Improving Mammography Positioning at two Community Mammography Centers by Asking Why?

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Introduction

Mammography positioning is an often overlooked, but real component of imaging quality that can be compromised in high volume facilities.
Technical repeats are encouraged, though rarely performed due to the inevitable inconveniences posed to patients and staff alike.
Regards to mammography positioning, traditional parameters of success have been defined at a binary, concrete level: MQSA accreditation pass rate.
MQSA accreditation is important, positioning improvement may be attainable at a higher threshold of success, and at the local level.

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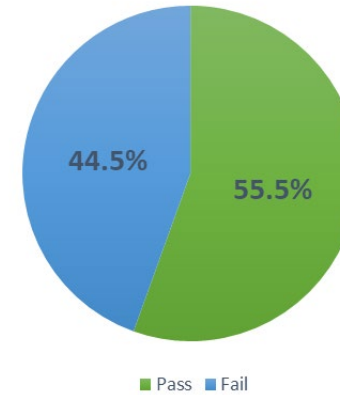LELAND STANFORD JUNIOR UNIVERSITY
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Method

- A 27-week improvement program which was performed at two Solis facilities in non-contiguous states enrolled in the ACR Learning Collaborative focused on Mammographic Positioning with an emphasis on behavioral modification.

- The first cohort of this program had previously passed all MQSA accreditations over the last 5 years at both locations.

- The collaborative developed a performance measure that consisted of 7 major and 6 minor positioning criteria. An internal audit was performed each week with a minimum of 45 screening mammograms(after an initial audit of 263 mammograms) according to the identified positioning criteria and displayed aggregate results on a run chart.

- The teams participated in a structured improvement program to evaluate the current state, understand root causes of problems, develop and test various interventions and gauge improvement.
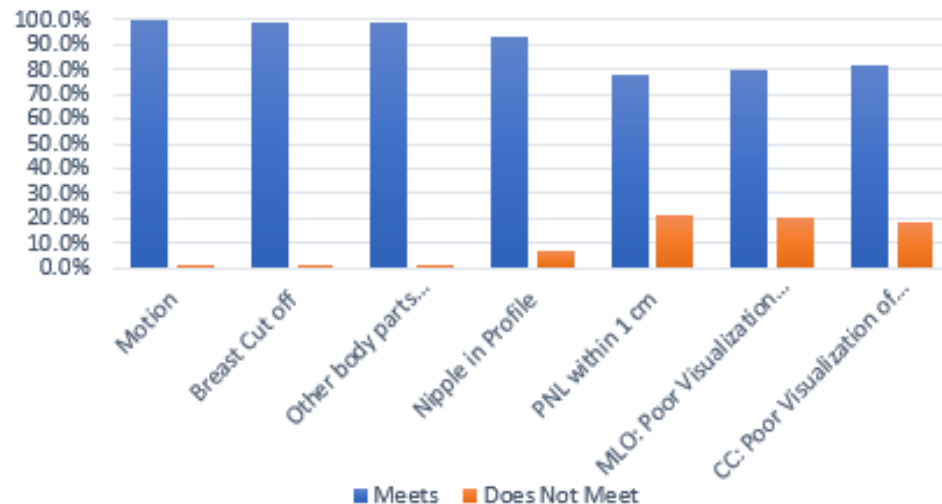
Initial Audit Data

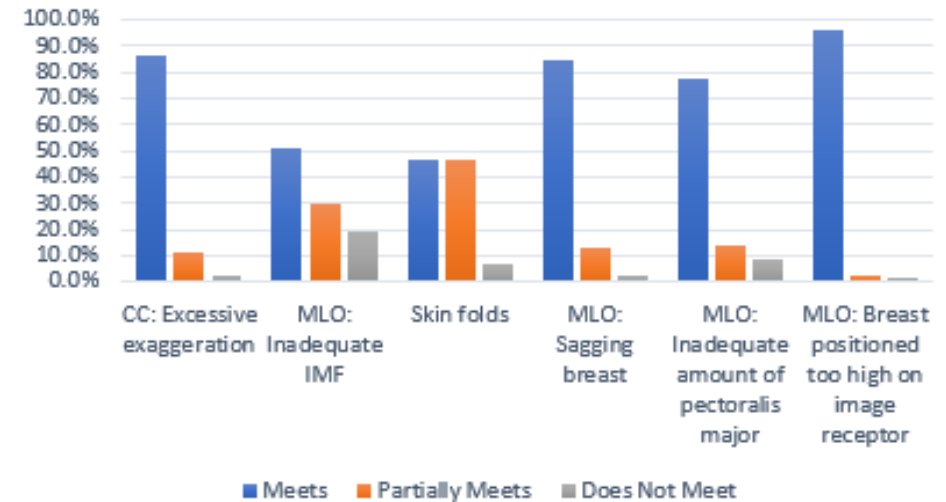236 screening mammograms between Apr-May 2022

Overall Case Score (Pass/Fail)

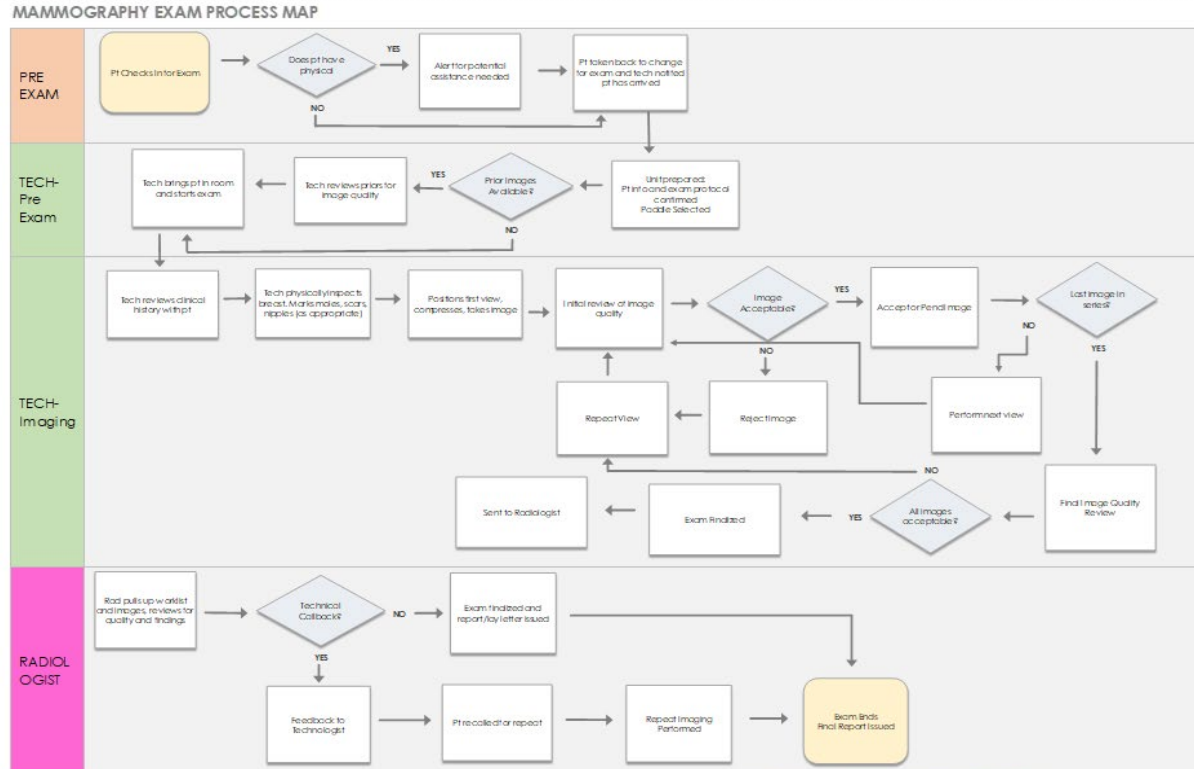44.5% Fail, 55.5% Pass

■ Pass ■ Fail

Major Criteria

Motion, Breast Cut off, Other body parts..., Nipple in Profile, PNL within 1 cm, MLO: Poor Visualization..., CC: Poor Visualization of...

■ Meets ■ Does Not Meet

Minor Criteria

CC: Excessive exaggeration, MLO: Inadequate IMF, Skin folds, MLO: Sagging breast, MLO: Inadequate amount of pectoralis major, MLO: Breast positioned too high on image receptor

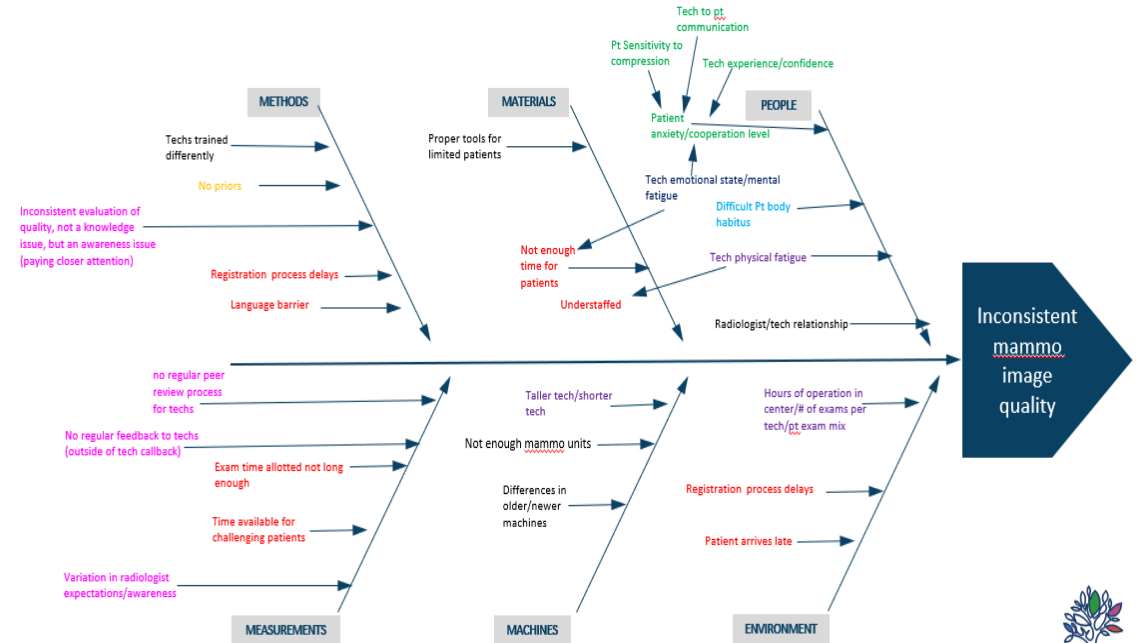■ Meets ■ Partially Meets ■ Does Not Meet

Analysis

Process Map

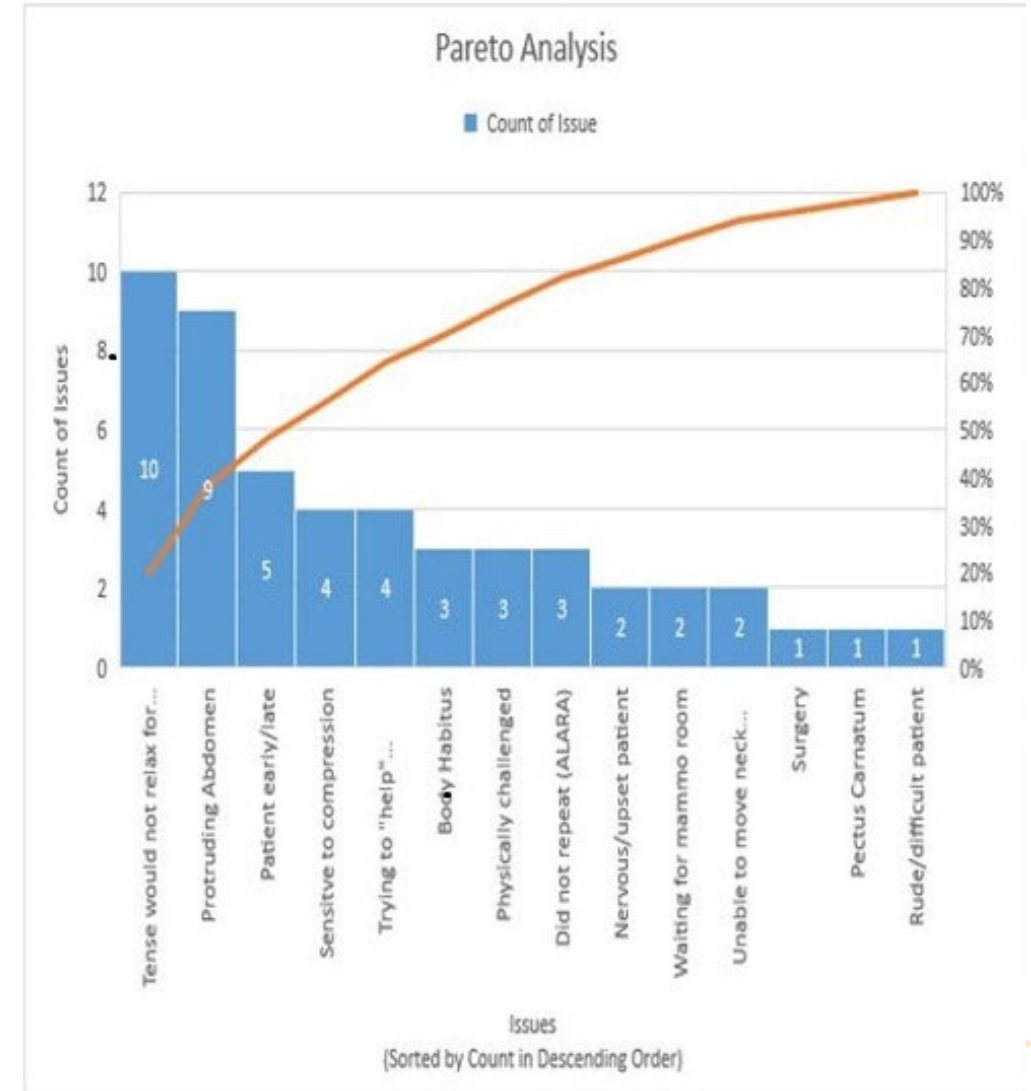
MAMMOGRAPHY EXAM PROCESS MAP
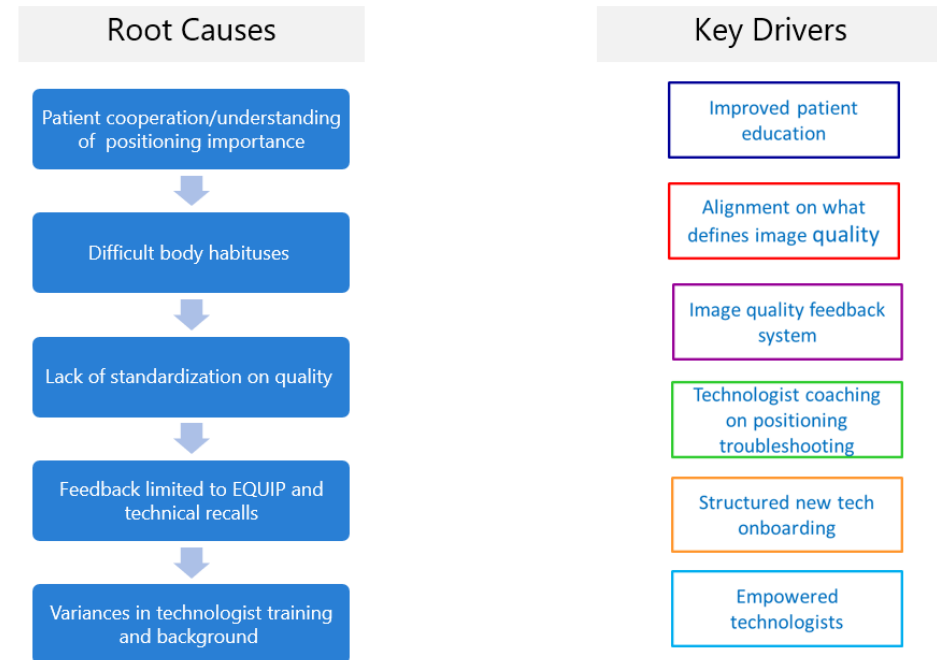
Cause and Effect Diagram

Pareto Analysis

o Solis' initial audit data – 236 screening mammograms in 2-month period, audited by trained auditors on the project team

o Overall pass rate only 55%

o Project goal was 85%

o Pareto Analysis (root causes): Main areas of improvement were IMF, skin folds, posterior tissue on both views

Root Cause Analysis

- The root causes are split between patient factors and technologists' awareness of quality.

- Root causes helped identify five key drivers with the most important being alignment on what defines quality and patient education.

- A sixth key driver emerged when analyzing results of weekly audits.

- This key driver empowering the technologist in quality awareness proved to be the most impactful.

Key Drivers

Root Causes	Key Drivers
Patient cooperation/understanding of positioning importance	Improved patient education
Difficult body habituses	Alignment on what defines image quality
Lack of standardization on quality	Image quality feedback system
Feedback limited to EQUIP and technical recalls	Technologist coaching on positioning troubleshooting
Variances in technologist training and background	Structured new tech onboarding
	Empowered technologists

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Intervention

Interventions

Improved patient education

Better Education = Better Cooperation = Better Imaging

- Patient Education Sheet ⚠
- Tech to Patient Communication
- Pink ribbon for feet position

Technologist coaching on positioning troubleshooting

- Positioning Articles/Videos
- Case of the month
- Positioning coach

Structured new tech onboarding

- Standardized method
- Quality standards
- Auditing positioning skills

Interventions

Alignment on what defines image quality

- Educational tool with examples of quality images

Image quality feedback system

- Meaningful feedback from Rads to techs
- Regular random audits

Empowered technologists

- Techs engaged in audits
- Learning together, accountability
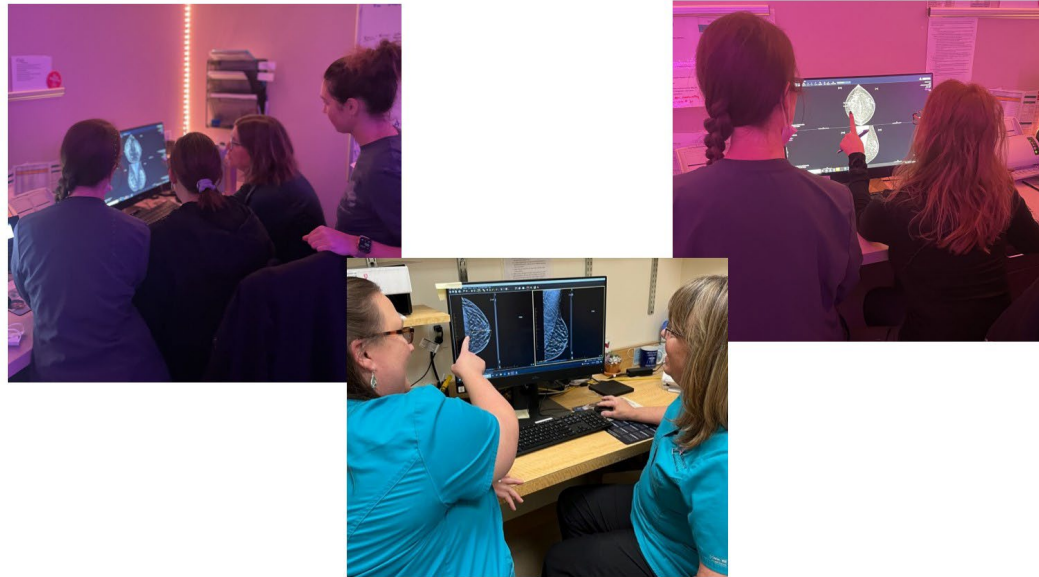
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Results

Sustained trend ABOVE 85% for 10 weeks!
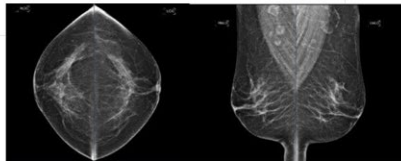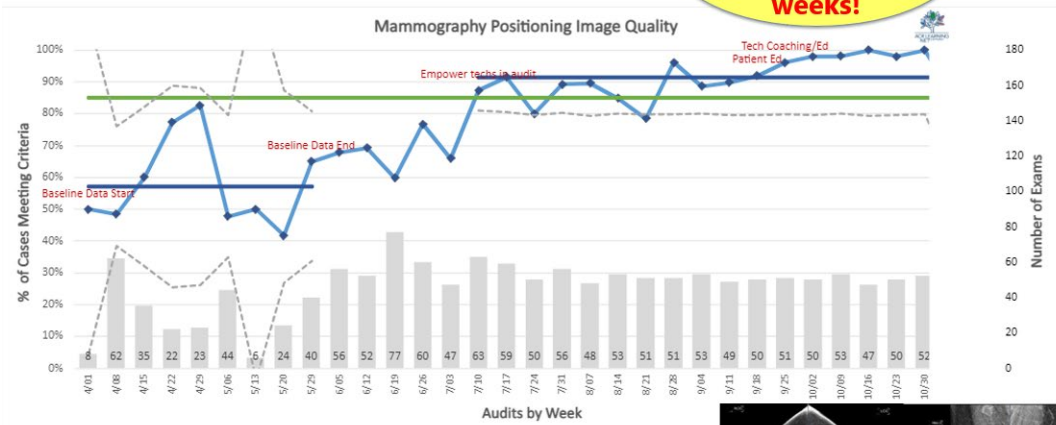
Encouragement and empowerment brought instant awareness and accountability, resulting in sustained trend over 10 weeks of 85-99%.

Empowerment is KEY!

The feedback from the technologists was unanimous. The team auditing was extremely helpful. The discussions that took place, agreeing /disagreeing and gaining consensus helped view image quality differently. The discussions inspired the technologists to deliver the best quality work.

Results cont.

- The baseline audit revealed a pass rate of 55% of total screening mammograms at both facilities. An image auditing process that included participation from the frontline technologists was developed and shared at group and individual levels.

- Frontline staff empowerment yielded an increase to an 85% of images passing.

- Level of performance was sustained for 10 weeks through additional interventions of improving tech and radiologist communication, standardization of new technologist onboarding, and structured and frequent feedback to technologist.

Results
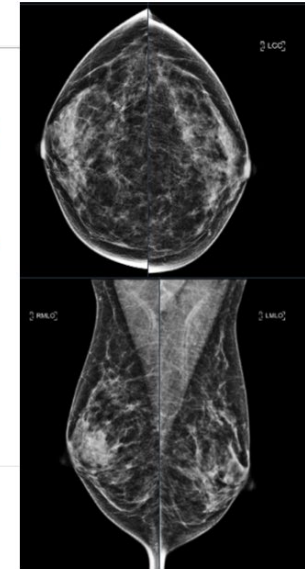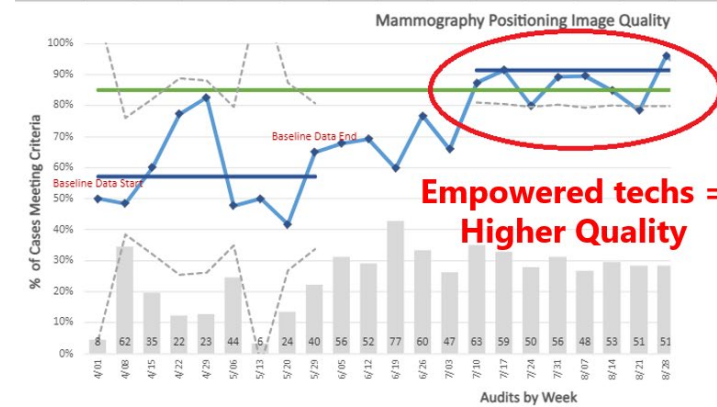
The most significant intervention emerged on its own, empowering the technologist as part of the auditing process, enabling them to learn together and hold each other accountable.

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Discussion

- The binary (pass/fail) threshold of MQSA Accreditation is inadequate by itself for quality assessment.
- Mammography positioning is a dynamic target that is comprised of individual, varying attributes.
- Identifying root causes with heightened attention to behaviors and conditions can result in sustainable improvement in image quality.
- Given the success of the facilities that participated in the first cohort of the Mammography Positioning Improvement Collaborative, two sites from the same organization have enrolled in the second cohort of the collaborative, with goals of expanding the learnings
  across the Solis enterprise to over 100 clinics.
- Applying these lessons at scale requires maintaining the essence of the improvement collaborative while customizing the process to minimize resource redundancy.