MoreSteam®

Optimizing Patient Flow in the Ambulatory Clinic Setting

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'How I Fixed This' Webcast Series

Ellen Milnes
Director of Marketing
MoreSteam

- Introductions

- Presentation

- Questions

About MoreSteam

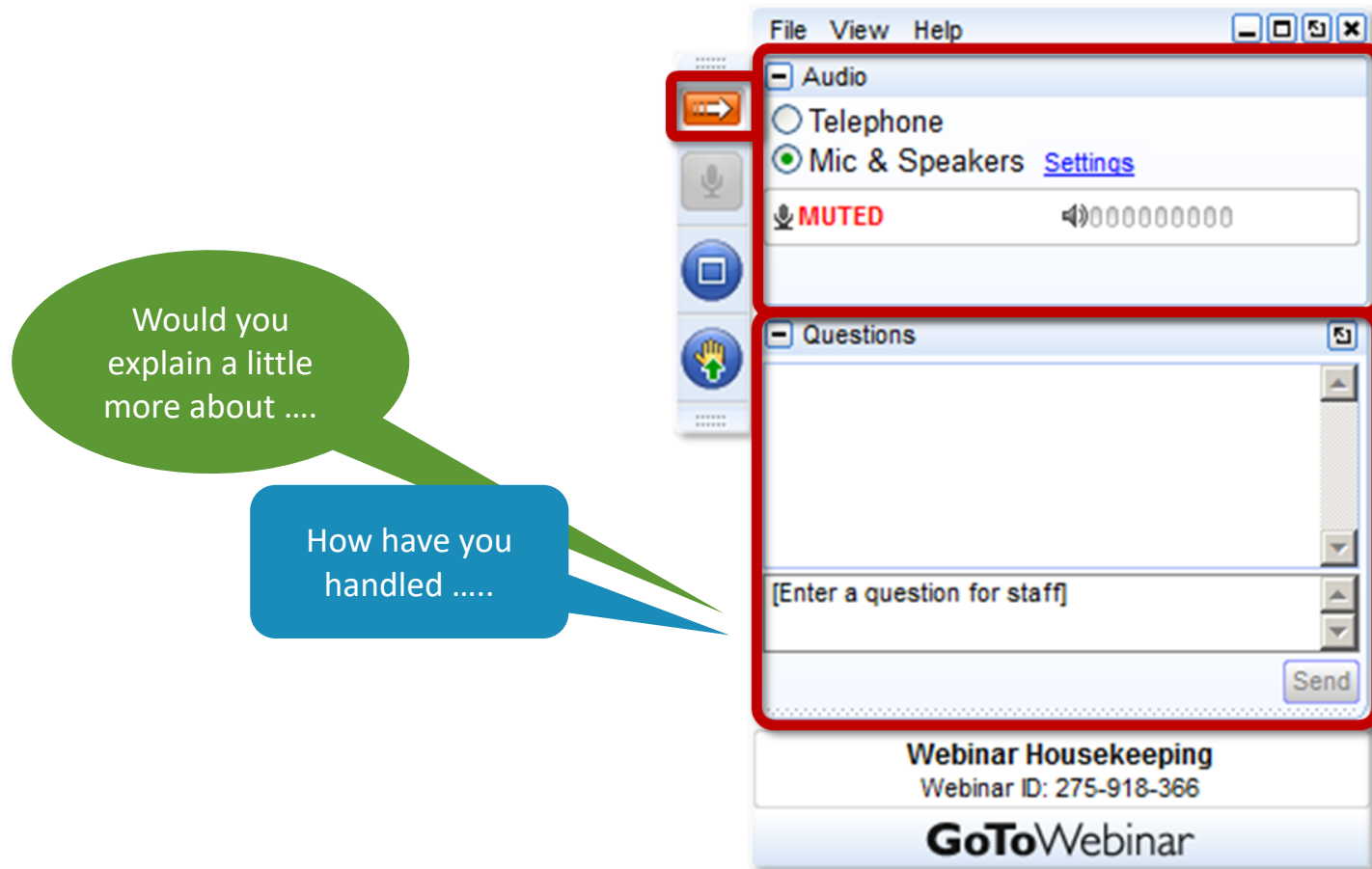*Enterprise continuous improvement from training to project completion*

575,000+

55%

Course Provider

GoToWebinar Attendee Panel

Nicole Batulis

Director of Operational Excellence, Dartmouth-Hitchcock Medical Center

- Leads the Project management Office, Performance Improvement Team, and the Value Institute Learning Center.

- B.A. in Chemistry & Music from Emory University and M.H.A. in Healthcare Administration from University of Minnesota

- Certified LSSMBB and CPHQ

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Overview

- Dartmouth-Hitchcock Health

- The Value Institute Learning Center at Dartmouth-Hitchcock

- Ophthalmology Patient Flow
  - Background
  - Baseline Data
  - Process Analysis
  - Simulation
  - DOE
 - Interventions
  - Impact

Dartmouth-Hitchcock Health

- DHMC is a rural Academic Medical Center located in Lebanon, NH.

- Anchored by a 396-bed teaching hospital which includes a children's hospital and a designated comprehensive cancer center.

- D-H has over 9,000 employees and over 1,000 physicians across its locations in New Hampshire and Vermont.

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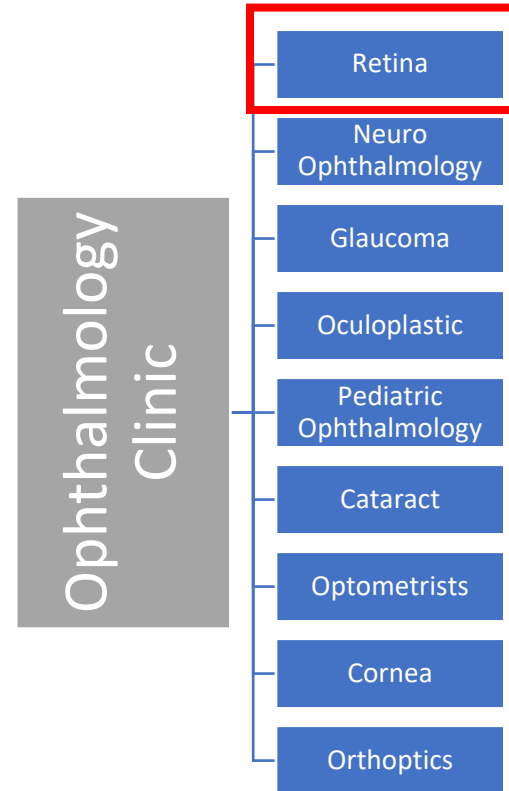# The Value Institute Learning Center at Dartmouth-Hitchcock

- All new employees receive online Whitebelt training as part of orientation.

- We offer a 2 day in person and an online option for Yellowbelt completion.

- Greenbelt training is a 5 day in person course with support from a blackbelt coach for certification project execution. Acceptance to Greenbelt is based on supervisor recommendation and blackbelt interview.

- Host a monthly Value Grand Rounds series to promote sharing and spread of improvement work across the organization
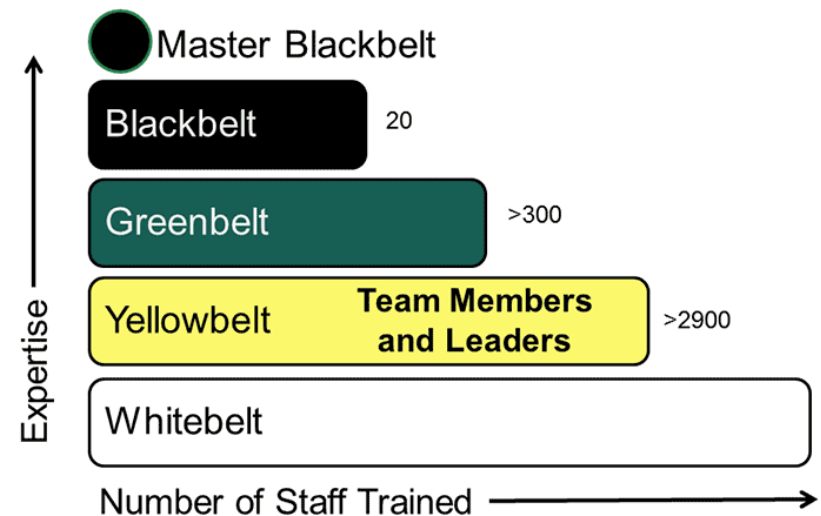
Ophthalmology Patient Flow
Background

- The clinic has struggled with patient wait times and flow. Patient satisfaction data related to wait times ranked Ophthalmology the **lowest score in the health system** out of all of the ambulatory clinics with less than 40% of patients rating their experience as 'top box.'

- Additionally, there is wide variation in patient wait times and total clinic cycle time by day of week.   **Cycle times over 2 hours** are not uncommon for patient visits, occurring 40.79% of the time in the baseline period for Retina patients.

Ophthalmology Clinic

- Retina
- Neuro Ophthalmology
- Glaucoma
- Oculoplastic
- Pediatric Ophthalmology
- Cataract
- Optometrists
- Cornea
- Orthoptics

D-H Population Growth Projections

Age	2016	2021	% Δ Pop
<18	126,021	119,438	-5.2%
18-64	423,866	411,046	-3.0%
65+	134,964	151,688	+12.4%
Total	684,851	682,172	-0.4%

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Ophthalmology Patient Flow
Background

How do staff feel about clinic operations?

Messy
Unknown
Chaotic Slow
Traffic-jam
Log-jam
Dreadful

SIPOC Process Overview

Supplier	Input	Process	Output	Customer
Patient Referring Provider Scheduler	Demographics/ Insurance Schedule Availability, Recall, Referral, F/u action to determine provider avialability	Scheduling	Scheduled Appointment	Patient Provider
Patient Receptionist	Demographics/ Insurance Copays	Check in	Arrived Appointment Collected Copay Appointment Slip	Provider Workup Tech
Workup Tech	Arrived appt on eD-H Screen Chart/eD-H Appointment slip	Workup	Completed work up Patient paperwork placed in tray for imaging Patient in imaging waiting room	Patient Imaging Tech/ Photographer
Work Up Tech Patient Imaging Tech	Imaging Orders/ Requests Appointment slip	Imaging (if needed - 70-80%)	Completed Imaging available for provider review Patient placed in imaging waiting room	Provider Patient Head of Service, Imaging Tech
Imaging Tech Patient Head of Service	Prepped Patient Appointment slip	Rooming	Roomed Patient Room Status Indicator	Provider Patient Head of Service
Provider Head of Service Scribe	Reviewed Chart & Imaging	Provider Visit/ Procedure	Plan of Care, eDH documentation Orders for Testing Recommendations for Next Appt	Provider, Scribe Patient, Ref. Provider Check-Out & OR Scheduler
Provider, Check- Out Secretary Patient Head of Service	Provider Recommendations for scheduling and follow-up Patient availability	Check Out	Scheduled appointments	Patient Provider Referring Provider

Long Wait
Slow
Too Long

It took almost 2 1/2 HOURS to complete the visit. I saw Dr for about 5 MINS too long.

Had to ask several times if I had been forgotten.

much, much too slow

We were there 5 hrs. - too long.

During my wait in the ALMOST 1 HOUR WAIT in the waiting room, well after my appointment time, I observed the provider leave the clinic and return with a package of food and beverage in his hands.
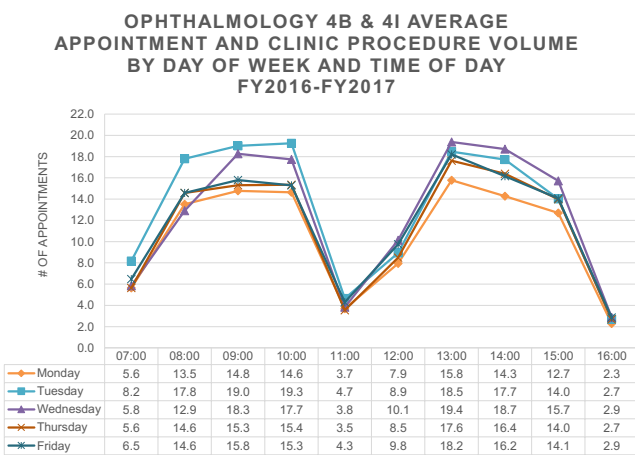
How do patients feel about wait times?

I think I fell asleep waiting for the doctor to see me....

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Ophthalmology Patient Flow
Baseline Data

OPHTHALMOLOGY 4B & 4I AVERAGE APPOINTMENT AND CLINIC PROCEDURE VOLUME BY DAY OF WEEK AND TIME OF DAY FY2016-FY2017

'Spider' diagram visualizes the peaks and valleys in patient volume by day of week and hour of the day

	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
Monday	5.6	13.5	14.8	14.6	3.7	7.9	15.8	14.3	12.7	2.3
Tuesday	8.2	17.8	19.0	19.3	4.7	8.9	18.5	17.7	14.0	2.7
Wednesday	5.8	12.9	18.3	17.7	3.8	10.1	19.4	18.7	15.7	2.9
Thursday	5.6	14.6	15.3	15.4	3.5	8.5	17.6	16.4	14.0	2.7
Friday	6.5	14.6	15.8	15.3	4.3	9.8	18.2	16.2	14.1	2.9

Box Plot shows the variation in appointment volume by day of week. Reflects staff feedback of " I never know what to expect day to day"

Ophthalmology Appointment Volume Variation by Day of Week FY 2017
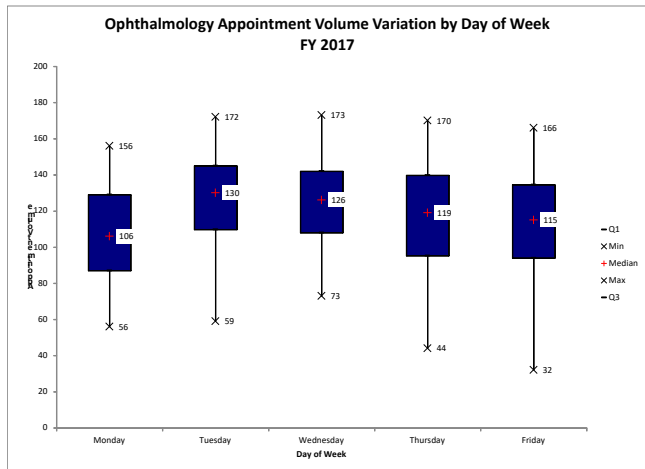
Ophthalmology's Patient experience performance on wait time is the worst in the health system, and is significantly below the mean of other clinics.

Outpatient Satisfaction for Question: 'Wait time at clinic (from arriving to leaving)' from visits in July 2016 - March 2017

Analysis of Means identifying 95% confidence intervals that account for variation of responses and sample sizes within departments
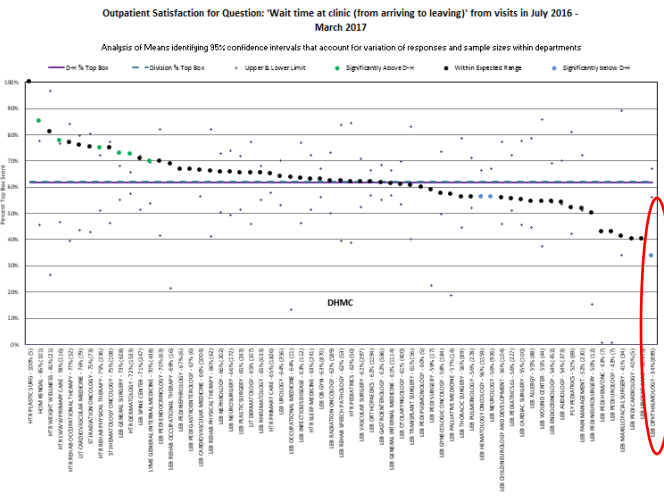
Cycle time histogram shows mean of 1:50:37 and Std Dev of 40:10. KS test value p value of 0.2137 is greater than 0.05 and indicates the data comes from a normal distribution

Cycle Time Histogram

Normal Distribution
Mean = 0.0768
Std Dev = 0.0279
KS Test p-value = .2137
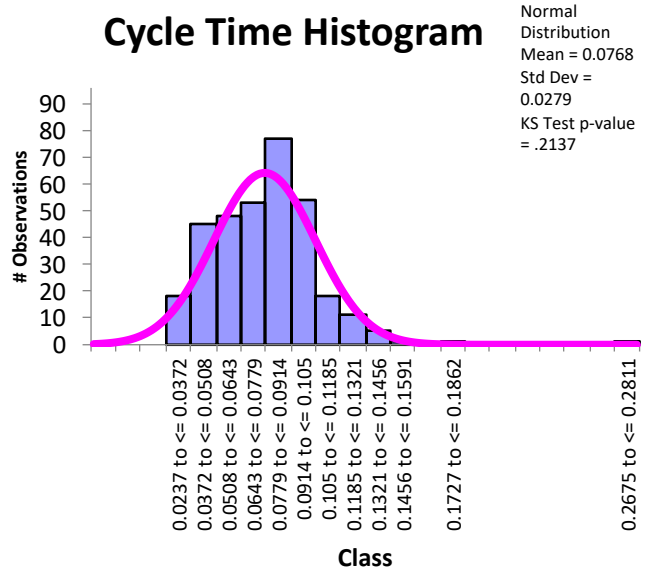
Ophthalmology Patient Flow
Process Analysis

Ophthalmology Clinic Flow Value Stream Map

Takt Time: 3.16 mins

Value Added Process Time	43
Total Cycle Time	101.6
% Process Efficiency	42.3%
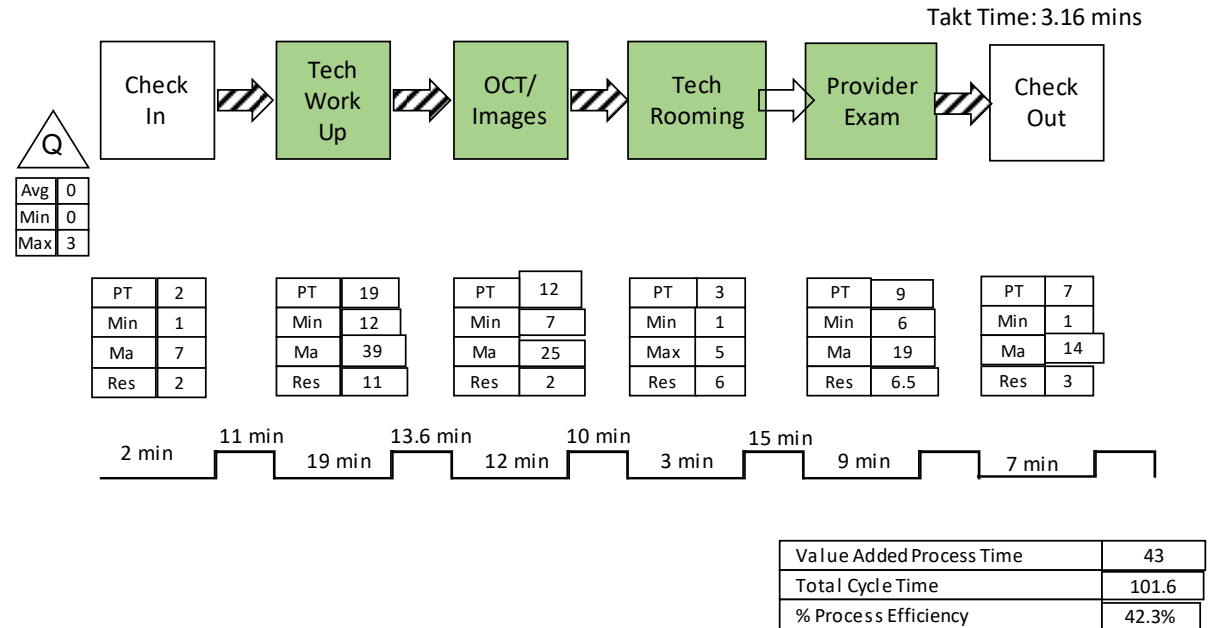
Ophthalmology Clinic Workload Balancing Chart

Check In 1.00 | Work Up 1.73 | OCT / Imaging 6.00 | Rooming 0.50 | Provider 1.38 | Check Out 2.33

Per Person Procress time — Takt Time
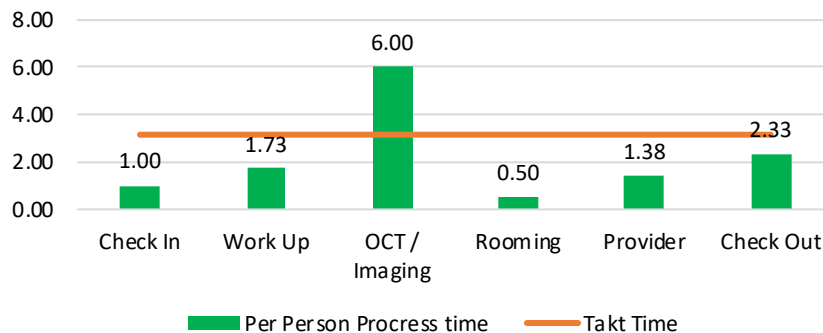
The Ophthalmic imaging equipment, the OCT, of which there are 2 in the clinic was found to be a bottleneck in the process.

Ophthalmology Patient Flow
Simulation

Patient Demand → Check In → Waiting Room → Tech Workup → Imaging? (Y/N)

Count	38		TLT (m)	12.55
Avg. Length	0.82		BCT (m)	22.49
Max	4		Run Time	68.53%
BCT (m)	10.07		Idle Time	16.5%

Wait OCT → OCT → Wait → Tech Rooming → Wait → Provider Exam

Count	25
TLT (m)	36.27

25

Check Out → Exit
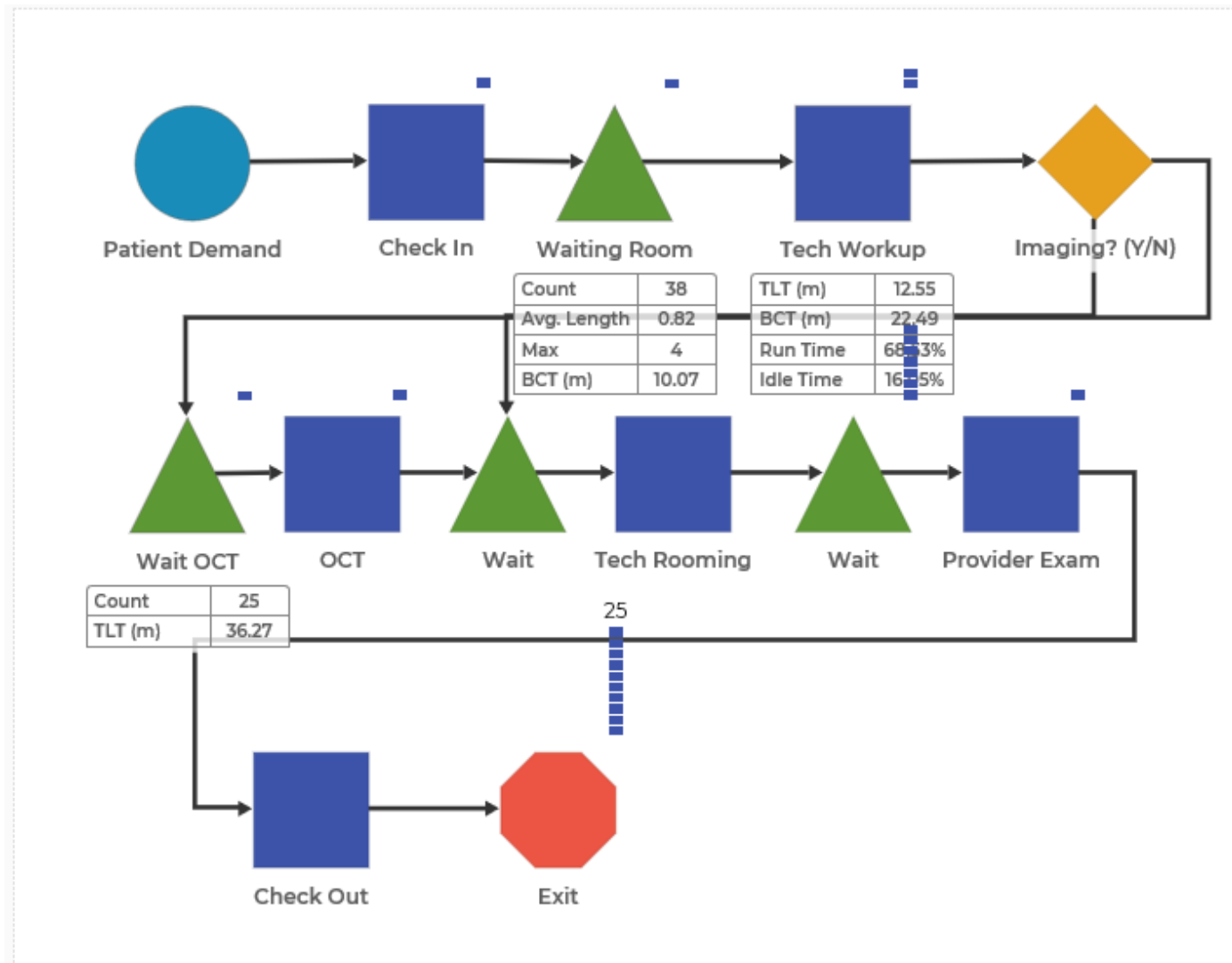
Ophthalmology Patient Flow
Simulation

Total Lead Time - Retina

Time units are in minutes
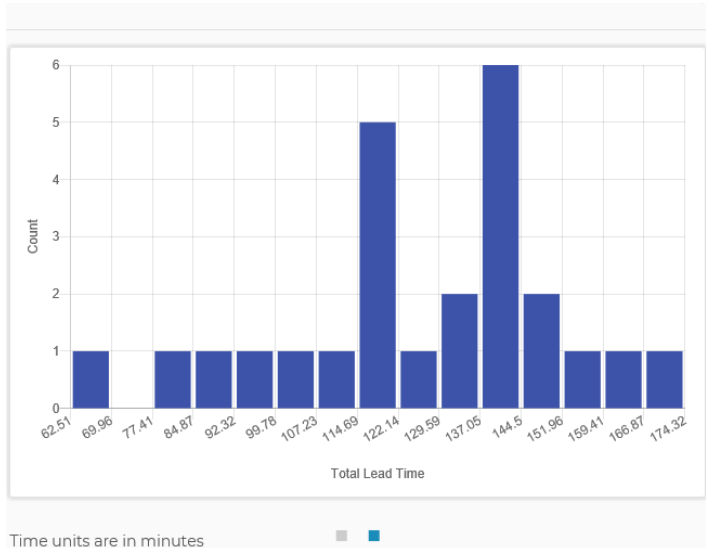
OCT / Imaging Wait Block Cycle Time
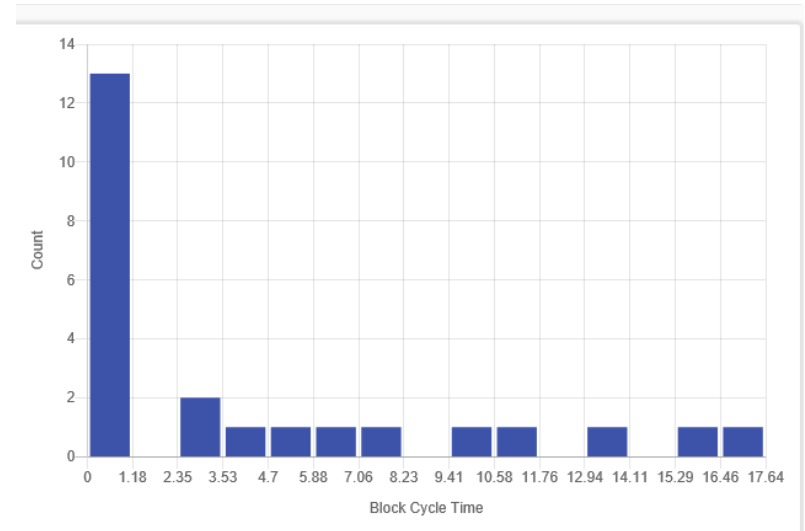
Original Full Clinic simulation model was utilized to compare technician assignment by specialty vs. pooled technicians.

Avg Imaging and Exam Time (minutes)

● Average time Specialized Technician
● Average Time with Pooled Technicians

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Ophthalmology Patient Flow
DOE

Residual Plots for Visit Cycle Time / Main Effects Plot for Visit Cycle Time Fitted Means
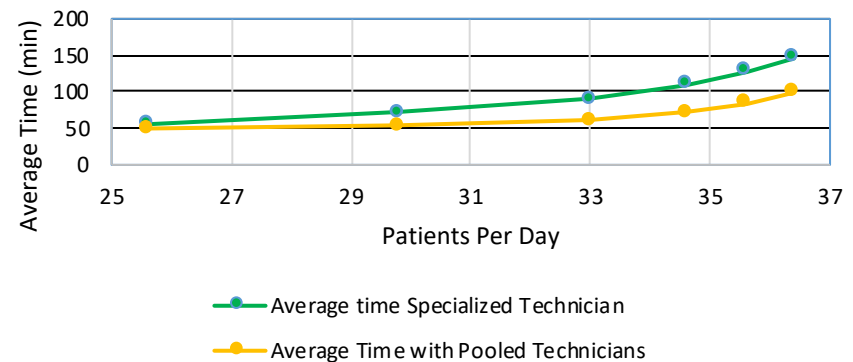
- **Tested utilizing DOE:**
  - Standardization of exam room set up
  - POD model: co-location of providers and the technicians completing their workups – pooling of resources *(Hard to Change Factor)*
  - Use of standard communication framework to discuss delays with patients
  - Use of scribe to support provider documentation
  - P Value POD Model = 0.003, p Value Scribe = 0.000, p value AIDET = 0.347, p Value Standard Room = 0.210
  - Interactions/ additional order terms not significant and removed from model

Ophthalmology Patient Flow
Interventions

- **Additional Interventions:**
  - Development of Policy and Procedures (Standard Work) for technicians
  - 5S and relocation of imaging equipment
  - Implementation of patient self-check-in
  - Implementation of technician prep appointment in addition to provider appointment to have patient schedule reflect true appointment itinerary and to work on level-loading the OCT
  - Re-balancing of provider admin time to level out spikes in patient appointment by hour of the day
  - Implementation of updates to Ophthalmic event time stamp tracking in eD-H
  - Lunch coverage for OCT imaging
  - Proactive communication with patients at time of scheduling about what to expect in their visit
  - Purchasing 3rd OCT imaging machine to support peak volume (in process – plan to add in with addition of new Retina Surgeon)
  - System is in position control/ hiring freeze so unable to move forward with Scribe support recommendations at this time.

- Video interviewed staff to observe variation in room set-up
- Discussed sequence of primary workup activities
- Developed a recommendation for a new standard that will be piloted
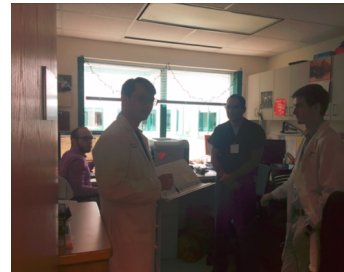
Implemented POD Huddles to enhance team communication

IDEAL SEQUENCE FOR THE TYPICAL TECH WORKUP
GOAL: DILATION AS EARLY AS POSSIBLE

Scheduling recommendations will move Ophthalmology from siloed template builds that focus on each individual provider to having a full clinic view of patient arrivals by hour to plan for and schedule pre-provider visit needs such as the technician workup and imaging.
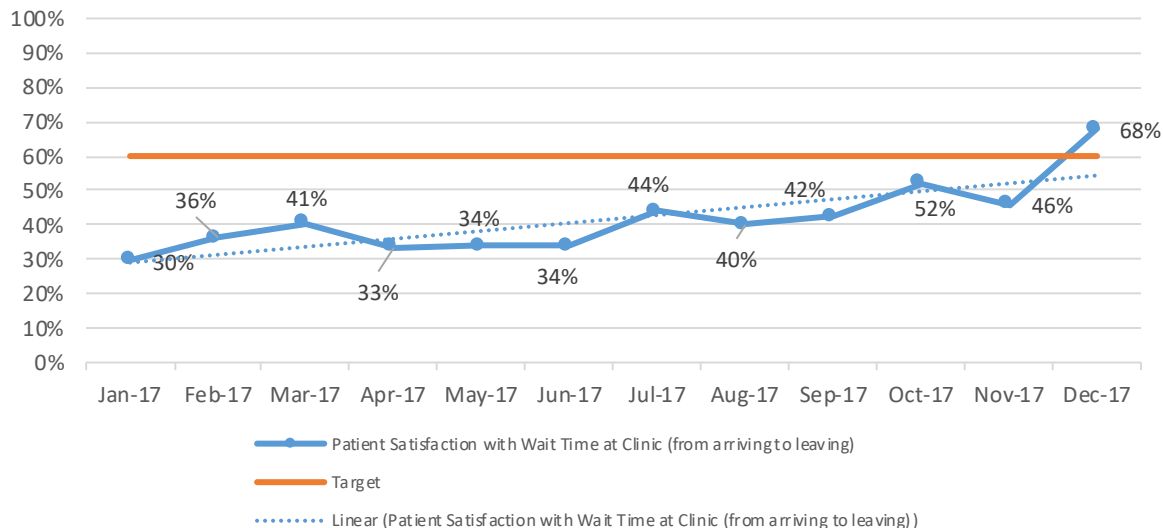
Ophthalmology Patient Flow
Impact

- Reduced visit cycle time from 1:50:37 to 1:40:31 post implementation for Retina providers. T test p Value = 0.034
- Reduced imaging wait times from an average of 20:38 to an average of 15:37. T Test p value = 0.001
- Patient experience scores were trending upwards post-implementation. Team will continue to monitor scores and patient comments to assess impact.
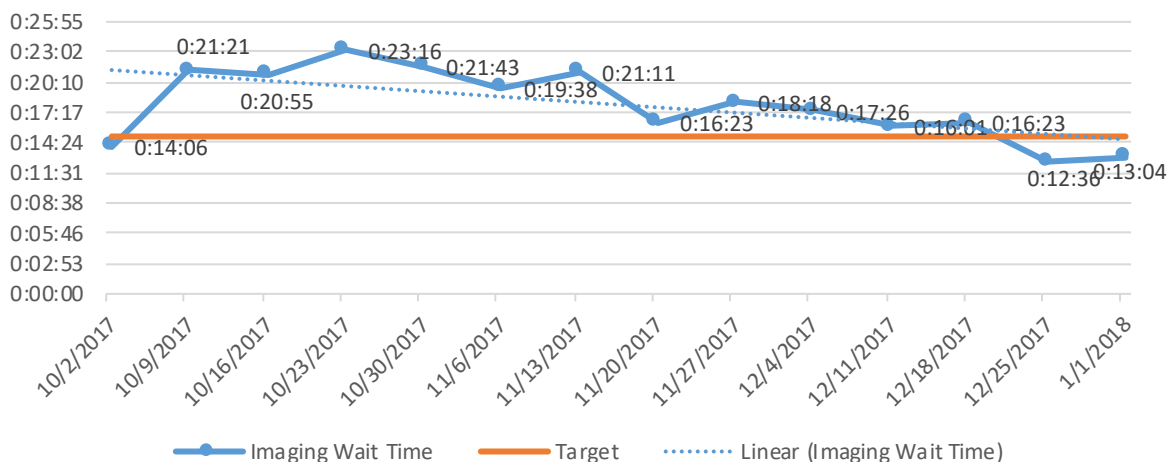

Patient Experience - Wait Time
Question: Satisfaction with Wait time at Clinic (from arriving to leaving) measured as % Top Box Score
January 2017-December 2017

Average Imaging Wait Time (hh:mm:ss)

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Questions?

Visit us at MoreSteam.com

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How to Keep in Touch

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Mark Your Calendar to Join Us:

➢ November 20: Bethany Melitz, City of Detroit
➢ December 5 & 12: Alexander Silantyev, PwC
➢ January 30: Ruben Del Toro, Southwest Airlines