

**Laboratory Quality Confab 2009**

## **Applying Lean Six Sigma to Patient Registration to Improve Billing Processes**

**September 30, 2009**

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### **Mission, Vision, and Guiding Values**

- **Mission**

Washington Hospital Center, a valued member of MedStar Health, is dedicated to delivering exceptional PATIENT FIRST health care. We provide the region with the highest quality and latest medical advances through excellence in patient care, education, and research.

- **Our Vision**

To be the trusted leader in caring for people and advancing health.

- **Guiding Principle**

To treat each patient as we would a member of our own family by providing the best medical treatment with caring and compassion, responsive service, and intelligent use of resources. Through this achievement, we will be recognized as a national model for excellence in patient-centered care.



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## Key Objectives

- 1 Document current billing process (registration → bill).
- 2 Understand, identify, and prioritize current risks with billing.
- 3 Make recommendations for process improvement.
- 4 Make recommendations for conversion to Atlas/Sunrise from a process point of view.

## Problem Statement

### Problem Statement

The objective for this project is:

1. To further refine the billing process prior to conversion to a new vendor.
2. To guide the Billing Department in implementing the right processes from the start to maximize collections and profitability of the program.

### Scope

Beginning: Patient approaches registration desk.

End: Bill is submitted.

### Project Goals and Objectives

Make recommendations for improvements and preparation for implementation.

## Summary of Project Team

On-site Analysis Conducted: August 20-22, 2008

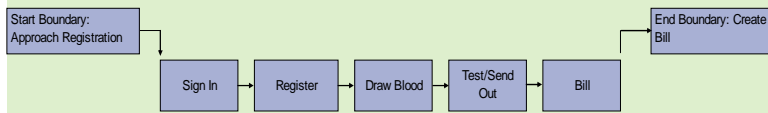
- **Champion:** Cathie Monge
- **Leader:** Bill Romanelli
- **Mentor:** Hans Froehling
  
- **Team Members:**
  - Dawn Sydney (Billing Manager)
  - Monique Smith (Billing Coordinator)
  - Samantha Wooten (Billing Representative)
  - Tina Teneyck (Billing Representative)
  - Annette Herring-Hering (Billing Representative)
  - Deloris Lynch (Supervisor MDL PSCs)
  - Darlene Dugar (Coordinator PSCs)
  - Karen Keith (Registrar)
  - Deborah Hubb (Registrar)

## Summary Key Customers, Suppliers, and Outputs

### SIPOC DIAGRAM

Process/Project Name:	MedStar Billing Project
Date:	08/20/2-808
Prepared By:	Hans Froehling
Notes:	

Suppliers		Inputs		Process	Outputs		Customers
Provider	Input Description	Input Requirements (optional)		Output Description	Output Requirements (optional)	Recipient of Output	
Patient	Information	complete/correct	See High Level Process Steps Below	Test result	complete/correct	Patient	
Physician	Information	complete/correct		Bill	complete/correct	Physician	
Registrar	Information	complete/correct				Registrar	
Phlebotomist	Information	complete/correct				Phlebotomist	
Customer Service	Information	complete/correct				Customer Service	
Sales	Information	complete/correct				Sales	
Billing	Information	complete/correct				Billing	
							Administration



## Voice of Customer

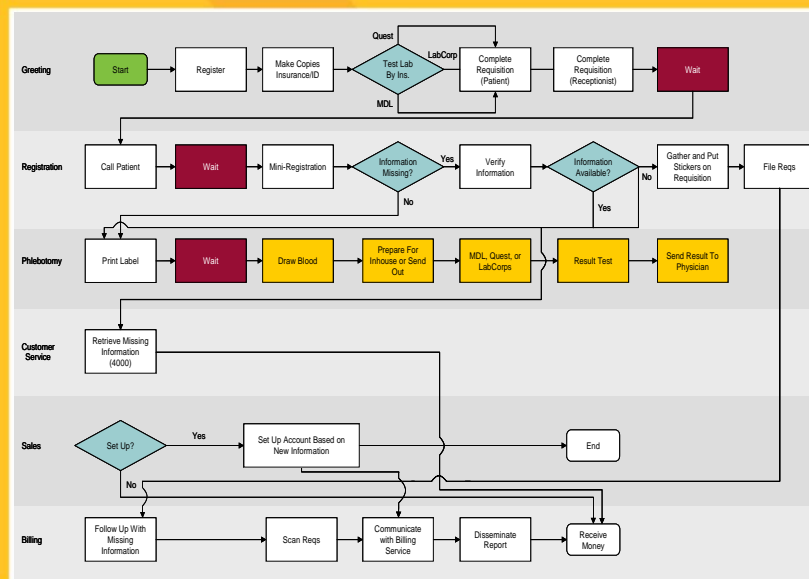
**What we wanted to know:** What are key customer requirements?

1. Short Wait Time
2. Correct Result
3. Individualized Caring Attention
4. Correct Bill



**What we learned:** Wait times currently fluctuate; staff is highly motivated to please clients; billing process can be improved by integrating workflows.

## Existing Process



## Existing Process (cont.)

- There are multiple hand-offs.
- There is a functional rather than process orientation.
- The overall facility layout is conducive to effective workflow.
- The reception desk creates bottlenecks when queues are large.
- The copier is removed from first point of contact.
- Patients sign in and are called for further processing; patients sometimes do not hear the call.
- Personnel are highly motivated and acts in accordance with the guiding principles of the MedStar system.
- Personnel are highly experienced.

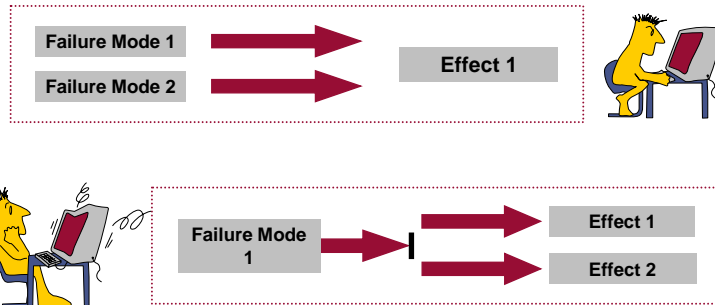
## Failure Modes and Effect Analysis (FMEA)

First used in the aerospace industry in the mid 1960s to detect aircraft problems before leaving the ground. The U.S. Food and Drug Administration requires FMEA to launch new medical devices or drugs.

### **FMEA is used to:**

- Identify how a product, service, or process can fail
- Estimate risk associated with specific failure causes
- Prioritize actions to reduce risk of failure
- Evaluate product/service design validation or process control plans

## Linking Failure Modes to Effects



A Failure Modes and Effect Analysis was conducted to determine current high-risk processes and improvement opportunities. Multiple failures can have multiple effects, and one failure can have multiple effects.

## Steps to Perform FMEA

1. Review the process and understand the basic functional elements
2. Brainstorm all potential ways the process, product or service could fail
3. Identify one or more potential effects and causes of each failure
4. Develop a rating scale (1-10 or 1-5)
  1. Severity (S): What is the effect or impact of the failure?
  2. Occurrence (O): How often could the failure occur?
  3. Detection (D): Are controls or measures in place that increase ability to detect the failure?
5. Rate each of the above factors (S-O-D)
6. Calculate the risk priority number (RPN) for each effect

## Step 6: Calculate the Risk Priority Number (RPN)

- The output of an FMEA is the Risk Priority Number.
- The RPN is a calculated number based on information you provide regarding:
  - The potential failure modes,
  - The effects, and
  - The current ability of the process to detect the failures before reaching the customer.
- The severity of the effects multiplied by the rating on how often it occurs multiplied by the ability to detect.

$$\text{RPN} = \text{Severity} \times \text{Occurrence} \times \text{Detection}$$

Effects

Causes

Controls

**Note:** Severity, Frequency of Occurrence, and Detectability of Error were measured on a five-point rather than ten-point scale to simplify the calculation method and reduce time to conduct the FMEA.

## Steps to Perform FMEA

7. Prioritize the failure modes using the RPN
8. Develop plans to reduce or eliminate the risk associated with the high priority failure modes
  1. Identify potential causes
  2. Develop preventive or contingent action steps to be taken
  3. Assign responsibilities
9. Implement plans and document actions
10. Recalculate RPN

Process Steps or Product Functions	Potential Failure Mode	Potential Effects of Failure	Severity	Potential Cause(s) of Failure	Occurrence	Current Controls	Detection	Risk Priority Number (RPN)	Recommended Action	Responsibility and Target Completion Date	Action Taken
Reception	Wrong patient demographics	Wrong patient	1	High Volume	2	Verification of information at registration	5	10	FFO, One-Piece Flow, Fewer tasks	Dawn	
Reception	Wrong patient demographics	Wrong bill	1	High Volume	2	Verification of information at registration	5	10	FFO, One-Piece Flow, Fewer tasks	Dawn	
Copies	No ID	Call by Receptionist or registrar or billing	4	Lost, stolen, forgotten	5	1. ASK for insurance; 2. Call Dr. Office, Look up on base.	1	20			
Complete Read by patient	Delay in drawing blood; One-Piece Flow interrupted	Illegible	3	Human error	5	Registrar should confirm spelling, QA process	1	15	Refresher Training on verification	Darlene	

## Analyze: FMEA



# FMEA of complete process

**What we learned:** Action items and owners are documented in the Excel file above. Action items and owners are listed in table format on slides 15-17. A follow-up call was conducted to determine if the recommended action items were implemented.

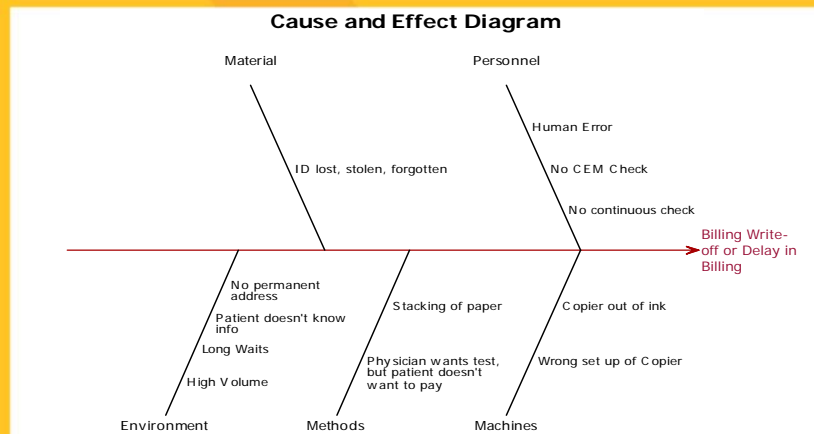
## FMEA: Summary of RPNs

RPN	Process Steps or Product Functions	Potential Failure Mode
125	Mini-Registration	No Diagnosis Code
125	Mini-Registration	Wrong DOB
125	Mini-Registration	Incorrect Physician
125	Mini-Registration	No Physician
125	Mini-Registration	Incorrect Spelling
125	Mini-Registration	Missed Test
125	Mini-Registration	ABN Not Complete
125	Mini-Registration	ABN Not Signed
125	Gather and Put Labels on Req	Missing Stickers
64	Print Label	Out of Paper
50	Mini-Registration	Lost Requisition
30	Print Label	Incorrect Patient

**What we learned:** Most billing-related errors can be “caught” in the front-end “Mini-Registration” process. Emphasis should be put on this area for improvements. The fields with the highest risk of either resulting in a write-off or in an expanded accounts receivable cycle are listed above. Other areas for improvement concern the consistent quality of copies of insurance cards and other pertinent information.



## Summary of Root Cause Analysis



**What we learned:** While some root causes of billing delays or write-offs are out of the control of the registration personnel (see environment), other root causes are within their control. Action items to address these root causes are documented on the next three pages.

## Process Step, Failure Mode, Action Item, and Owner

Process Step in Billing Cycle	Potential Failure Mode	Recommended Action	Responsibility and Target Completion Date	Current Status/ Expected Completion
Reception	Wrong Patient Demographics	FIFO, One-Piece Flow, Fewer Tasks	Dawn, Darlene, Monique, Dolores, Bill	Completed; numbering system used to ensure FIFO
Copies	Too Light	Regularly Review in Cartridge	Dawn, Darlene, Monique, Dolores, Bill	Completed; every registrar has copy of optimal copy; copier gives signal when toner is low
Copies	Too Dark	Regularly Review in Cartridge	Dawn, Darlene, Monique, Dolores, Bill	Completed; see above

**What we learned:** Process step in billing cycle, potential failure mode, recommended action, and owner of action item.

## Process Step, Failure Mode, Action Item, and Owner (cont.)

Process Step in Billing Cycle	Potential Failure Mode	Recommended Action	Responsibility and Target Completion Date	Current Status/ Expected Completion
Complete Req By Patent	Delay in Drawing Blood; One-Piece Flow	Refresher Training on Verification	Dawn, Darlene, Monique, Dolores, Bill	Step1: Registrar training on insurance; Step2: Cross-training with billing personnel
Call Patient	Patient Not Available	Sign System (Andon)	Dawn, Darlene, Monique, Dolores, Bill	Completed; numbering system in place; patient receives number
Call Patient	Patient Doesn't Clearly Hear Their Name	Sign System (Andon)	Dawn, Darlene, Monique, Dolores, Bill	Completed; see above
Mini-Registration	No Diagnosis Code	Laminated Job Aid	What, Why, So What; Dawn, Darlene, Monique, Dolores, and Bill	Completed

**What we learned:** Process step in billing cycle, potential failure mode, recommended action, and owner of action item.

## Process Step, Failure Mode, Action Item, and Owner (cont.)

Process Step in Billing Cycle	Potential Failure Mode	Recommended Action	Responsibility and Target Completion Date	Current Status/ Expected Completion
Mini-Registration	ABN Not Signed	Inform Physician; Don't Order Test	Registrar	Completed
Gather and Put Labels on Req	Missing Stickers	Double Check All Requisition	Dawn, Darlene, Monique, Dolores, Bill	Completed
Follow Up Missing	Physician Information	Set-up Schedule for Cross-training of Billing and Registration Personnel	Dawn, Darlene, Monique, Dolores, Bill	Cross-training schedule completed

**What we learned:** Process step in billing cycle, potential failure mode, recommended action, and owner of action item.

## Recommended Actions

- Retrieve information at front end of registration process.
- Develop cross-functional teams and rotate responsibilities.
- Implement action items and controls documented in FMEA.
- Ensure that copier is set at right “level” so that ID and insurance information can be consistently read.
- Review phlebotomy labeling machine every 75<sup>th</sup> patient.
- Ensure all documentation is handed over to Billing for scanning in the evenings.
- Monitor costs of outbound calls to retrieve missing information in Billing.

## Recommended Actions (cont.)

- Develop process mentality rather than functional mentality.
- New systems/vendors will not fix all process-related risks identified in FMEA.
- Follow-up meeting conducted (via teleconference) to confirm that action items were implemented.
- Evaluate the impact of action implementation via AR and write-off data.

## Monitoring Overall Performance



Month	Errors	Percent
Jul-08	23	0.69%
Aug-08	32	1.00%
Sep-08	19	0.52%
Oct-08	53	1.43%
Nov-08	27	0.91%
Dec-08	11	0.29%
Jan-09	27	0.99%
Feb-09	44	1.10%
Mar-09	12	0.29%
Apr-09	20	0.53%
May-09	37	0.23%
Jun-09	37	0.98%
Jul-09	15	0.36%

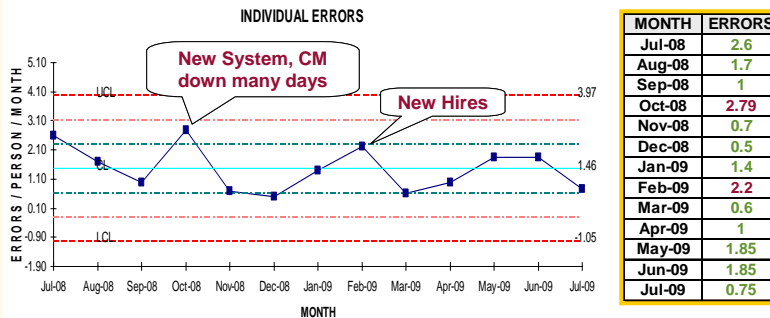
**Total Error Goal:** 1.0% of Total Reqs or average high of 40 per month.

## Strategies to Sustain the Gain

1. Continue to in-service staff by daily review of the errors realized.
2. Present “live” data at staff meetings.
3. Continue to monitor, document results, and discipline if appropriate.
4. Continue to acquire front-end connectivity.
5. Maximum acceptable error rates per employee established. Disciplinary guidelines presented to staff.
6. Start some Lean processes in October/November.
7. Continue to monitor the new Lean enhancements.

## Monitoring Individual Performance

**Goal: Four errors per person per month.**



Monitor each input operator and the entire department.  
 Daily presentation of the errors by employee.  
 Monthly posting of errors.  
***Time to challenge current goal of four errors per person per month!***

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## Financial Benefits of Decreasing Errors

- Decrease of \$60,000 in write-offs per year.
- Decrease in accounts receivable of \$210,000 per year.
- Redeployment of 1.5 FTEs with cost avoidance of \$60,000 per year.
- Total Investment: Intensive three-day Kaizen event.

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ONE THING.

A GREAT OUTCOME  
IS OUR THING.

We are a healthcare diagnostics and quality consultancy intent on delivering cost savings, new revenue, and optimized operations.



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