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Enhancing Treatment Planning Workflow in Radiation Oncology.

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Background

The treatment planning process is the most impactful and complex aspect of radiation oncology care. Providing short turn around times from patient CT simulation to treatment plan QA, requires a level of strain and haste for multiple members of the treatment team. We evaluated 18 months of data to determine the percentage of Quality Assurance (QA) approvals of nonemergent complex plans (including 3D/IMRT/Arc/SBRT/SRS) that are not completed by 8:00a the day prior to a patient's first treatment appointment, and found that this occurred 62% of the time. We utilized the ASCO Quality Training Process (QTP) to brainstorm methods to enhance workflow, and create an action plan that would allow for small Plan-Do-Study-Act cycles to reach our ideal state of >90% On Time Treatment Plan Delivery.

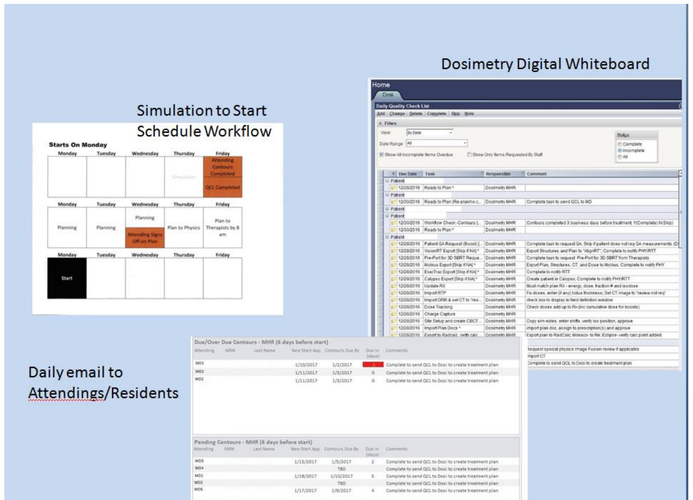
Aim Statement

Our rate of on time treatment planning delivery is an unacceptable 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.

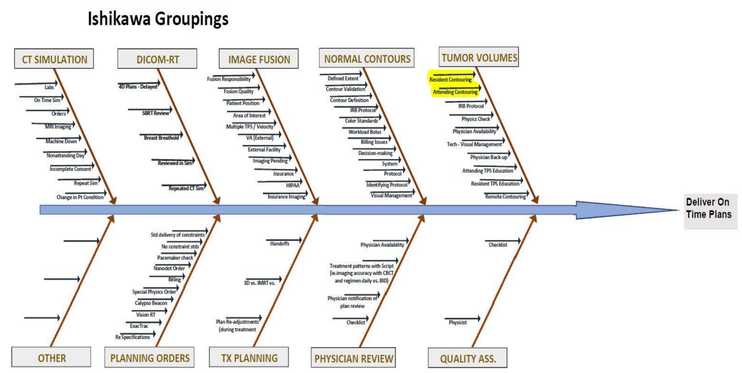
Materials and Method

We utilized LEAN tools from the ASCO QTP program (June 2016 cycle). We created an Ishikawa diagram to determine the areas of greatest potential. We subsequently developed a highly detailed flow chart of our work processes. Then we utilized Mosaiq scripts to establish baselines for our process measures

Materials Developed



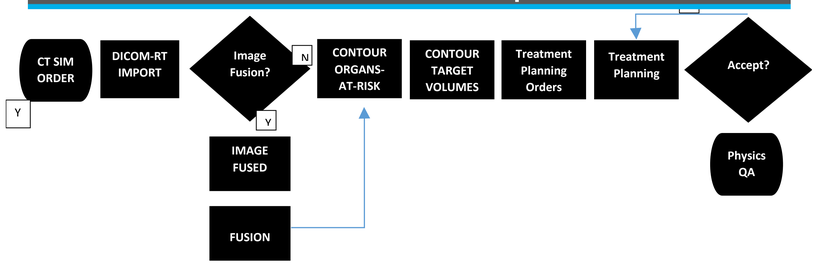
Cause and Effect Diagram



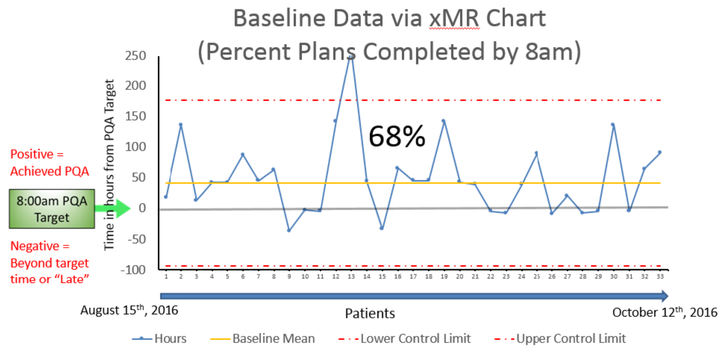
PDSA Cycle

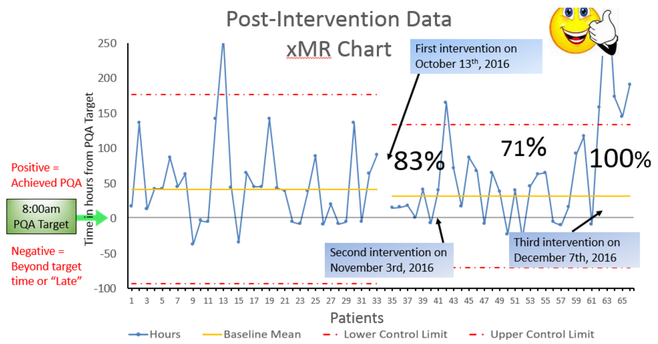
Date of PDSA Cycle	Description of Intervention	Results	Action Steps
October 1, 2016	Morning Hallway Whiteboard Huddle required commitment from all department divisions (subgroups)	Visual hallway Whiteboard didn't provide consistent understanding or knowledge of it's purpose and information wasn't disseminated	Presented the project to all members of the department.
October 13, 2016	Simulation contour schedule	Attendings 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.
December 7, 2016	Screen capture of digital dosimetry whiteboard email sent out daily to Attendings	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

Process Map



Baseline Data





Results

Using our Ishikawa diagram, the initial intervention was to generate target volume contours after the CT simulation. Our first measure was to visually manage the CT simulation process. We established a computer based quality control list (QCL) to enhance the communication process, and provided a "reminder" at the time of simulation of the target contour delivery date. After collection of data points, there was a significant improvement in on time delivery (now 89%, and approaching the ideal state), as illustrated by our Run Chart, and a coincident decrease in variability between providers and cases was noted in this cohort.

Conclusion

Our preliminary change effort is promising, but further data will enhance our findings. Our next steps are to collect an additional two weeks of data, and initiate another PDSA cycle with a new measure of automated reminders from the QCL system. In achieving our project goals and making it sustainable, we believe that we will be providing high quality, high value patient care, while enhancing the healthiness of the work environment for our staff.