

A Case in Lean Principles

Lakewood Health System (LHS) An Experiential Case in Lean Principles

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TQM versus Lean

TQM

- **Process examined at each step the employee did something.**
- **Can the work be made more efficient**
- **How can we work smarter – not harder**
- **Evaluate**
 - How can we be more efficient?
 - How can we eliminate wasteful work?
- **Main focus remained on continuing all steps and work process, but telling/teaching the employee to do them more efficiently.**

TQM versus Lean

Lean

- Examines the time/space between each step.
- Asks if each step is necessary.
- If it is necessary, can a part or all be automated?
- Evaluates
 - For potential elimination of waste.
 - For potential efficiencies.
 - Looks to eliminate re-work steps..

Main Focus is on examining the process from a patient stand point.

Will the patient be willing to pay for this?

Similar Goals

While the end goal may be similar, the methods used are not.

- The Lean Process doesn't tell a nurse how to do an IV start
- It will streamline the process for completing the IV Start (such as equipment location, ordering solutions, and documentation of the IV Start).
- In many ways TQM was “done” to the employee, where as Lean encourages the employees to create the systems needed to get the work done.
- After all, who knows better how to get the job done, than the person who is trying to get the job done?

Parts of Lean

1. 5S
2. Elimination of Waste – 7 types of Muda
3. Current State Maps
4. Future State Maps
5. Kaizen Events

5 S

Sort (dispose)

Straighten (arrange)

Sweep (clean)

Schedule (system methodology)

Sustain (Disciplined Culture)

Wastes

7 Types

1. Defects
2. Over Production
3. Waiting
4. Not Utilizing Employees Ideas
5. Transportation
6. Inventories
7. Motion
8. Extra Processing

Acronym = **DOWNTIME**

Current State Map

Purpose

- Assists to see the flow of the process by all parties involved, from the customer's aspect.
- Helps all team members to understand how people, material, and information flow (or don't flow) through the process.
- Demonstrates the metrics (measures) for process time, wait time, first time quality check for each step.
- Highlights problems in the way things work now – reveals waste.
- Creates a blueprint for improvement in the future state.

Metrics for the Current State Map

- **Process Time (P/T)**
 - is the time to conduct the work of the process step.
- **Wait Time (W/T)**
 - This can be during the process step and is considered when the process has begun but is delayed.
 - Also can be between process steps, such as when delays after one process step but before the next can begin.
- **Lead Time (L/T) Process time + Wait time**
 - this implies the total time from a customer perspective.
- **First Time Quality (% of time complete & accurate)**
 - How often the task can be done completely and accurately the first time it is worked on.
- **Others?**
 - Depending on the project, there may be number of staff or costs that could be tracked along the process the same way.

Future State Maps

These are a current state map with the new steps put on it, the eliminated steps removed.

This is usually used to document and to test a new process.

Kaizen Events

Japanese word that means improvement.

Also known as a deliberate application of common sense.

The best knowledge resides with the people who actually perform the work.

Generally a week long event with a cross functional staff that is composed of from 8 to 12 people. Usually staff and supervisory personnel.

Kaizen Events vs. LHS teams

Large Facilities – have Kaizen Events

1. 5 days in length – All are expected to attend for the 5 full days
2. Day 1 – Learn about Lean and perhaps do the Current State map
3. Day 2 – Complete the Current State Map and Look at Data
4. Day 3 – Draw Future State Map
5. Day 4 – Create Implementation/Education Plan
6. Day 5 – Educate all staff involved
7. The following Monday - Implement

Kaizen Events vs LHS Teams

Small Facilities can't afford to close one person departments for 5 full days!

We created Teams

- 1. Initial meeting is a minimum of 2 hours. Describe Lean, discuss the current mapping process for 1 hour. Second hour begins mapping.**
- 2. Meet the next week – 2 hours. Complete the current state map and discuss data collection methods and what data to collect.**
- 3. Meet the next week – Make data collection assignments.**
- 4. Meet in 2 weeks – Review data (previously supplied to the facilitator for preparation) – work on solutions.**
- 5. Meet in 2 weeks – continue work on solutions – prepare for implementation.**
- 6. Meet in 2 weeks – complete preparation for implementation.**
- 7. Education of staff for implementation.**

Review some tools and the processes we used at LHS

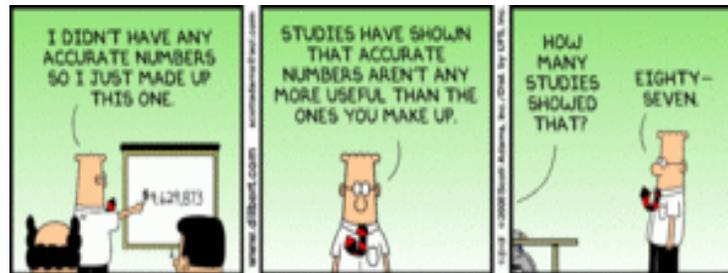
Outpatient Scheduling Process

1. SIPOC
2. Current State Map
3. Data/Metrics
4. Outcome
5. VERY FAST PROJECT

Days in Accounts Receivable

1. SIPOC
2. Current State Maps (many, many, many)
3. Scope creep
4. Data/Metrics
5. Review of the 4 group solutions.
6. Very Long Process

Data is Essential



First Steps

Define the scope of the process that is to be examined by the team.

The S.I.P.O.C. Chart helps with this.

S = Suppliers: Who provides input into the first step of the process?

I = Inputs: What things (tangible items) come into the first step of the process?

P = Process: What are the high level steps to this process? Include clear start & stop points (this can be considered the scope of the project).

O = Outputs: What things (tangible items) come out of the last step in the process? (This is not the outcome)

C = Customer: Who receives or benefits from the output of the process?

S = Stakeholder: Groups who have an interest in the outcome or output of the process, but don't receive it directly.

SIPOC Chart

| Suppliers | Input | Process | Output | Customer |
|---|---|---|------------------------------------|---|
| <p>Surgical Case Managers</p> <p>Jamie Case</p> <p>Outpatient Nurses</p> <p>Anesthesia MD's</p> <p>Lab</p> <p>Radiology</p> | <p>Test Results</p> <p>Pre-Op Orders</p> <p>H&P</p> | <p>Title: Outpatient Procedure with tests/exams to be done prior to procedure.</p> <p>Start Point: Procedure is scheduled</p> <p>End Point: Patient arrives</p> <p>Main Process Steps:</p> <ol style="list-style-type: none"> 1. Initial Lab/X-ray done, H&P visit is scheduled 2. Pt. may have to return for H&P 3. Orders (if any) forwarded to Jamie Case OR after H&P decision to repeat/additional testing is made OR after anesthesia reviews chart, a new order is created. 4. Patient arrives for procedure <p>Process Owner: Outpatient/Lab/Radiology</p> <p>Executive Sponsor: Laurie Bach</p> | <p>Pt is cleared for procedure</p> | <p>PATIENT</p> <p>Stakeholders: MD, Anesthesia, Outpatient, Lab, Radiology</p> |

Tips on SIPOC charts

1. This should be completed prior to bringing the entire team together.
2. The managers, Lean facilitator and the Executive sponsor would typically complete this and choose team members as well.
3. Keep in mind that if the process being examined touches the patient, they are the customer.

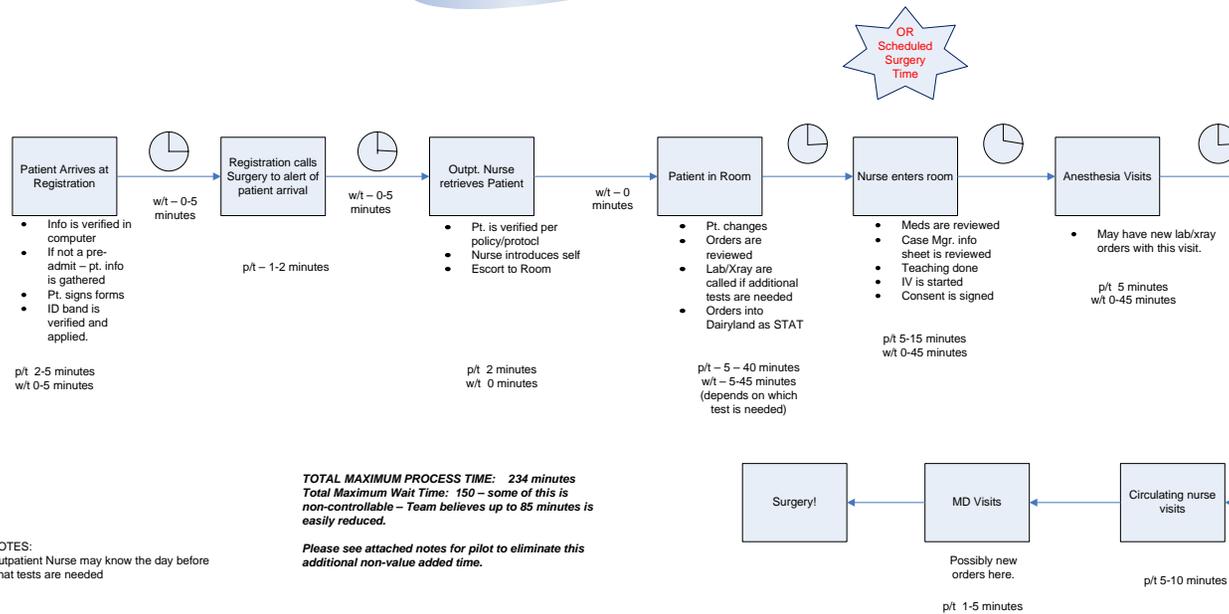
Team Members for the Outpatient Surgical Team

- **OR Scheduler**
- **2 RN's from Surgery**
- **OR Manager**
- **Lab Manager**
- **Radiology Manager**
- **Phlebotomist**
- **Radiology Scheduler**
- **Admitting Supervisor**
- **Admitting clerk**
- **Information Services**

Outpatient Surgery Patient – current state map

Outpatient Surgical

With labs/x-ray's due prior to surgery
October 2007
Current State Map



Solutions

- Team members immediately identified the incorrect order of events and began to work together to determine the correct order of events for the patient's best interest.
- We educated the change on a Thursday and Friday.
- Implemented the change the following Monday.
- ***YIPPEE – success!***
- The OR schedule was running more timely, less staff overtime noted. Happier surgeons and CRNA's. But most importantly:

HAPPY PATIENTS!

After Implementation

Essential to do an evaluation

1. Within 1 week of change
2. Within 2 weeks of change
3. After 30 days
4. After 60 days
5. After 90 days.

Days in Account Receivable (AR) Team

This team was brought together to examine the possible reasons for the facilities days in AR being over the industry norms.

Days in AR Team Members

- 4 Business Office staff members**
- 4 Admitting staff (Clinic and Hospital)**
- 1 Lab staff**
- 1 Rehab Receptionist**
- 1 Coder**
- 1 Release of Information staff**
- OR Manager**
- 1 IV Infusion Therapy Nurse**
- 1 Patient Financial Services Staff**
- 1 IS Staff**

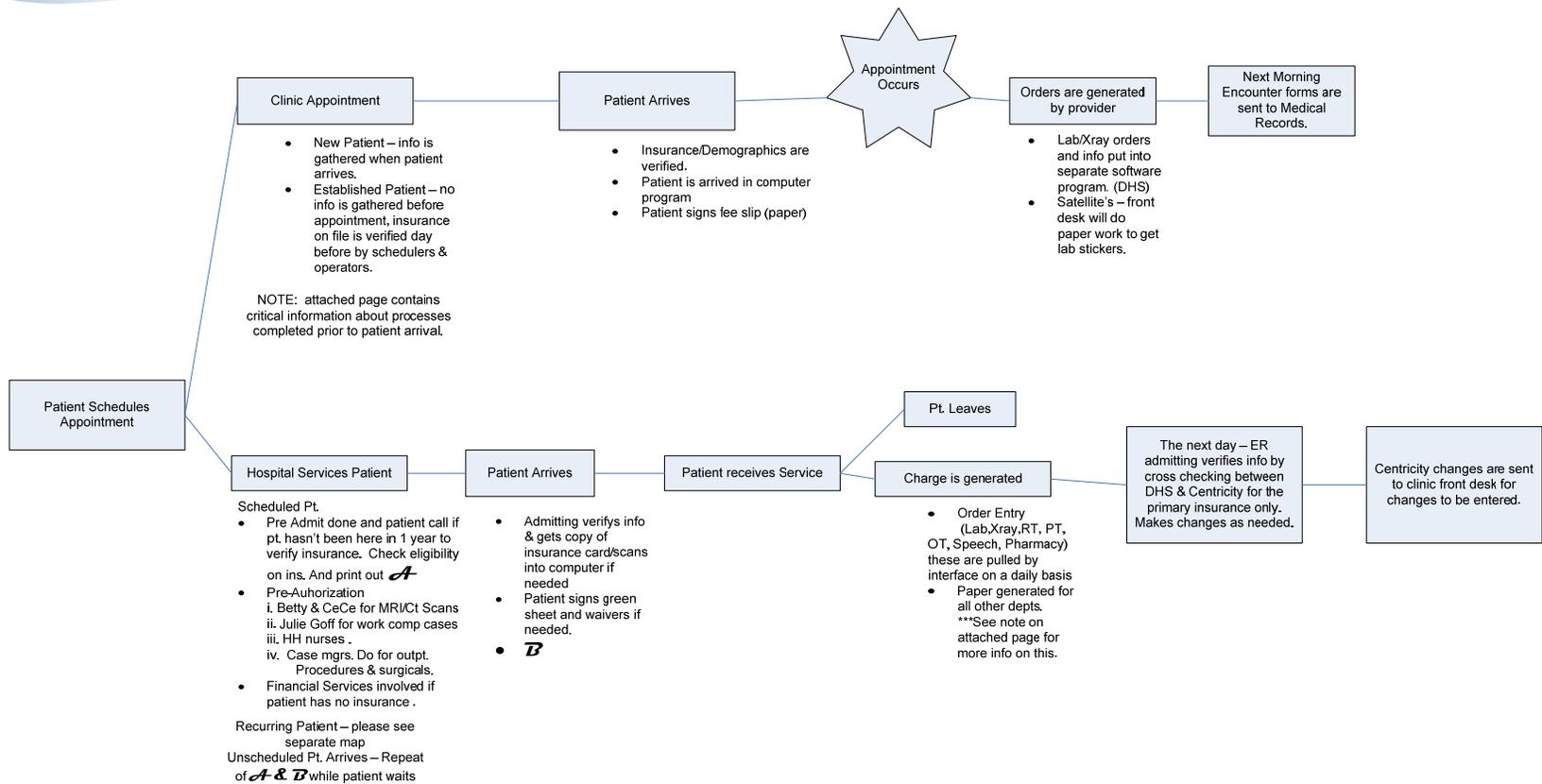
Days in Accounts Receivable

| Suppliers | Input | Process | Output | Customer |
|---|--|--|---------------------|--|
| Medical Records Coders ROI Nursing Infusion Therapy Lab PT Providers Admitting Hospital Clinic Business Office Patient Financial Serv. Home Health | Charges (some order entry & some paper) Codes from Coders Late Charges | Title: Days in Accounts Receivable Start Point: Pt. admitted to facility End Point: Bill is paid in full Main Process Steps: 1. Patient is admitted to facility. 2. Charge is generated. 3. Coded 4. Released 5. Claim is dropped 6. Sent out to payor 7. Payment received & posted 8. Rolls to second payor or pt. 9. Payment received & posted 10. reoccurs until 11. Paid in Full or written off to bad debt. Process Owner: Business Office Executive Sponsor: Jim Dregney | Bills and Cash Flow | Patient 3 rd Party Payors LHS Stakeholders: LHS and patients |

Current State Maps

Days In Accounts Receivable

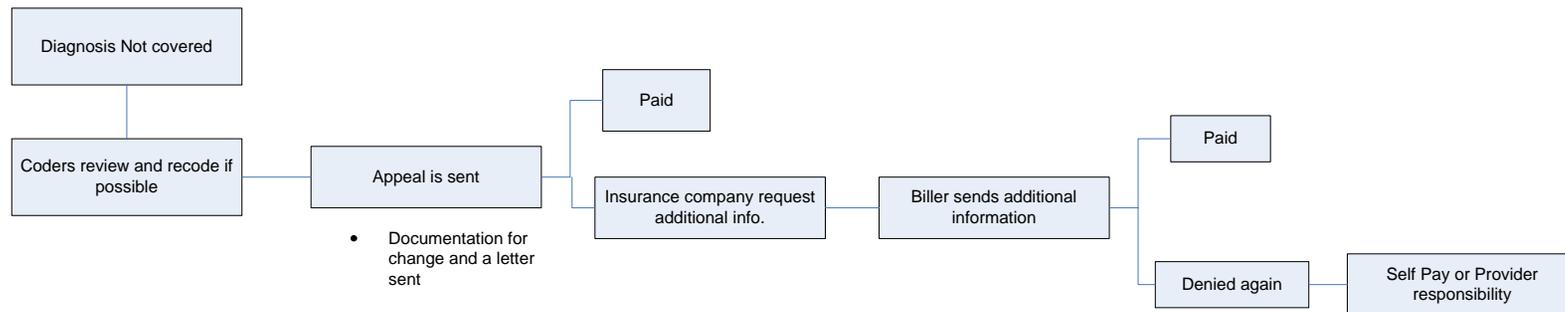
January 2008



Current State Maps

Denial of Claims

January 2008



NOTE: BC/BS denies all late charges these must be written off. Health Partners allows 90 days, 180 days for Medica.

Current State Maps

Paper Charges

January 2008

Paper Order/Charge form generated (see days in account receivable flow)

OPS
 Inpt. Charges
 Clinic Mental Health
 ER
 Surgery (Denise – Doc, day surgery)
 Infusion Therapy
 Cardiology
 Gastro
 Bladder Scans
 Sleep Study
 CHARGES

- Staff member from above dept. generates paper charge
- Put in ER box on unit
- Transported to ER
- Days work is organized by time of day and verified with census to ensure each patient has a charge.
- Outpatient Coder pick up days work every morning (M-F)
- Distributed amongst coders by patient type
- Coders verify paper charges with documentation NOTE: Time goes by here waiting for completion of documentation & signatures
- Coders generate new charges/ subtract charges as appropriate.
- Paper is sent to JoAnn Forsberg for data entry

Pain Management
 Utilization Review
 Wound Care
 OR (Charge Slips)
 Anesthesia
 Care Van
 Ambulance
 Room and Board
 Care Center
 Pharmacy
 Pines/Manor
 Nutritional Therapy
 Diabetes
 Education/OH
 Home Health
 CHARGES

- Staff member from above dept generates paper charge
- Sent directly to JoAnn F. for data entry.

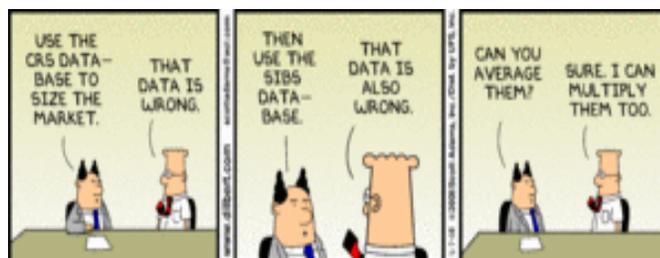
Other
 Misc Charges

- Cannot be order entered
- Late Charges
- Misc. Charges that are infrequent in usage
- These are sent directly to Joann F.

NOTE: Education/OH send down charges 1x/month
 NOTE: One Statement Transfers from Clinic needs to be mapped out

18 pages of Current State MAPS!

Project Size and Data



Scope Creep

This project was too large for the team to begin to consider problem solving on.

Decision to break into 4 smaller teams

- Admitting Issues
- Paper Charges
- Denials and ROI
- Incomplete Charts

Admitting Team

- 3 staff from Admitting**
- 3 staff from Clinic Reception**
- 2 staff from Medical Records**
- 1 Rehab Receptionist**

Admitting Team

1. Establish Goal Statement

To obtain accurate admission information entered into both systems at time of service to patient to reduce the days between date of service and final payment to LHS.

Admitting Team

Reviewed data from various sources

Internal reporting – Reasons for denials, DHS software generated reports

External Reporting – Rycan

Queried various admitting staff – How do you do this?

Briefly reviewed the work stations

Admitting Team

Findings

1. Lack of standardization
2. Staff all think their way is the best way
3. We versus them (Clinic versus Hospital)
4. Lack of trust in the two groups
5. Two separate software programs that lack intra-operability
6. No policy on who is a guarantor
7. Lack of equipment (scanners and cameras) at all stations
8. Substantial amount of returned mail for wrong addresses

Admitting Team

Solutions

- 1. New Policy – Standardization of Admitting Information**
Includes – all demographics, postal service guidelines for abbreviations, picture of patient, email and cell phone information etc.
- 2. New Policy – Guarantor**
Who is defined as a guarantor, what information is collected on this person, Drivers License and Social Security Card of Guarantor is scanned into system.
- 3. New Policy – Consent for Minor Care**
Use of Absent Parent Forms, phone calls to parents etc.
- 4. Eligibility of insurance**
Software programs new option of “one button wonders”

Paper Charges Team Members

2 Coders

2 Data Entry Staff

1 IS staff

2 Outpatient Nursing Staff

1 Home Care Staff

Paper Charges Team

Goal Statement

To reduce the overall number of paper charges produced at LHS.

Paper Charges Team

- Each day at LHS generates 400 to 600 pieces of paper that are our charge sheets.
- These are then sent between campuses (with an approximate 3 days occurring between leaving one desk and arriving on the desk of data entry).
- Many of these Charge sheets are out dated and don't include all of the items that need to be charged for.
- It is the “last thing to do” for many staff.
- 1.5 FTE of Data Entry Staff

Paper Charges Team

Automate, Automate, Automate!

Realized that we could automate the majority of these using our current software.

Started with 2 small departments that do very small quantities of charges. Great success

Pushed on to 2 more departments. Great Success

Now working on getting Surgery and Anesthesia up on this system.

Have several more departments to implement this in.

Paper Charges Team

Data Collected

1. Number of items that are data entried each day (not just pieces of paper) (over 6000)
2. Copies of all charge sheets (many versions for the same dept)
3. Record of late charges (ouch)
4. One week worth of documented items that are missing from the paper charge forms that are on the charge master. (OR!)
5. Complete Listing of all departments completing paper charges
(over 23)

Paper Charges Team

Findings

1. By automating and having the user input the charges, we are capturing these at the “point of sale”.
2. It will become like charting for staff as it is in the same program as their labs/x-rays/orders etc.
3. As a new item is added to the charge master, it is automatically added to the program for charging by the user.
4. Eliminated the 3 day shipping time.
5. Will reduce significantly the amount of time being currently spent on data entry. (Possible 1.0 FTE)

Huge Success Impending!

Denials and ROI Team

3 Hospital Billers

3 Clinic Billers

1 ROI Staff

1 Medical Records Staff

GOAL STATEMENT

Decreasing of denied claims that LHS has control over.

Denials and ROI Team

The number of denials being received by LHS was increasing.

1. Demographics were incorrect
2. Name doesn't match the Insurance ID Card
3. Not eligible
4. Coordination of benefits between payors
5. Accident or Work Comp info not collected at time of admit
6. Insurance dates are not effective for DOS
7. And on and on and on

Denials and ROI Team

This group reviewed data from Rycan, internal reports, Embeon Business Services.

Findings primarily revealed that the admitting team was working on the main issues.

This group then focused attention on ROI for billing purposes.

Denials and ROI Team

- **Current FTE in the LHS Release of Information department is 1.5.**
- **Backlog of 3-4 weeks on requests**
- **Once the insurance company receives the requested information they have an additional 30 days to approve or deny.**
 - Days in AR for this case is now 90 days!
- **Of the requests for information received each week by ROI, 25 are related to denials.**

Denials and ROI

Solutions

At this time, the decision is to split ROI for payment from ROI for continued care.

Once the paper charges are automated, this will free up approximately 1.0 FTE and allow us to re-deploy that person to perform the ROI for payment duties.

Incomplete Charts Team

3 Medical Records staff

1 ER nurse

1 Hospital Business Office

Division Director of Clinic Services

Incomplete Charts Team

Goal Statement

To achieve a decrease in the overall number of incomplete charts being received by HIM from the Emergency Department.

Incomplete Charts

- **Approximately 100 charts every 2 weeks are incomplete in the ER department alone.**
- **One third of these were related to nursing documentation**
- **The remaining were physician related and primarily due to lack of levels being selected.**
- **System in place for chart completion is cumbersome and involves charts being sent all over the facility.**

Incomplete Charts

Findings/Solutions

- Nursing was currently involved in a charting system implementation (T system with selection of own levels)
- Created new policy that once chart enters HIM, it does not leave. (Exception was to MD offices) Staff come to the HIM office for completion.
- Discovered that the ER Tech position was reviewing each chart for MD signature throughout their shift. Requested this person to also have MD select level if that area was not completed.
 - 100% compliance now!

Lessons Learned

Questions?

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Resources

A Lean Guide to Transforming Healthcare

Thomas G. Zidel, 2006 by ASQ

The Lean Healthcare Pocket Guide

Debra Hadfield, 2006 by MCS Media, Inc

A3 Problem Solving for Healthcare

Cindy Jimmerson, 2007 by Productivity Press

The Kaizen Event Planner

Karen Martin, 2007 by Productivity Press

The Complete Lean Enterprise

Beau Keyte, 2004 by Productivity Press

The Toyota Way, Fieldbook

Jeffrey Liker, 2006 by McGraw-Hill Company