Patient-Centric Improvement Project:

Streamlining Workflow Processes to Improve Efficiency in Ultrasound-Guided Procedures

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Background

In a collaborative effort between the Departments of Radiology and Nursing, a multidisciplinary group of front-line staff sought to identify existing inefficiencies in our ultrasound procedure practice from the patient's perspective.

Following the Six Sigma DMAIC (Define-Measure-Analyze-Improve-Control) methodology, the group set out to implement changes aimed at improving workflow processes to increase efficiency.

As a result of the initial analysis, three objectives were identified:

1. Unify all outpatient procedure workflows
2. Reduce the overall procedure lead time by 20%
3. Improve the morning on-time procedure start rate to 30%.

Define

Mayo Clinic Enterprise Standard Project Charter – Word Version

Project Name:	Charlton 2 US Procedure Project (Glom-orUS)		
Primary Executive Portfolio	Mayo Clinic in Rochester		
Primary Program	Radiology Specialty Council		
Governance Level	3 - Department/Division	Project Size	Small
Approved Stage	Execute		
Description (255 Character Limit)	The project will create a Value Stream Map of the Charlton 2 US procedure process. Using that current-state VSM, we will look to identify opportunities for eliminating process waste and improving efficiency.		
Primary Operating Objective	C2c: Standardize, improve effectiveness (outcomes, safety, service), and reduce cost - Service		
Secondary Operating Objective	C2b: Standardize, improve effectiveness (outcomes, safety, service), and reduce cost - Outcomes & Safety		

Approvals

Approval Type	Completed	Review Group/Review Person(s)
Approval to Initiate	02/04/2014	US Lead meeting
Approval to Execute	03/25/2014	Quality Oversight Committee
Choose an item.	mm/dd/yyyy	

Mayo Clinic Enterprise Project Management Standard Stakeholder's Analysis Template

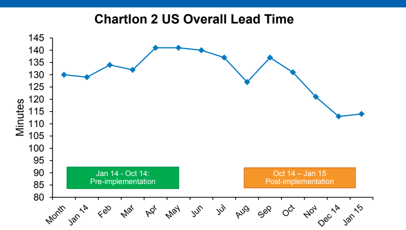
Stakeholders (can be Individuals / Groups / Departments)	ARCIVD Role	Key Interests & Issues	Assessment of Impact (H,M,L)	Current Status (advocate, supporter, neutral, critic, blocker)	Key Communication Points
Sonographers	A,R,C,I,D	Improved workflow, reduce Sonographer waiting time, meet capacity for high patient volumes	H	A,S	Communication about PDSA cycles, collection of data, prior to implementation of change(staff meetings, Ch Sonog/Nursing meetings)
Radiology Nurses	A,R,C,I,D	Improved workflow, reduce Nursing waiting time, standardizing patient assessments	H	A,S	Communication about PDSA cycles, collection of data, prior to implementation of change(staff meetings, Ch Sonog/Nursing meetings, newsletter)
Station 53 Nurses	A,R,C,I,D	Reducing pre-procedure time, standardizing patient assessments	M,H	A,S	Weekly newsletter, Unit practice committee meetings
Clinical Assistants- IA	A,R,C,I,D	Improved workflow; reduce pt waiting in Radiology; reduce number of phone calls needed	H	A,S	Monthly meetings, E-mail updates
Clinical Assistants- PSR	R, C, I, D	Staffing; workload	M	S	bi-monthly meetings; e-mail update

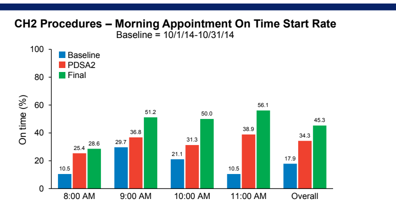
Define (continued)

Communication Plan: GLOM-orUS

Message	Purpose/ Objective	Vehicle/ Media	Sender	Responsible	Audience	Frequency	Data
Goals of the project Timeline Updates	Inform Seek input Update	CH US Lead Meeting	Samir Budimlic	Samir Budimlic	CH 2 US Lead/Managemet team	Monthly	5/7/2014 6/4/2014 11/6/2014 1/8/2014
Goals of the project Timeline Updates	Inform Seek input Update	Ultrasound Staff Meeting	Samir Budimlic/ Ryan karshen	Ultrasound	Sonographers	Monthly	5/2/2014 6/6/2014 9/5/2014 12/12/2014 2/6/2015
Goals of the project Timeline Updates	Inform Seek input Update	US Operation's group	Samir Budimlic/ Carrie Carlson/ Dr. Knudsen	Samir Budimlic/ Carrie Carlson	US Operation's group	Monthly	5/14/2014 8/13/2014 10/22/2014
Status Document	Update	Project Management Clarity System	Samir	Samir	Instilution Department Leadership	Monthly	6/12/2014 7/3/2014 8/11/2014 9/30/14 10/30/2014 12/30/2014 2/2/2015
Goals of the project Timeline Updates	Inform Seek input Update	E-mail	DeAnn Kelzer	CA Group	CA's	As Needed	11/4/2014 emails\DeskFW ATTENTION Charlton 2 ultrasound Procedures Quality Project - PDSA 1.3 .msg 12/12/2014 emails\PSDA 2.1\ deskPDSA2.1.msg PDSA permanent change 1/9/2015 PDSA 3.0 1/16/2015

Measure

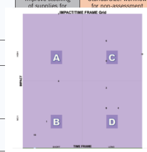




Analyze

Affinity Diagram

Pre-Procedure (Assessment/Labs/ hx Review-"scoop")	Consent	Exam	Scheduling	Staff Roles	Process/Worfklow Improvements	Standardization
Procedure RN helps with assesment of first case of the day	Electronically signed consent (x2)	Reduce paper/forms in exam room	Adjust time slots for specific procedures (I/O)	Sonog: could pull catheter when procedure is done(x3)	Assign a dedicated "inpatient" exam room	Standarize: process for timeout pause
Perform Rad RN assessment on the pt's floor	Consent signed at the pt. floor before coming to US	Have Rad come into room earlier when Resident is doing the procedure	Create dedicated inpatient appointment slots. Open and close as appropriate.	Sonog: set up trays	Perform exams based on appt time, not check-in time	Standarize: process for running a 3rd procedure room when needed
Radiologist "scoops" all Aspiration/ Drain/ Mass bx patients before appt		When we are busy and behind, have staff perform the procedure	Don't assign specific appointment times to inpatients.		Improve stocking of supplies for	Standardize: workflow for non-assessment
Designate a Radiologist to perform the "scoop", regardless of who is doing the case		Don't do general scans in a procedure room				
Check pt;s labs the night before when possible		Re-organize the nurse procedure cart for easier access to supplies: i.e. shelves/drawers organized per procedure				
Adopt the "Pink Sheet" practice to Ch2		Use the bigger diameter catheter for large volume paras				



Improve

PDSA1: Station 53 workflow: Pt check-in at Ch2 desk

Objective	Testing impact of having outpatient renal transplant, native renal, liver and pancreas transplant bx patients check in directly at Charlton 2 Ultrasound instead of Station 53
Questions to answer	1. Will eliminating pre-procedure Station 53 steps by having pt's check-in directly at Ch2 US lead to a 20% improvement in total lead time? **Yes** 2. Will eliminating pre-procedure Station 53 introduce obstacles to a safe patient process? **No**

PDSA 2.1 – 8AM On-Time Start Rate

Objective	Evaluate if the following steps will improve total lead time for the 8:00AM slots and the remaining AM procedure slots and the impact it will have on the on-time start rate: • 7:30 Procedure RN performs the assessment of the first 8:00 AM outpatient procedure in the room • Seed Sonographer starts the first 8 AM pt Resident obtains consent and marks the site when appropriate • Radiologist performs the 8:00 AM procedure before reading on-call cases
Questions to answer	1. Is changing role expectations for RN's, Sonographers and Radiologist at the beginning of the day going to improve the on-time start rate for the two 8:00 AM time slots? **Yes** 2. What **is the impact on the remaining AM procedure slots?** Improvement in total lead time and on-time start rate was noted based on data collected What is the impact on the total lead time? **Improved**

PDSA 3.0 – Third Procedure Room

Objective	Utilizing Procedural Assistants to run an additional procedure room to reduce patient waiting times and improve total lead time
Questions to answer	1. Will the ability to run a third procedure room whenever volumes are high help improve the total lead time? 2. Will running a third procedure room improve the on–time start rate significantly? 3. What will the impact be on the efficiency of the other two procedure rooms? 4. What will be the impact of Sonographer availability to run a third room?

Control

- Monthly metric gathering by project manager to assure sustained efficiency gains
- Create a staggered procedure schedule to minimize patient delays

Lessons learned

1. A thorough, well planned and organized approach to the "Define" and "Analyze" phases is essential to the project success.
2. Defining metrics, targets and documenting data collection methods are instrumental.
3. Managing change can be very challenging and can potentially derail a project:
   a. Anticipating barriers and proactively responding to concerns
   b. Counterbalance measures
   c. Effective communication
   d. Problem solving and trial redesign was of paramount importance to maintain buy-in in the project by all stakeholders involved
4. Identifying and focusing on the change that can add significant value to the stated objectives is paramount.
5. Avoid focusing on time-consuming low value-added items

Project Closure Report

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Conclusions

The 11-month, interdepartmental, collaborative, quality improvement effort using the DMAIC framework was successful in improving the department's efficiency by reducing unnecessary redundancies, decreasing delays and streamlining workflow processes. We succeeded in meeting our objectives of unifying the outpatient procedure workflows, reducing the total lead time for all procedures and improving the morning procedure on-time start rate.