

ASCO's Quality Training Program

Project Title: Increasing on Time Treatment Plan Delivery in
Radiation Medicine

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Jo Price, RT(T)

Institution: Oregon Health & Science University Knight Cancer Center

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Institutional Overview

Oregon Health and Science University is the state's only academic health center. It includes OHSU Hospital and Doernbecher Children's Hospital with a combined 576 beds.

In 2015 the hospital saw more than 1 million patient visits. More than half of the hospitalized patients are either uninsured or insured through a public payer.

Radiation Medicine at OHSU treated 1,108 patients last year.

Team Members



Jerry Jaboin, MD, PhD
Vice-Chair for Clinical Affairs
Team Leader



Simon Brown, MD
Year 3 Resident



Wolfram Laub, PhD, MBA
Clinical Associate Professor
Therapeutic Radiation Physics



Barb Agrimson, RT(R)(T), CMD
Medical Dosimetrist



Jo Price, RT(T)
Lead Radiation Therapist



Jennifer Ruocco, PhD
Director of Radiation Oncology



Dorothy Ryan, RT(R)(T)
Chief Radiation Therapist



Stephanie Junell, PhD
Medical Physicist



Jeff Hanson
Finance and Operations
Manager

Champions



Charles Thomas, MD
Professor and Chair



Kevin Billingsley, MD
Chief, Division of
Surgical Oncology

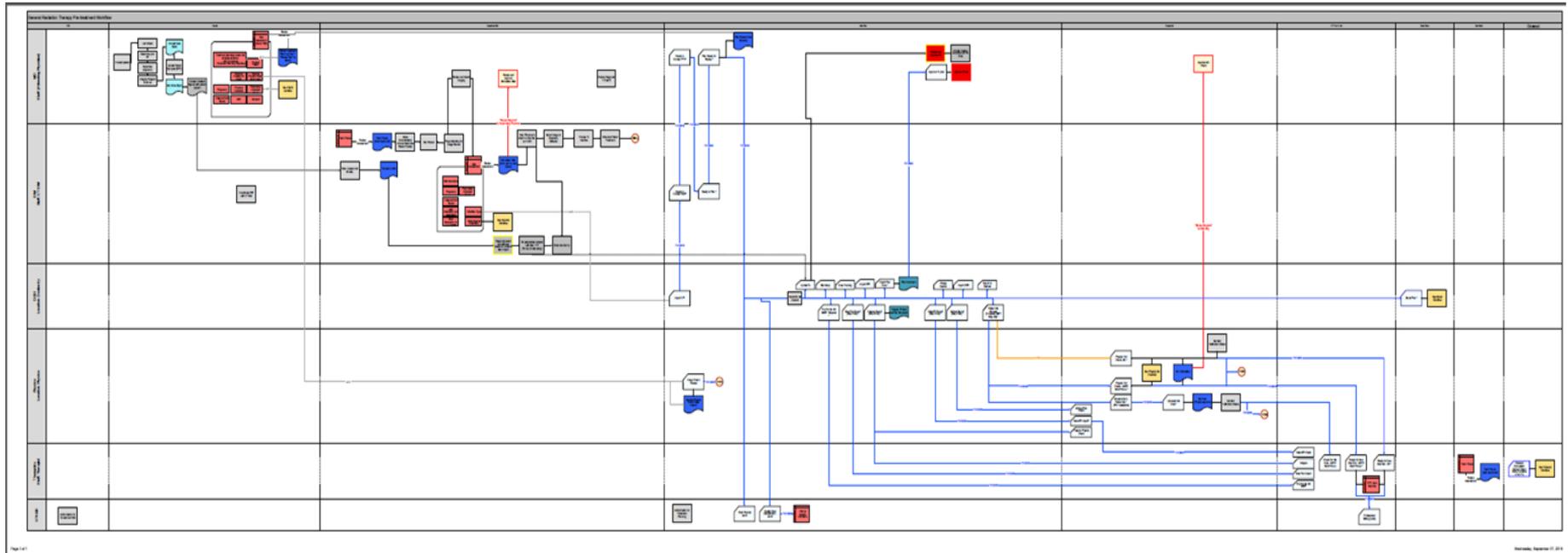


Ellen Distefano
Quality Management

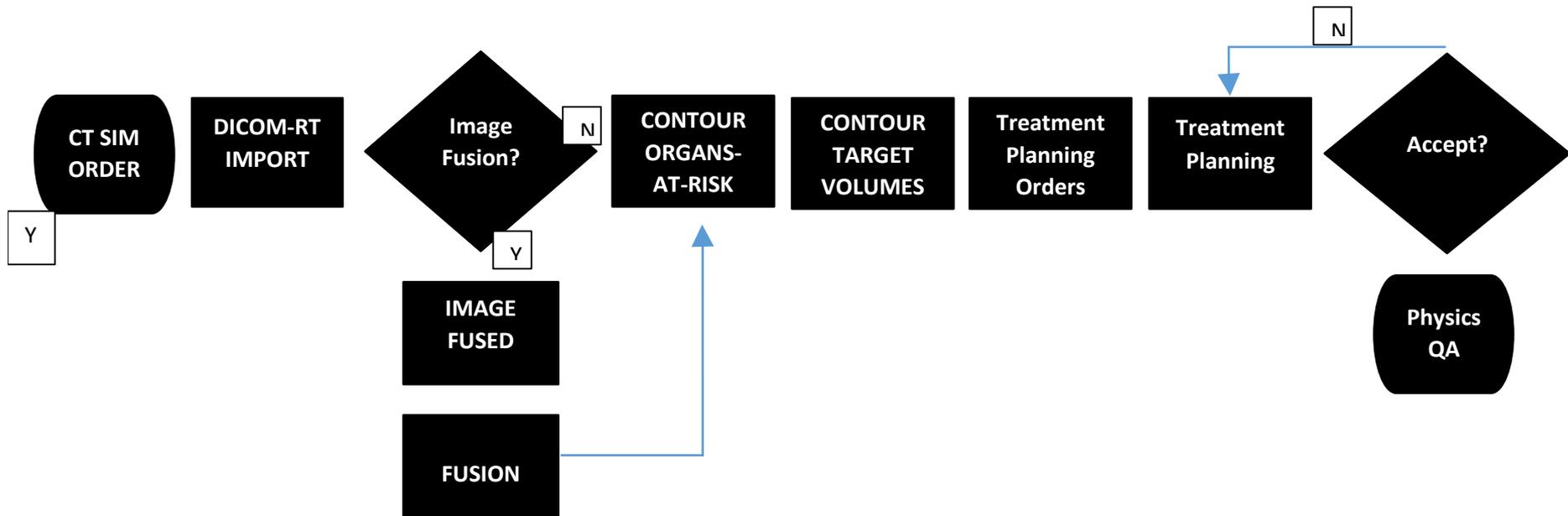
Problem Statement

Sixty-two percent of final Physics Quality Assurance (PQA) approvals for treatment plans (including 3D/IMRT/Arc/SBRT/SRS plans) are not completed by 8:00 am the day prior to the patient's first treatment appointment.

Process Map

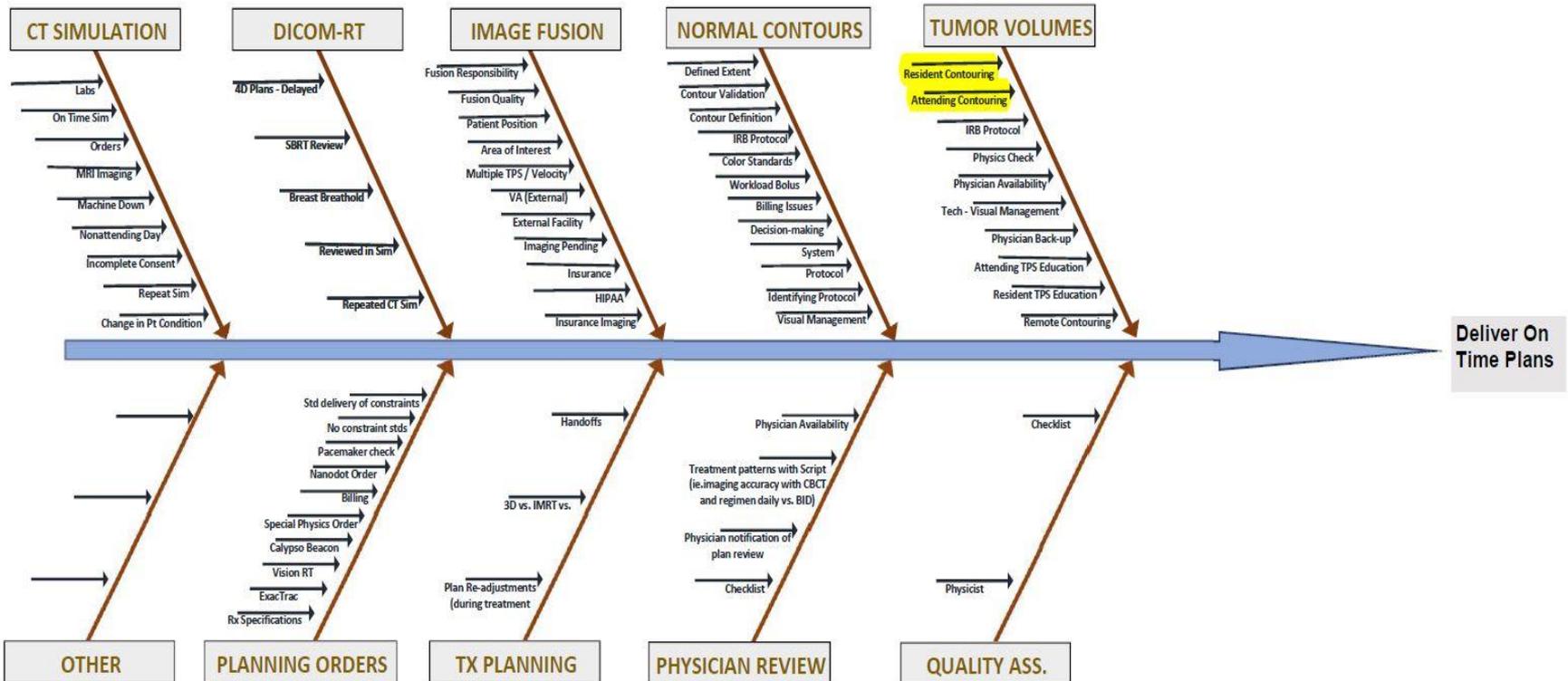


Process Map



Cause & Effect Diagram

Ishikawa Groupings



Diagnostic Data



ASCO Endpoints_RTT
w/out Emergency Starts

New Starts From 2/18/2015
to 8/24/2016

Attending	Patient Count	% Ready for Therapist QA by 8am day before New Start	Average CT to New Start (h)
	28	42.9%	152
	11	81.8%	161
	275	57.1%	151
	253	55.7%	248
	50	72.0%	224
	239	71.1%	220
	2	0.0%	121
	23	56.5%	144
	2	100.0%	119
	185	62.2%	223
	3	66.7%	238
All Attendings	1071	61.3%	205

6 Month
Tracking Period

All Data points
retrieved by
Mosaiq

Of 1071 patient
plans completed
approximately
62% were
completed at 8
am prior to the
start of
treatment.

Aim Statement

Our rate of on time treatment planning delivery is a dismal 62% for all providers and 68% for the two providers we are tracking.

By January 2017, 90% of plans for those two providers will have final physics quality approvals completed by 8 am the day prior to the patient's start of treatment.

Measures

- **Measure:** Percentage of plans ready for therapist QA by 8 AM the day before New Start
- **Patient population:** Non-emergent radiotherapy patients
- **Data sources:** Mosaiq radiation therapy program and whiteboard Abnormality Tracker
- **Data collection frequency:** Daily
- **Calculation methodology:** MOSAIC QCL Scripting for task completions.
- **Data quality(any limitations):** Limitations dependent on data not automatically collected.

Intangible Measures

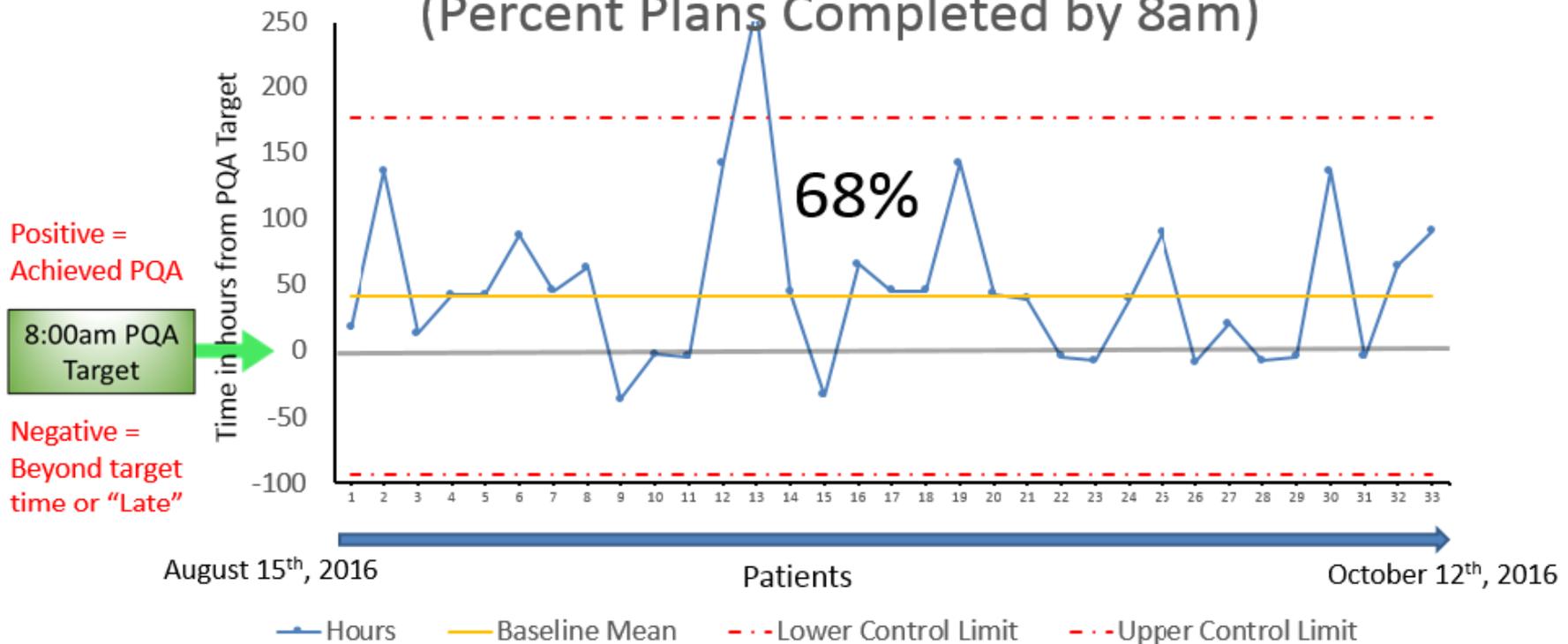
Ah ha Moments...

- “Boy the CT sim initiates and manages a large number of processes”
- “I had no idea Physics did that”
- “I could not believe how much workflow is managed by the residents”
- “The brainstorming process itself was really enjoyable”
- “We need to really work on reducing the load on Dosimetry”



Baseline Data

Baseline Data via xMR Chart (Percent Plans Completed by 8am)



PDSA Plan (Test of Change)

Date of PDSA Cycle	Description of Intervention	Results	Action Steps
October 13, 2016	Morning Hallway Whiteboard Huddle required commitment from all department divisions (subgroups)	Visual hallway Whiteboard didn't provide consistent understanding or knowledge of it's purpose and information wasn't disseminated	Presented the project to all members of the department.
October 13, 2016	Simulation contour schedule	Attending's understood required times for plan completion. Big improvement in goal.	Additional Visual management tool
November 3, 2016	Dosimetry Digital QCL Whiteboard Tracking Monitor	Dynamic display of project workflow (contour completion)	Another method to communicate task workflows.

PDSA Plan (Test of Change)

Date of PDSA Cycle	Description of Intervention	Results	Action Steps
December 7, 2016	Screen capture of digital dosimetry whiteboard email sent out daily to Attending's	Clearer understanding of pending work	Communicate the Attendings workflow to their assigned Residents
December 20, 2016	Residents added to digital dosimetry whiteboard daily email.	Pending	To Be Determined

Prioritized List of Changes (Priority/Pay –Off Matrix)

Impact	High	Digital Whiteboard Daily Email Sim to Start Schedule	Digital Whiteboard
	Low	Daily Huddle	
		Easy	Difficult

Materials Developed

Dosimetry Digital Whiteboard

Simulation to Start Schedule Workflow

Starts On Monday

Monday	Tuesday	Wednesday	Thursday	Friday
			Simulation	Attending Contours Completed QCL Completed

Monday	Tuesday	Wednesday	Thursday	Friday
Planning	Planning	Planning Attending Signs Off on Plan	Plan to Physics	Plan to Therapists by 8 am

Monday	Tuesday	Wednesday	Thursday	Friday
Start				

Home
Dosi

Daily Quality Check List

Add Change Delete Complete Skip Note

Filters
View: By Date
Date Range: All

Show All Incomplete Items Overdue Show Only Items Requested By Staff

Status
 Complete
 Incomplete
 All

Y	Due Date	Task	Responsible	Comment
12/28/2016	12/28/2016	Ready to Plan ^	Dosimetry MHR	
12/30/2016	12/30/2016	Ready to Plan (Re-plan/no c...	Dosimetry MHR	Complete task to send QCL to MD
12/30/2016	12/30/2016	Workflow Check -Contours [...]	Dosimetry MHR	Contours completed 3 business days before treatment. Y(Complete) N(Skip)
12/30/2016	12/30/2016	Ready to Plan ^	Dosimetry MHR	
12/28/2016	12/28/2016	Patient QA Request (Boost) [...]	Dosimetry MHR	Complete task to request QA, Skip if patient does not req QA measurements (D
12/28/2016	12/28/2016	VisionRT Export [Skip if NA] ^	Dosimetry MHR	Export Structures and Plan to "AlignRT"; Complete to notify PHY/RTT
12/28/2016	12/28/2016	Pre-Port for 3D SBRT Reque...	Dosimetry MHR	Complete task to request Pre-Port for 3D SBRT from Therapists
12/28/2016	12/28/2016	Mobius Export [Skip if NA] ^	Dosimetry MHR	Export Plan, Structures, CT, and Dose to Mobius; Complete to notify PHY
12/28/2016	12/28/2016	ExacTrac Export [Skip if NA] ^	Dosimetry MHR	Complete to notify RTT
12/28/2016	12/28/2016	Calypso Export [Skip if NA] ^	Dosimetry MHR	Create patient in Calypso; Complete to notify PHY/RTT
12/28/2016	12/28/2016	Update RX	Dosimetry MHR	Must match plan RX - energy, dose, fraction # and isodose
12/28/2016	12/28/2016	Import RTP	Dosimetry MHR	Fix doses, enter (if any) bolus thickness; Set CT image to "review not req"
12/28/2016	12/28/2016	Import DRR & set CT to "revi...	Dosimetry MHR	check box to display in field definition window
12/28/2016	12/28/2016	Dose Tracking	Dosimetry MHR	Check doses add up to Rx (inc cumulative dose for boosts)
12/28/2016	12/28/2016	Charge Capture	Dosimetry MHR	
12/28/2016	12/28/2016	Site Setup and create CBCT ...	Dosimetry MHR	Copy sim notes, enter shifts, verify iso position, approve
12/28/2016	12/28/2016	Import Plan Docs ^	Dosimetry MHR	import plan doc, assign to prescription(s) and approve
12/28/2016	12/28/2016	Export to RadCalc (with calc...	Dosimetry MHR	Export plan to RadCalc; Monaco- to file; Eclipse- verify calc point added

Daily email to
Attendings/Residents

Due/Over Due Contours - MHR (6 days before start)

Attending	MRN	Last Name	New Start App	Contours Due By	Due in (days)	Comments
MD1			1/10/2017	1/2/2017	-3	Complete to send QCL to Dosi to create treatment plan
MD2			1/11/2017	1/3/2017	0	Complete to send QCL to Dosi to create treatment plan
MD2			1/11/2017	1/3/2017	0	Complete to send QCL to Dosi to create treatment plan

Pending Contours - MHR (6 days before start)

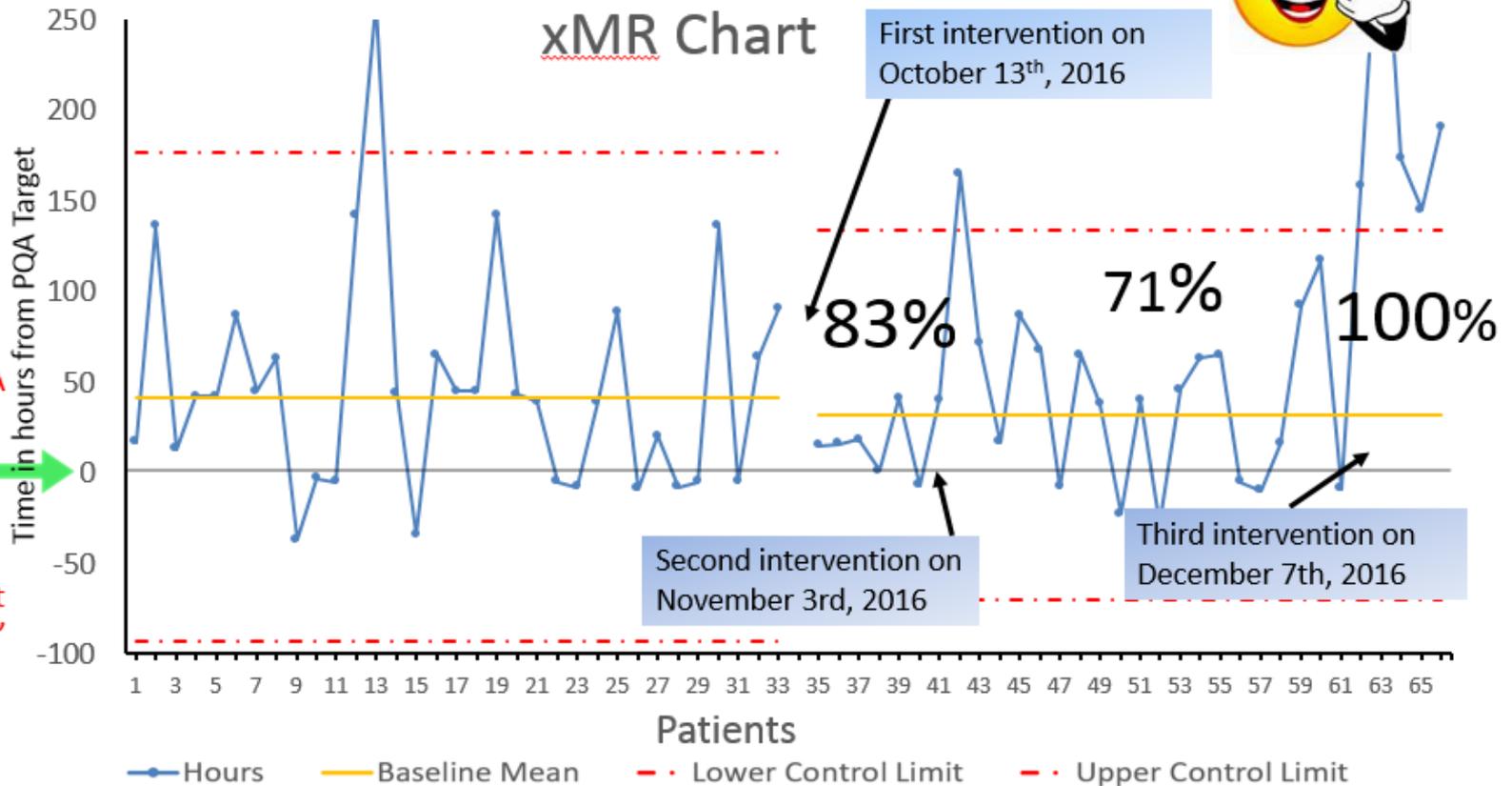
Attending	MRN	Last Name	New Start App	Contours Due By	Due in (days)	Comments
MD3			1/13/2017	1/5/2017	2	Complete to send QCL to Dosi to create treatment plan
MD4				TBD		Complete to send QCL to Dosi to create treatment plan
MD2			1/18/2017	1/10/2017	5	Complete to send QCL to Dosi to create treatment plan
MD2				TBD		Complete to send QCL to Dosi to create treatment plan
MD5			1/17/2017	1/9/2017	4	Complete to send QCL to Dosi to create treatment plan



Change Data

Post-Intervention Data

xMR Chart



Conclusions

- Our data suggests we have reached our goal, but we don't have sustainability yet. We are on our way to reaching our goal.
- Each intervention resulted in a positive change, but more interventions were required.
- We need to identify more steps to reach our goal for all providers and maintain it.

Next Steps/Plan for Sustainability

- Continue process and identify future interventions
- Run xMR chart for last pending PDSA
- Implement process to include all providers
- Hold quarterly meetings

Increasing On-Time Treatment Plan Delivery in Radiation Medicine

AIM: Our rate of on time treatment planning delivery is a dismal 62% for all providers and 68% for the two providers we are tracking. By January 2017, 90% of plans for those two providers will have final physics quality approvals completed by 8 am the day prior to the patient's start of treatment.

INTERVENTION:

- Recorded the time (in hours) from planning CT Simulation to treatment Start
- Recorded success rate of achieving PQA by 8am the business day prior to treatment start
- Created a cause-and-effect analysis via Ishikawa groupings
- Implemented visible flow chart and patient log with time points to assist providers with planning and scheduling
- Using the PDSA method we implemented a digital whiteboard tracking monitor and an alert system to notify providers of incomplete contours.

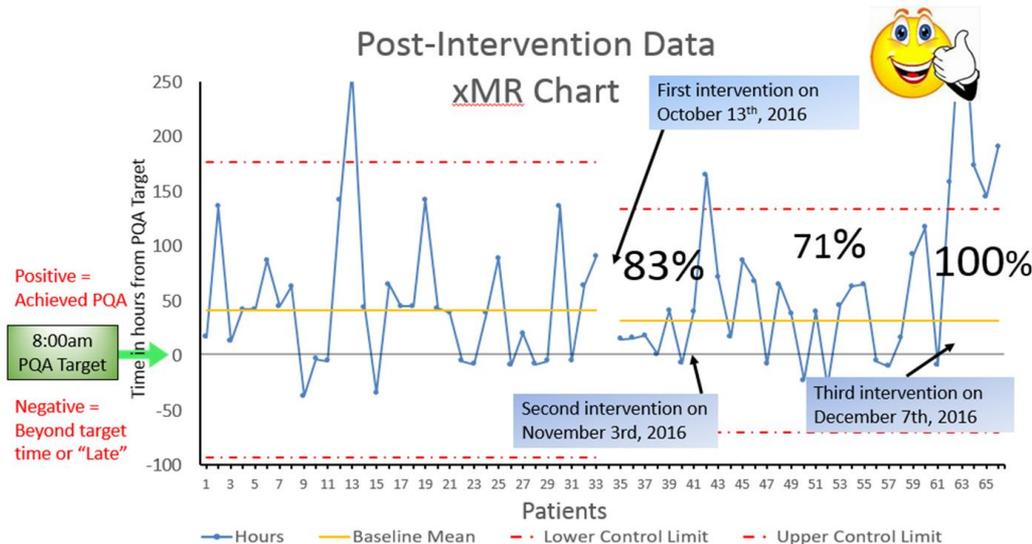
TEAM:

- Department of Radiation Medicine

PROJECT SPONSORS:

- Dr. Charles Thomas, MD
- Dr. Kevin Billingsley, MD
- Ellen Distefano

RESULTS:



CONCLUSIONS:

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Thank you

