Increasing On-Time Screening Mammogram Patient Appointments and Improving Load-leveled Work

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DMAIC

Background: The Breast Imaging and Intervention Department (BII) experienced delays meeting patient appointment times causing patient and staff dissatisfaction. Uneven load-leveled work among the technologist was a secondary factor in staff satisfaction.

Measure: In 2016, baseline data was collected for 29,290 screening mammogram patients through a daily tracking process using a visual pacing board(figure 1). Technologists place a green or red magnet on the board near the patients scheduled appointment time.

A green magnet signifies an on-time appointment and a red magnet signifies a patient who was seen > 15 minutes before or after their scheduled appointment time. Patients who arrived after their appointment time were identified with a red magnet also.

For 2016, 58% of the patients had an on-time screening mammogram appointment (figure 2).

Analyze: The key issues identified that prevented the patients from being seen on-time were:

- Too many patient appointments were scheduled each hour for the number of technologists staffed.
- Technologists completed between 12 and 20 patients per day, the work was not level-loaded. There was no current system to manage the distribution of work throughout the day.
- A 15 minute appointment slot only allowed 58% of the patients to be completed on time.

Improve: Plan, Do, Study, Act (PDSA) tests were conducted which lead to several implemented improvements which included:

Patient Appointments:

PDSA 1-3:

Tested one technologist performing twenty screening mammograms with appointment schedule card.

Tested pacing grid and 20 screening mammograms per day per technologist in four of nine rooms.

Tested pacing grid and 20 screening mammograms per day per technologist in nine rooms

Implemented: Appointment slots were adjusted to allow for 20 minute screening exams based on cycle time data. A level-loaded patient calendar with adjusted time slots (1/23/17).

Staffing Schedule:

Implemented: A new technologist schedule was developed to accommodate the new patient exam schedule (1/11/17).

Implemented: A technologist appointment card (figure 3) which assisted with the timing of scheduling breaks, lunches and start/end of shifts (1/23/17).

Level Loading:

PDSA 4: Tested Heijunka box (figure 4) level loading method of patient assignment for technologist in lieu of appointment schedule card

Implemented: Heijunka box so that patient appointments were evenly distributed among technologists using minutes of work per day per technologist (2/10/17).

Figure 1: Pacing Board

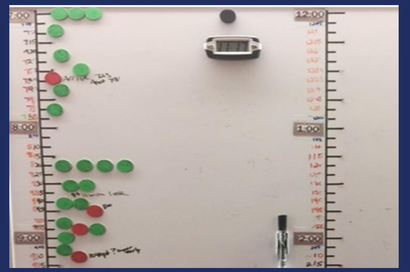


Figure 2: Baseline % On Time

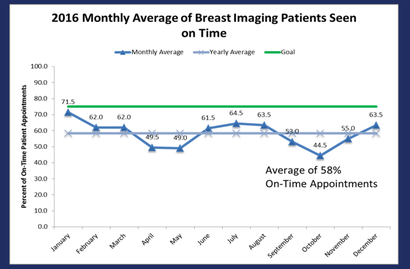


Figure 3: Technologist Appointment Card

This card assisted with the timing of scheduling breaks, lunches and start/end of shifts.

Each technologist was given a card to follow throughout their day.

Each green box represents a scheduled patient appointment time.

700	1000	1300
720	1020	1320
740	1040	1340
800 Huddle	1100	1400 Prep
		1410 Break
820	1120	1430
840	1140	1450
900	1200-1300 Lunch	1510
920 Break		
940		

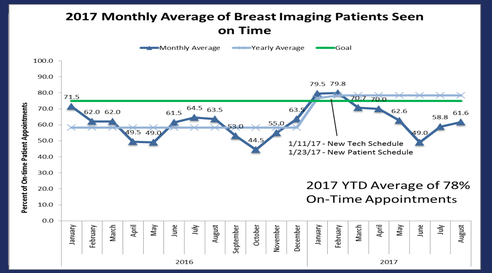
Figure 4: Heijunka Box

Each red card represents ten minutes worth of work. The cards are loaded into the slots by a Procedural Support Assistant once the patient checks in. The cards are distributed by appointment time and evenly distributed between exam rooms.

10 minute time increments (0:00, 0:10, 0:20, 0:30, 0:40, 0:50)

10 Exam Rooms

Results



Control

- The BII team will continue to measure on-time appointments daily using the pacing board as the measurement tool.
- Prior day's on-time percentages are visually posted and discussed at the daily multi-disciplinary team huddle.
- A real-time reaction plan will be developed for when BII is not meeting their on-time appointment target.
- Several tech staffing PDSA's continue to be tested to find the best solution for load-leveled work.

Conclusion

- This project has reduced the average screening patient lead time from 39.4 minutes to 22.2 minutes.
- The team successfully met and exceeded their goal of 75% on-time patient appointments during the first quarter of 2017.
- In the second quarter of 2017 the on-time patient appointment time dropped to 58%. This was attributed to full patient schedules and new technologist training.
- Future improvements will need to address common barriers that cause deviations from plan, i.e. procedures that make a mammogram room unavailable, unplanned absences, and PTO.
- BII is working on a current process improvement project to define and solve staffing gaps.

Lessons Learned

- Change is hard
  - New work approach for seasoned technologists
  - Systematic thinking versus "gut" feelings
  - Departmental culture
- Unexpected Imperfections
  - Patients arriving late for appointments
  - Working outside our cycle time
  - Procedures create additional work
- Appointment Access
  - Appointment schedule built with flex time, decreased access overall

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