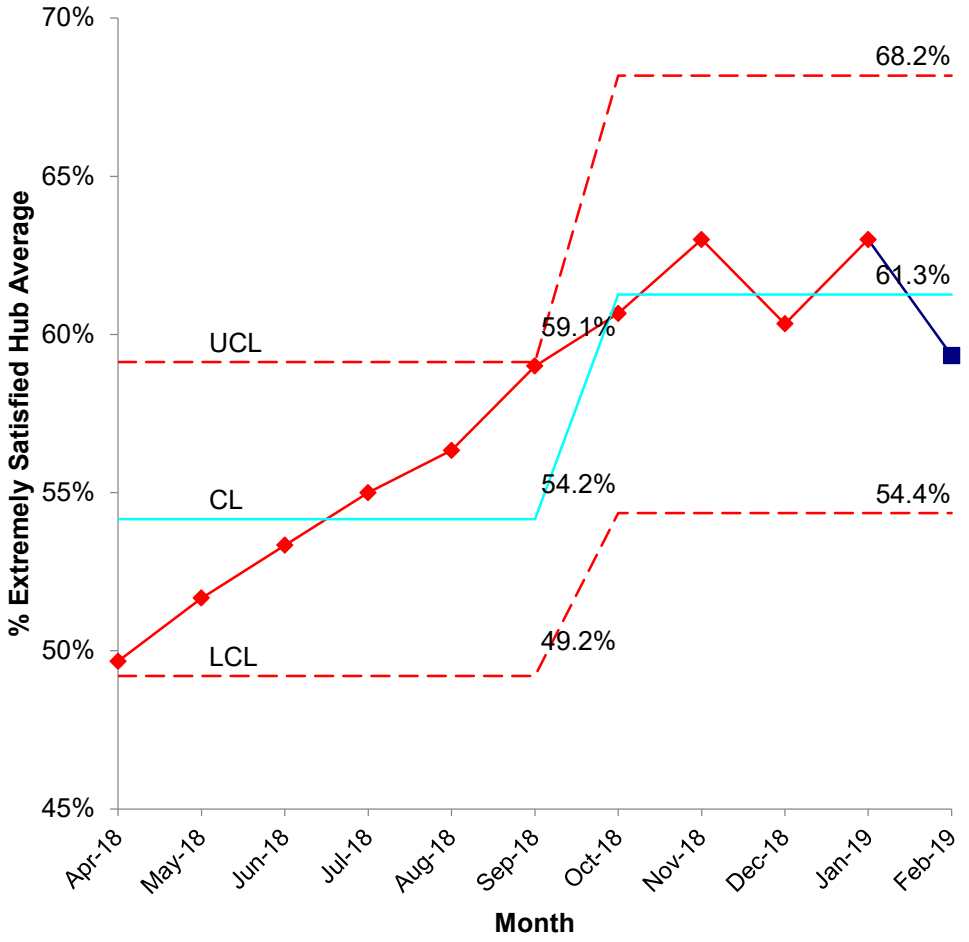


KAISER PERMANENTE®

Results- Patient satisfaction

Improvement in patient satisfaction metrics coincided with the intervention.

Control chart demonstrates that patients indicating they were “extremely satisfied” (top box satisfaction) imaging centers where MRIs are performed increased from 54.2% to 61.3% (P<0.05) after project implementation.



Results- Conclusions

- Interdisciplinary collaboration and rigorous focus on process improvement resulted in significant gains in patient access to MRI exams
- Scan times decreased, and patient volume increased after the interventions at the same time we maintained quality and improved patient satisfaction.
- Our imaging department now routinely has 10-20 same day and next day MRI appointments, which more effectively matches our supply and demand.
- **Our findings demonstrate the value of applying lean management principles to enable significant improvements in a complex process such as MRI access.**

KAISER PERMANENTE®