Increasing the Value of Radiology Ultrasound Exams

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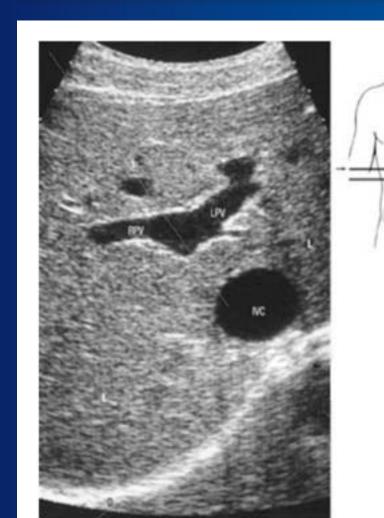**Mayo Clinic, Rochester, MN**

DEFINE ➜ MEASURE ➜ ANALYZE ➜ IMPROVE ➜ CONTROL

Ultrasound Quality Improvement

US Exam 431
Abdomen Complete
With Doppler Limited

Improve & Demonstrate Quality, Safety and Value

Charter

Mayo Clinic Preliminary Proposal

Project Name: Increasing value for an Ultrasound high volume exam on Gonda 3 by decreasing cost and gaining efficiency

Brief Project Description (*What will this project do?*): Reduce the cost of performing 431 by 10% by December 31, 2010. Responsible resource management is part of the Radiology 2009 Strategic plan. The Ultrasound Division, chaired by Matt Callstrom M.D., has identified a high volume exam, US431 (US Abdomen Complete w Doppler Limited), to be evaluated for cost reduction/savings in performing the exam. Reducing cost and improving efficiency for the exam chosen is the goal of this project.

Business Need (*Problem or Opportunity Statement / Background of Need*)

The high volume Ultrasound (US) exam US431. US Abdomen Complete w Doppler Limited, accounts for 9% of the Gonda 3 Ultrasound practice. Assessing the individual components of the exam and the cost of each would need to be measured for cost breakdown. There may be redundancy or inefficiency built into the exam which could be eliminated. There may be a wide variation in cost of performance due to the fact there are multiple staff rotating through the area that may have individualized processes. Research has shown individualization of practices produces variation in time and the cost of performing the exam. Number of exams ordered, completed, the efficiency of the process, the quality of the exam, and the patient experience are interrelated components of the resulting cost of the exam. In response to 2009 Strategic Priorities to improve and demonstrate quality, safety, service, and value the proponents of the US project team are hypothesizing that by evaluating the components of cost involved in a complete exam and improving efficiency in the identified high volume exams, a savings to the department for performing the exams will hopefully be realized. The counter balance would be to maintain the exam quality, outcomes and value.

Project Value– Quantitative and Qualitative Metrics of Success

Objective	Metrics/Measurements
The cost to the department of performing US431 exam on Gonda 3 will be reduced by 10%* by years end (2010)	The baseline cost will be established as part of the project
* 10% measurement chosen from the Department of Radiology Strategic Plan and Deliverables to Improve and Demonstrate Quality, Safety, Service, and Value.	Cost for performing identified exam: pre & post project, will be reduced by 10%. Patient satisfaction will not decrease.

Project Scope (*elements that are in & out of scope*)

IN SCOPE: Gonda 3 US outpatient practice, high volume exam, #431 US Abdomen Complete w Doppler Limited
OUT OF SCOPE: High volume exams in other US locations. Other exams not identified in this project.

Team Members

M. Callstrom, M.D., Ph.D.
C. Carlson, R.T.R., R.D.M.S.
W. Gustafson, R.V.T., R.D.M.S.
H. Hatz, R.V.T., R.D.M.S.
K. Reinsvold

K. Sellner, R.N.
S. Staffon
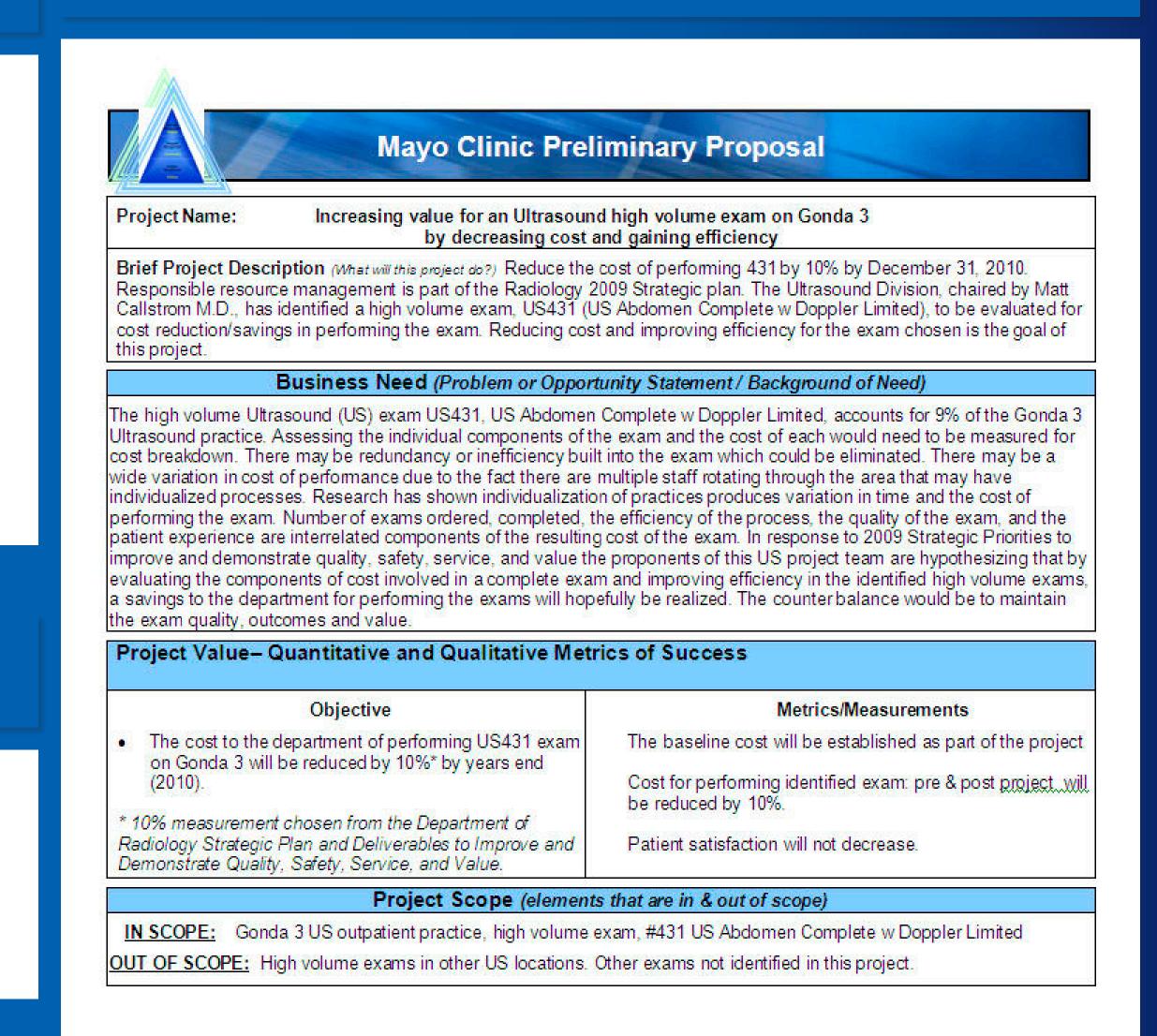J. Taubel, R.T.R., Q.M.
D. Wall, M.D.
J. Woley, R.V.T., R.D.M.S.

Communication Plan

US Gonda 3 Cost Reduction Quality Improvement Team

Communication plan:

The Gonda 3 Cost Reduction Project for High Volume Exam, US431, Abdomen Complete with Limited Doppler.

- This project is about optimizing efficiency and quality for the selected high volume exam, US 431.
- It is important because it aligns with institutional and departmental strategic initiatives to achieve responsible resource management.
- We would like to decrease the performance cost of the exam by 10%, without affecting patient satisfaction or the quality of the exam.
- We would appreciate your constructive feedback as we move towards our goal. We ask your support of this project through your patience with practice changes as we try new ideas.

Drs. M. Callstrom, D. Wall, J.Friese, N. Hangiandreou, and J. Taubel, C. Carlson, W. Gustafson, H. Hatz, J. Wolery, K. Reinsvold, S. Staffon, and K. Sellner
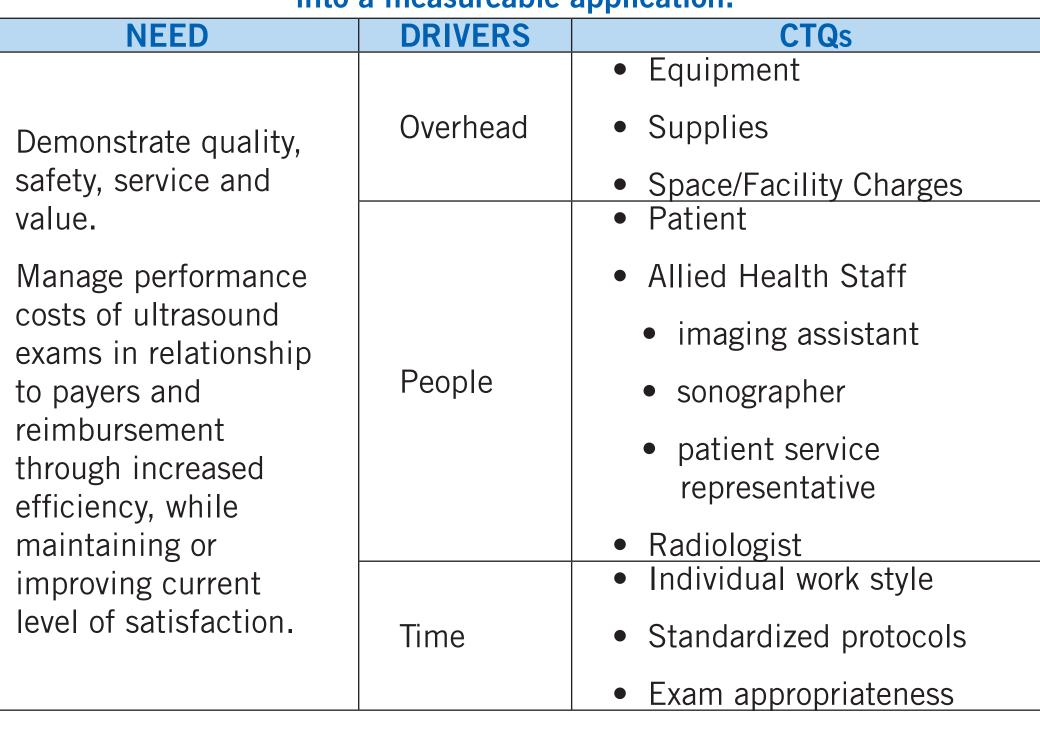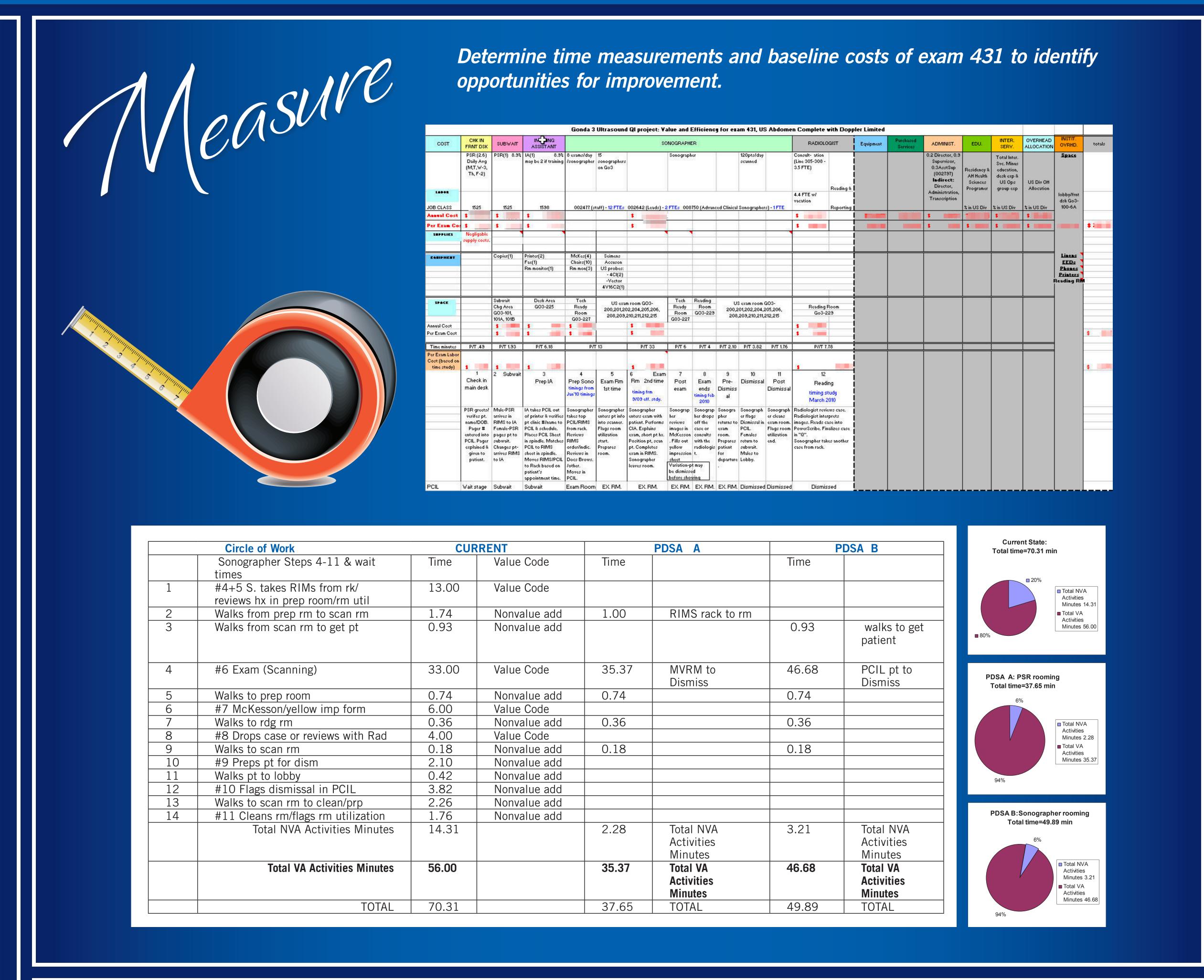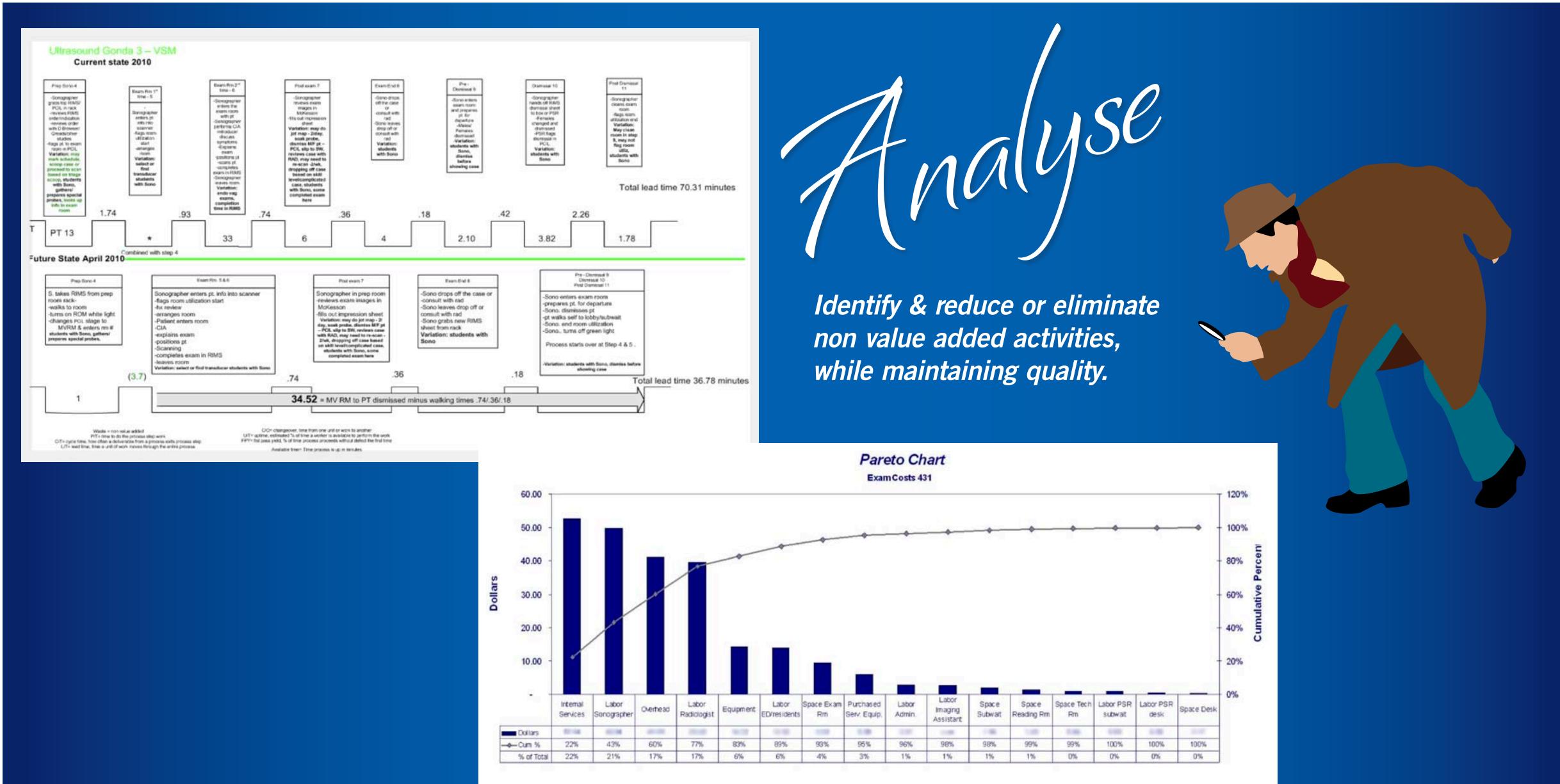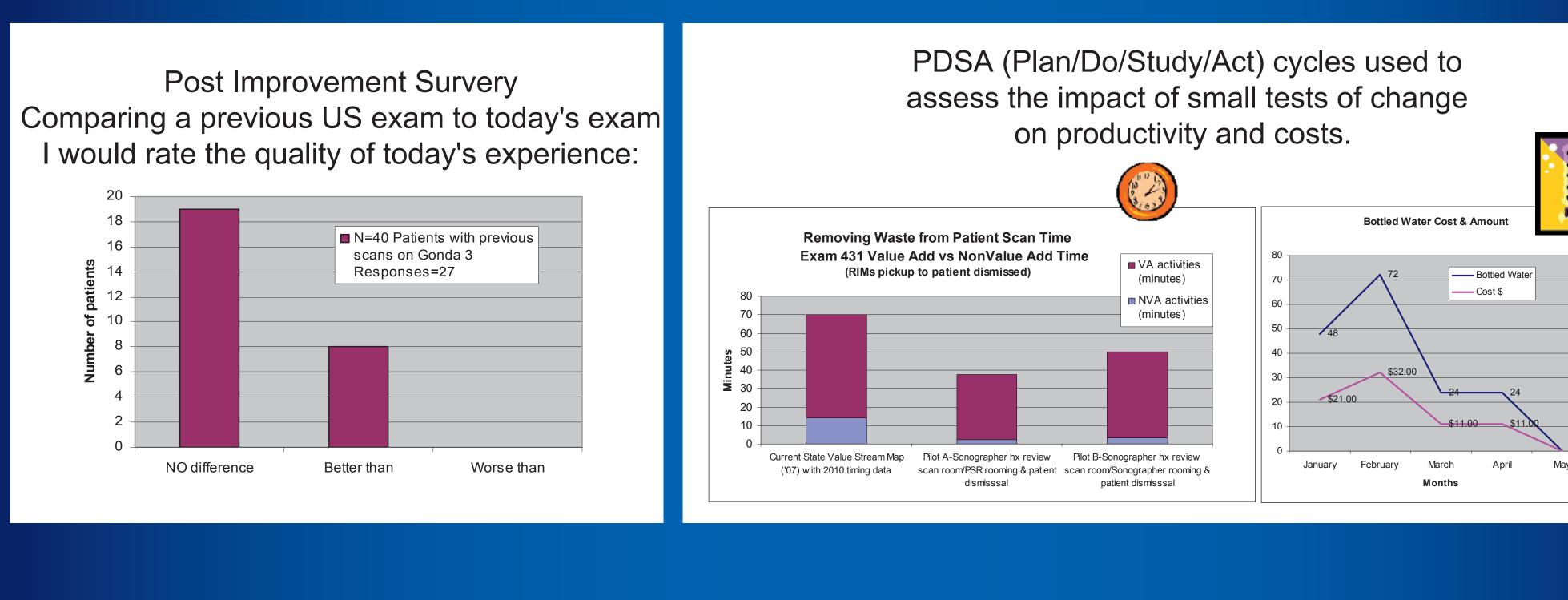
CTQ (Critical to Quality) TREE:
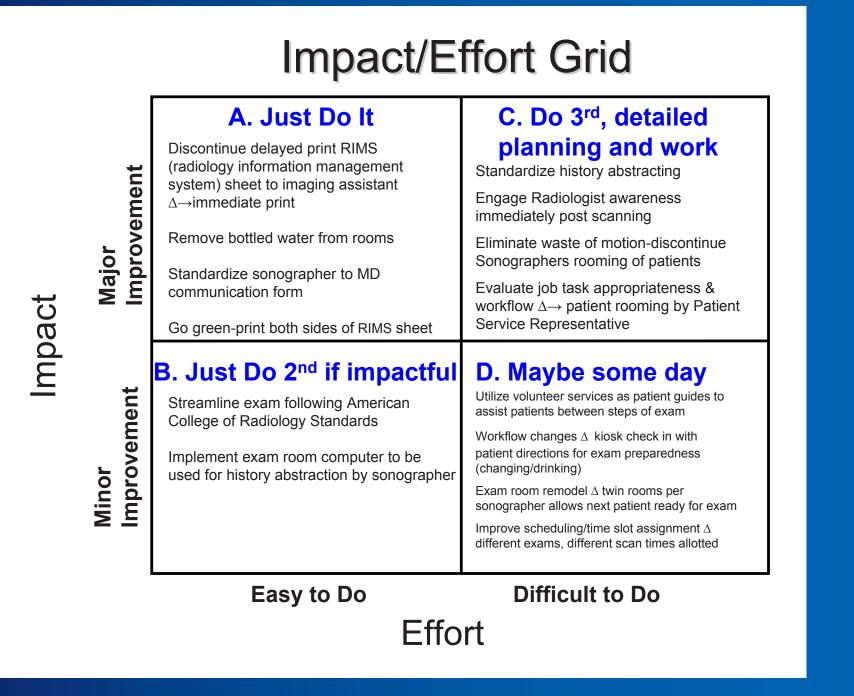
Translates the voice of the customer (VOC) language into a measureable application.

NEED	DRIVERS	CTQs
Demonstrate quality, safety, service and value. Manage performance costs of ultrasound exams in relationship to payers and reimbursement through increased efficiency, while maintaining or improving current level of satisfaction.	Overhead	• Equipment • Supplies • Space/Facility Charges • Patient

	People	• Allied Health Staff
		  • imaging assistant
		  • sonographer
		  • patient service representative
		• Radiologist

	Time	• Individual work style • Standardized protocols • Exam appropriateness

Define
What, By How Much, By Where

MEASURE

Determine time measurements and baseline costs of exam 431 to identify opportunities for improvement.

Circle of Work

Circle of Work	CURRENT Time	Value Code	PDSA A Time		PDSA B Time	
	Sonographer Steps 4-11 & wait times					
1	#4+5 S. takes RIMs from rk/ reviews hx in prep room/rm util	13.00	Value Code			
2	Walks from prep rm to scan rm	1.74	Nonvalue add	1.00	RIMS rack to rm	
3	Walks from scan rm to get pt	0.93	Nonvalue add			0.93 walks to get patient
4	#6 Exam (Scanning)	33.00	Value Code	35.37	MVRM to Dismiss	46.68 PCIL pt to Dismiss
5	Walks to prep room	0.74	Nonvalue add	0.74		0.74
6	#7 McKesson/yellow imp form	6.00	Value Code			
7	Walks to rdg rm	0.36	Nonvalue add	0.36		0.36
8	#8 Drops case or reviews with Rad	4.00	Value Code			
9	Walks to scan rm	0.18	Nonvalue add	0.18		0.18
10	#9 Preps pt for dism	2.10	Nonvalue add			
11	Walks pt to lobby	0.42	Nonvalue add			
12	#10 Flags dismissal in PCIL	3.82	Nonvalue add			
13	Walks to scan rm to clean/prp	2.26	Nonvalue add			
14	#11 Flags rm/flags rm utilization	1.76	Nonvalue add			
	Total NVA Activities Minutes	14.31		2.28	Total NVA Activities Minutes	3.21 Total NVA Activities Minutes
	Total VA Activities Minutes	56.00		35.37	Total VA Activities Minutes	46.68 Total VA Activities Minutes
	TOTAL	70.31		37.65	TOTAL	49.89 TOTAL

Current State: Total time=70.31 min
PDSA A: PSR rooming Total time=37.65 min
PDSA B:Sonographer rooming Total time=49.89 min

Analyse
Identify & reduce or eliminate non value added activities, while maintaining quality.

Pareto Chart — ExamCosts 431

ANALYZE

Post Improvement Survery

Comparing a previous US exam to today's exam I would rate the quality of today's experience:

N=40 Patients with previous scans on Gonda 3
Responses=27

- NO difference
- Better than
- Worse than

PDSA (Plan/Do/Study/Act) cycles used to assess the impact of small tests of change on productivity and costs.

Removing Waste from Patient Scan Time
Exam 431 Value Add vs NonValue Add Time (RIMs pickup to patient dismissed)
Bottled Water Cost & Amount

Impact/Effort Grid

	Easy to Do	Difficult to Do
Major Improvement	**A. Just Do It**	**C. Do 3rd, detailed planning and work**
Minor Improvement	**B. Just Do 2nd if impactful**	**D. Maybe some day**

Effort

Improve
What is the customer willing to pay for?

IMPROVE / CONTROL

US Operations – Patient Appointment Access

July 2011

Days out (no.) — US — Institutional Directed Standard

Average Days Out by Month — US

Gains identified & realized. Maintain and sustain.

Current 431		Future 431 (PDSA A)
Cost=$		Cost=$ (Pilot A)
Exam 431 current timing=70.31 minutes		Exam 431 Pilot A timing=37.65 minutes

PSRs rooming patients & Sonographers history review in scan room
- Supply expense reduction
- Streamlined protocol
- Improved communication tool
- Decreasing exam time resulted in the ability to add more exams per day
- Value added for patients who will spend less time in Department
- 10% Reduction in department expenses to perform Exam 431
- Δ Department Savings $ per exam or new target cost=$

Control