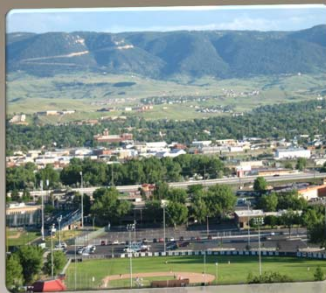


Lean Successes in Patient Registration, PSC Wait Time and Lab Billing

6th Annual Lab Quality Confab and
Process Improvement Institute
November 7, 2012
Chris Lorenzen, FACHE, LSSBB

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- 501(c)3 community hospital
- 191 Beds
- Level II Trauma Center
- Life Flight
- Heart and Neuroscience programs
- Large geographic market

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Geography and population create many challenges.

- 568,000 people
- 97,000 sq mi
- 5.8 persons per sq mi
- 17 of 26 community hospitals are designated Critical Access Hospitals



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Background

The Outreach Laboratory is a relatively new business (2009) that was born of dissatisfaction among physician offices with other laboratory providers. They wanted local service.

The Rhodes Group was asked to help us with a business plan that addressed the challenge of integrating a competitive outpatient laboratory business with that of a stable inpatient service. Physicians wanted:

- Competitive laboratory fees
- Connectivity to EMR systems
- Integration with other WMC data

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Key Features of WMC Lab

The outreach feasibility study found strong support for an outreach business. The key was whether or not the hospital could effectively compete on price/efficiency.

Positive findings included:

- High quality service provider
- Strong community support
- Strong physician support
- No current outreach program
- Excellent quality laboratory
- Good growth potential
- Unique geographical placement



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Wyoming Medical Center Laboratory Outreach Assessment, 2008

Challenges

- Hospital-owned practices were already being served by their own laboratory that would compete with an outreach strategy.
- The majority of the laboratory staff had between 10 and 20 years of employment with WMC in a very stable inpatient environment.
- Space constraints at the main hospital initiated discussion of a comprehensive pre-admission area to include Prehospitalization, Pulmonary Function Testing, OB Prehospitalization, Cardiac Surgery Clinic and Diabetes Management.
- The reliance on an inpatient registration & billing system would cause significant delays for patients.

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First, admit you have a problem.

The complexity of patient flow with so many different departments operating in the suite has contributed to significant wait times for patients. Improvements weren't getting the results we needed and staff conflict escalated. The following issues were identified:

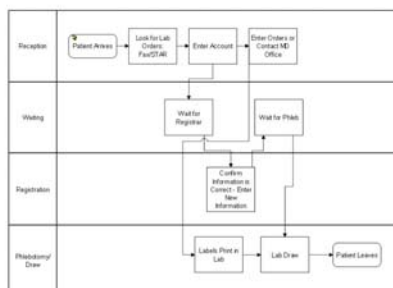
- Lack of shared purpose
- Conflicting service types and goals
- Staffing patterns didn't match demand

Lean improvement processes were used at first. Later, Six Sigma methods were used to fine tune our strategy.

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Define

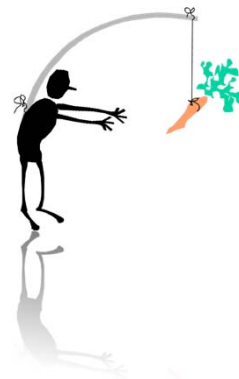


- **Problem:** Patient turnaround times are averaging 26 minutes for a lab draw compared to the customer expectation of 15 to 20 minutes.
- **Scope:** Receipt of MD order through patient blood draw.

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Definition of Goals

- Define and stabilize process for the outreach lab and prehospitalization. Assist all services in meeting their customer needs.
- Establish daily metrics to ensure quality is upheld every day.
- Decrease the lead time for Outreach Lab patients from 26 to 15 mins or by 73%.



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Measure

- Patient flow data is tracked for every patient. The key metrics include the initial arrival time, time with the registrar, time with the lab, and total visit time.
- When a patient enters the clinic, a Patient Tracking Form is completed and time-stamped. At each stage, staff will record their beginning and end times on the form. The data is then entered into a database by registration personnel.
- The data collection process was tested for its effectiveness. 94% of the measurement (time) is attributable to the process and the balance attributed to the measurement system. The measurement system was found to be acceptable.

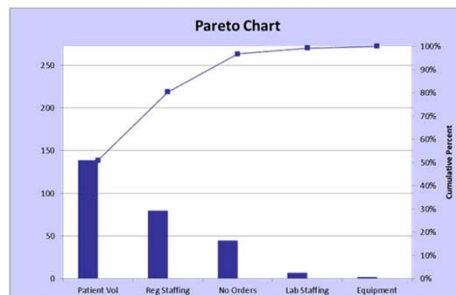
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Patient Tracking Form

WMC Pre-Admission Testing and Outpatient Services									
Name					Arrival Time				
DOB					Date			Appt Time	
Account #					MR #				
<input type="checkbox"/> Established Pt <input type="checkbox"/> New Pt <input type="checkbox"/> Phone Call <input type="checkbox"/> PreReg Verified <input type="checkbox"/> PreReg Not/Verified <input type="checkbox"/> Unknown					<input type="checkbox"/> Purple -- <input type="checkbox"/> Yellow -Preadmitted / something Missing <input type="checkbox"/> Red - Schedule/Preadmitted/NOT verified				
Patient Access			Start		End			Initials	
Prehosp			Start		End			Initials	
Lab			Start		End			Initials	
CPL			Start		End			Initials	
PFT			Start		End			Initials	
Other			Start		End			Initials	
Delay Reason			Prime		2nd			3rd	
N/A			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
No Orders			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
Delay due to Pt Volume			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
Staffing Issues in PAS			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
Staffing Issues in PHT			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
No Room Avail in PHT			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
No Room Avail in Lab			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
EKG in use			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
STAR Downtime			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
Equipment malfunction			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
Z - Other delay/reason			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	
Other Comments									

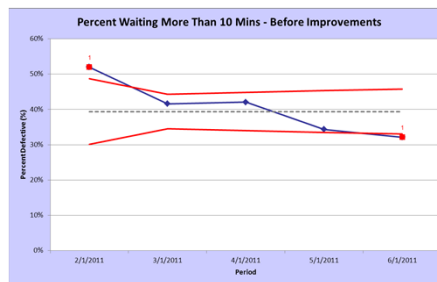
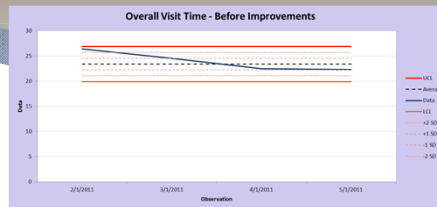
Measure

Reasons for delays pointed us to our biggest areas of opportunity. Although orders are a common frustration, it was apparent that if we focused on patient flow, we could see our service from the customer's perspective much more clearly.



Measure

- Baseline: March 2011
- Process Yield was found to be 22% using a standard visit time of 15 minutes. i.e customer expectations were only being met for 22% of patients.
- 42% of patients were waiting more than 10 minutes to begin their lab draw.



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Measure

Two other studies evaluated the standard draw time for phlebotomists:

- A review of historical draw data revealed an average draw time of 8.4 mins. A subsequent study of 15 patients revealed an average draw time of 7.4 mins.
- The two studies validated that a fifteen minute standard was possible and that initial arrival and registrar time could not exceed 8 mins in total.

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Analyze

Significant variables from the patient flow data included:

- Volume Data: Admit Type of Already in System ($r^2=99\%$) and Delay Codes
- Time Data: Lab, Arrival Time ($r^2=88\%$) and Registration Time. Delays including Patient Volume Delay and No Orders.



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Analyze

- Using experimental design, three factors were chosen at two levels that could explain 97% of the variation in overall visit times.
- The experiment focused on:
 - Lab Time - either <15 mins or >15mins
 - Admit Type - either the patient is already in the system or they presented as a new patient with no information present in the registration system
 - Delay Status – either the patient waited a minimum of 10 mins or incurred no wait

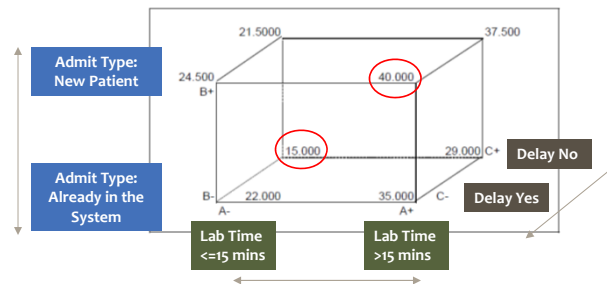
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Design of Experiments

The optimal overall visit time is 15 minutes based on a patient visit under 15 minutes, no delay and their information is already in the system (returning customer or pre-registered).

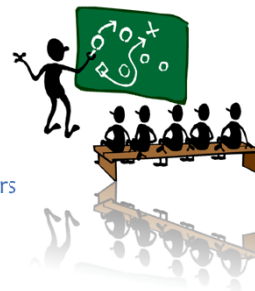
Worst case visit time is 40 mins with just the opposite conditions occurring.

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Improve

- 4-day kaizen event. The team developed a future state map that incorporated their changes, piloted the new process for part of a day, then completed an action plan and standard work for the new process.
- The team identified the following priority improvement areas and potential solutions:
 - Orders complete, accurate, and available
 - Registration ready on patient arrival (or prior)
 - Efficient reception/registration process
 - Match staffing patterns to demand
 - Set up express service for pre-admissions customers



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New Process Goals

Orders Complete, Accurate, and Available:

- Educate MD office staff to send orders immediately to lab and to provide standardized referral information/facesheet. Track missing orders.
- Process orders immediately once received. Don't wait for the patient to show.
- Match test codes in physician practice EMR to same Laboratory codes.

Registration Ready on Patient Arrival:

- Reduce required registration information to bare minimum and post at each workstation.
- Call new patients to complete registration over telephone prior to their arrival. Offer online registration.

New Process Goals

Efficient Reception/Registration Process

- Cross-train reception staff to register patients and avoid waiting for registrar. Only new patients see registrar.
- Place laboratory-trained staff at reception to manage orders.
- Identify critical patient volume decision points (Little's Law):
 - 1 patient waiting is signal for action
 - 2 patients waiting – Alert sent out via IM
 - 4 patients waiting and a.m. schedule – Send for help from inpatient lab

Queues and Takt Time

1) Draw station requirements to meet Takt Time:

- 15 min. overall visit time goal and 8 patients per hour on average with 11 per hour in the morning
 $.25 \text{ hours} = \text{pts in process} / 8 \text{ pts per hour}$

2 draw stations required increasing to 3 during the morning hours

2) Waiting room:

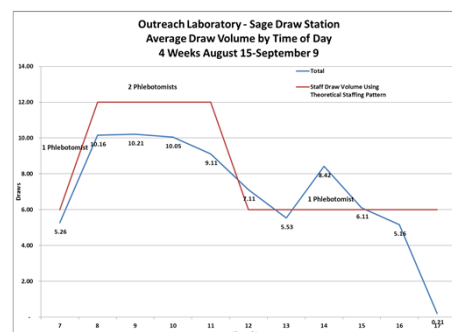
- 5 minute goal with the same throughput volume
 $.08 \text{ hours} = \text{pts in process} / 8 \text{ pts per hour}$
- 1 patient in waiting room at any time of the day

$$\text{Cycle Time} = \frac{\text{Items-in-Process}}{\text{Throughput Rate}}$$

New Process Goals

Match Staffing Patterns to Demand

- Set performance standards
- Extend business hours & stagger shifts
- Change from 12-hour shifts to 10-hour shifts
- Account for walk-ins & peak volumes
- Cross-train staff
- Move therapeutic phlebotomy appointments to the afternoon



Lab Performance Standards

Takt Time:

- Currently 11.5 mins per draw with 2 phlebotomists. Each phlebotomist is expected to do 5 to 6 draws per hour using a daily average.
- Increases to 9.7 mins per draw with 2 phlebotomists during the busy morning hours. Each phlebotomist is expected to complete 6 to 7 draws per hour.
- Phlebotomists will run from 80% to 98% of capacity during the day however it averages out to a reasonable productivity level that staff can support.

Registration Performance Standards

- No wait to see registrar. 2 to 3 patients in waiting room – alert IM sent out.
- Arrival to completion of registration no longer than 5 mins.
- Orders entered when received. Issues addressed immediately.
- Patients pre-registered 95% or more of the time.



Other Considerations

Biggest challenge: Trying to make inpatient billing fit outpatient needs.

- FAST front-end registration system
- Outside billing company

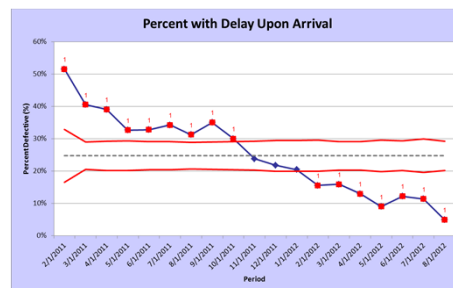
Space – 5S Draw Station. Increased space by 33% and 3rd chair possible.



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Improve

- Process Yield doubled to 43% at 15 mins and 67% at 20 mins. Although customer requirements are not being met, this is a significant improvement and customer complaints have decreased substantially. Staff are also more satisfied with the new process.
- Median turnaround time went from 22 mins to 15 mins.
- Patients waiting longer than 10 minutes to begin their blood draw have dropped from 42% to 13%.
- Registration goal is 5 mins and currently at 10 mins. More opportunity exists.



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Further Improvement

- Hold daily huddles with registration staff to address problems, perceived challenges for the day, status of improvement efforts, and daily metrics review. Post daily metrics.
- Set a goal to reach 90% yield following the implementation of FAST and the new billing service.
- Explore other modules in the FAST system that can enhance online orders and registration. Explore FAST kiosk check-in to address privacy concerns.
- Set up measurement system to identify issues with patients showing up with no orders.
- Address phlebotomist turnover including market pay rates, flexible shifts, etc.

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Sustainability

“We were invested in our own goals and that limited our ability to perform well.”
Kim Howell, Registration

“We had to think of ourselves as one department and not individual departments.”
Deb Whitaker, Lab



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