

# *Development and Implementation of a New Process for Handling Add-On Lab Orders at Duluth Clinic–Ashland*



**Submitted by Pam Helgeson-Britton  
Director of Process Excellence & Organizational Productivity  
SMDC Health System, Duluth, Minnesota**



---

**A case study presentation from  
the ASQ Healthcare Division:  
[www.asq.org/health](http://www.asq.org/health).**

Copyright © 2009, Pam Helgeson-Britton.  
Used with permission.

**[Submit your own case study](#)  
to be considered for publication.**

What other content would you like to see  
on the Healthcare Division site? **[Let us know!](#)**



# About SMDC Health System

---

- Serves a regional Midwest population of 460,000 at 17 locations.
- Includes four fully-owned hospitals and the Duluth Clinic, a multispecialty clinic with more than 400 physicians.
- Mission: To bring the soul and science of healing to the people we serve.
- Vision: Working together with our patients and communities, we are creating the next generation of integrated health care.



# The Project Team

---

- Duluth Clinic–Ashland Laboratory
  - Manager of Laboratory Service (Project Leader)
  - Phlebotomist
  - Clinical Assistants
  - Medical Technician
  - Physician



# The Problem

---

- Additional lab tests ordered by providers were not communicated to the laboratory in a standardized, efficient manner. Once a sample (e.g., blood, urine) had been drawn and tested, the electronic health record system did not recognize the addition of another lab test to it. The clinical assistant or physician had to contact the lab by phone or e-mail to add a test.
- Many times the lab was not notified of the added test. This occurred approximately 37 percent of the time and resulted in additional work, wasted time, and decreased customer satisfaction.

# Project Goals

---

- **Overall Goals:**
  - Reduce expenses.
  - Apply technology.
  - Provide safe, coordinated, efficient, and effective care.
  - Provide efficient and effective operations.
- **Objective:** Correctly submit 99 percent of all add-on lab orders at Duluth Clinic–Ashland by January 30, 2009, through the use of an efficient, effective process established by project team.
- **Scope:** From the time the add-on lab order is submitted to completed lab testing (result). This project also included add-on lab orders from outreach physicians while on site in Ashland. This project did not include any other Duluth Clinic sites.
- **Results:** Recoup losses due to:
  - Missed labs not completed (loss of \$3,627 per year).
  - Lab draws at no charge (loss of \$2,000 per year).



# Root Cause Analysis

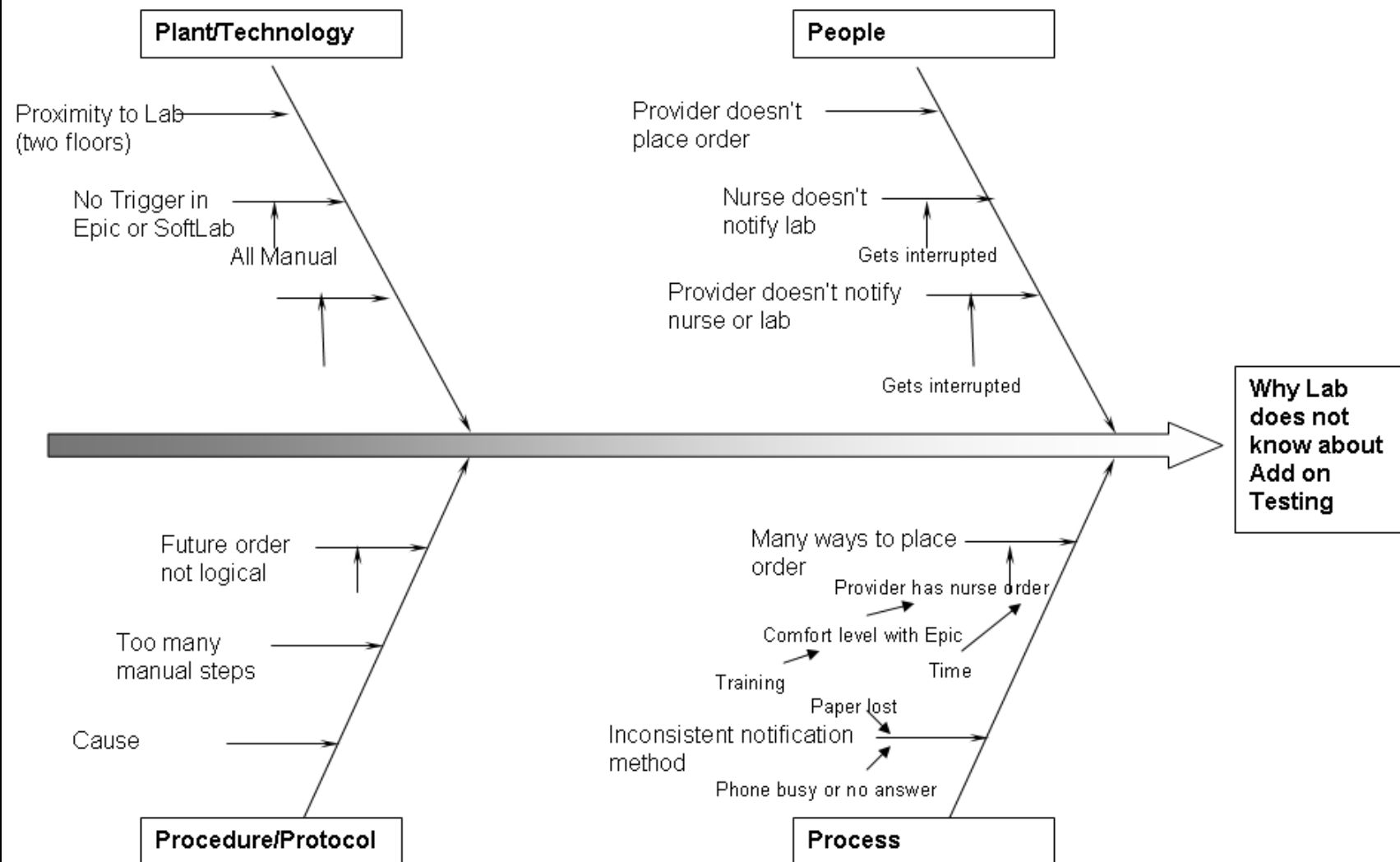
---

Cause-and-effect analysis showed a number of reasons why add-on lab tests were not communicated to the lab in an efficient, effective manner:

- Provider distance from lab (two floors apart).
- No trigger in EPIC or Softlab (all manual).
- Provider didn't place the order.
- Nurse didn't notify the lab (interruptions).
- Provider didn't notify nurse or lab (interruptions).
- Future orders were not logical.
- Too many manual steps.
- Many ways to place order.
- Inconsistent notification methods.

# Root Cause Analysis

## Cause And Effect Diagram





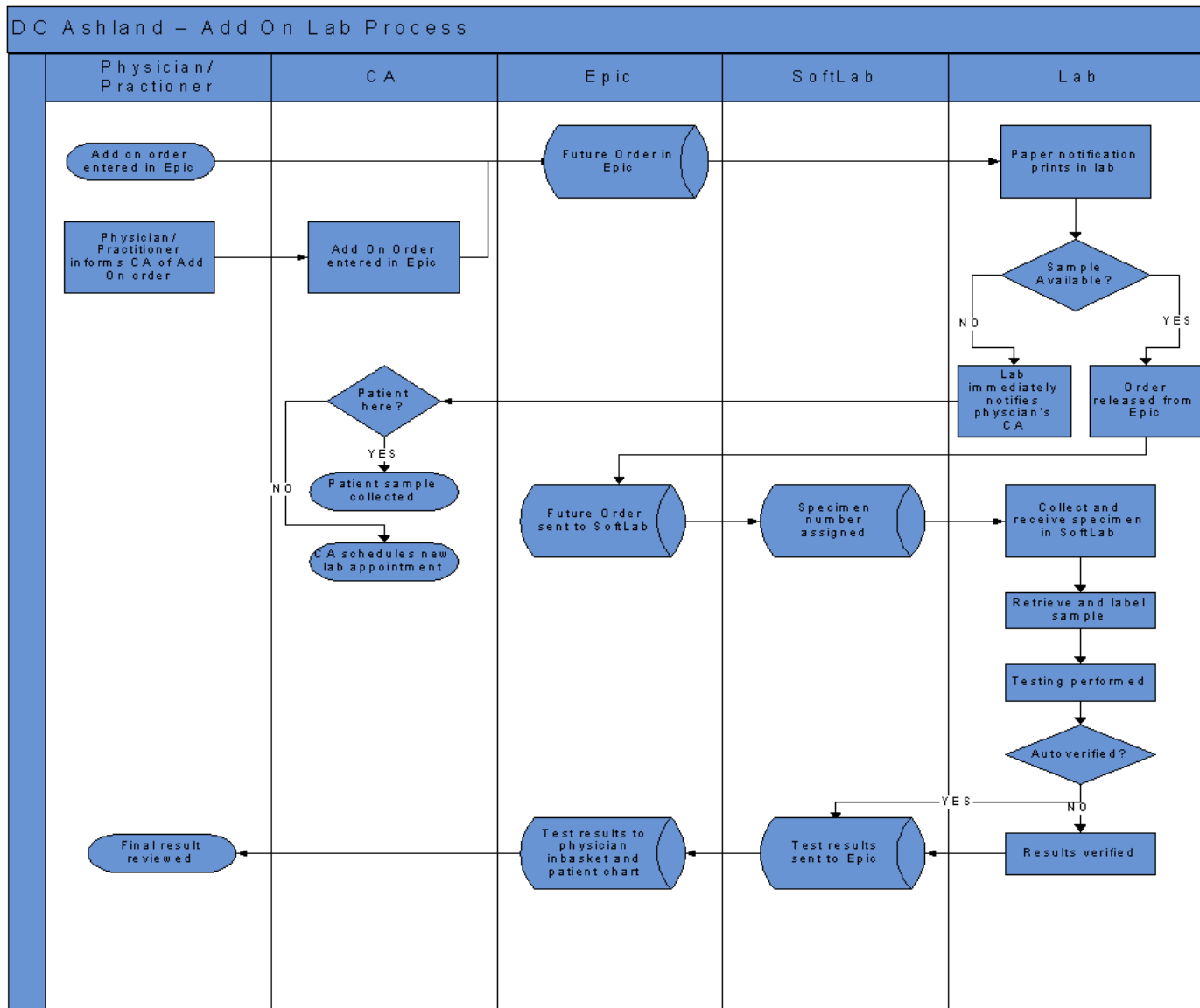
# Addressing Root Causes

---

- A new process to order add-on labs through the electronic health record system was designed and tested. The lab was then notified systematically, eliminating the need to contact the lab manually.
- The physician team member developed a preference list that included labs commonly added on. One challenge the team was not able to overcome was the potential for the physician to order the add-on lab test in the wrong status. A programming change from the vendor's end was necessary to accomplish this. Special emphasis was placed on use of the preference list to mitigate this since the error only occurs when the list is not used.
- **Resources used:** 155 hours x \$40/hour = \$6,200



# Addressing Root Causes





# Monitoring and Evaluating Over Time

The team monitored and evaluated the process over time through the use of a process control plan.

SMDC: Process Excellence Process Control Plan						
Project Title	Consistency in Add on Labs in Ashland			Control Plan Owner	Linda Parker	
Process Title	Add On Labs			Control Plan Revision	6.02.09	
Date	04.01.2009			Process Owner	Ashland Lab	
Project Number	PE000311			Process Manager	Linda Parker	
Process Objective				Core Team	Ashland Lab Personnel	
Critical Improvement Metric	Acceptance Metric Limits	Control Method Tasks / Responsibilities	Measurement Frequency	Countermeasure Plan Defined	Countermeasure Accountability Signoff	Source of Control Metric Data
Percentage of Add on Labs resulted	100%	Linda Parker	Daily	See Below	DC-Ashland MT	Clarity Report
Percentage of Add on labs ordered correctly	95%	List review - Ashland MT's Report review - Linda Parker	Daily	See Below	DC-Ashland MT	Pending List, Clarity Report
Number of times Add On Priority is used by sites other than DC-Ashland	0	Report review - Linda Parker	Daily	See Below	Lab Contact at site	Clarity Report

# Monitoring and Evaluating Over Time

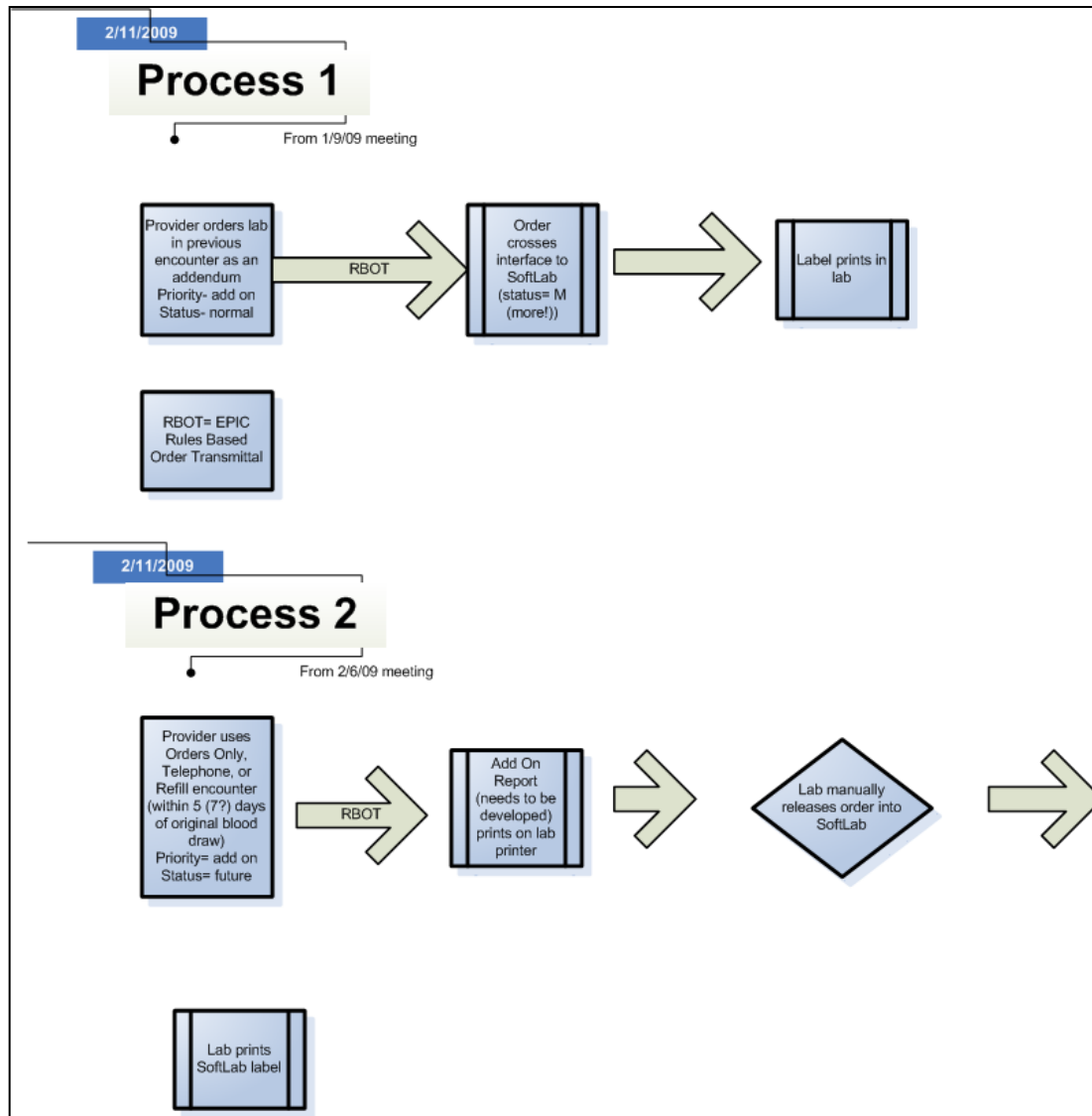
The team also monitored and evaluated the process through the use of a countermeasure plan.

## Countermeasure Plan Worksheet

Countermeasure Plan for: Consistency in Add on Labs in Ashland

Process Step/Critical Improvement Metric	Action Step(s)	Result of Action Step(s)	Responsible Person	By When
Add on lab not resulted	Linda to notify DC-Ashland lab same day	Lab test completed	DC-Ashland MT	One business day
Add on lab ordered incorrectly	Linda to notify and educate ordering user day error detected	Improved knowledge of add on ordering process	Ordering user	One business day
Add on priority used by site other than DC-Ashland	Linda to notify site contact	Site contact to follow up with ordering user	Linda/Site contact	One business day

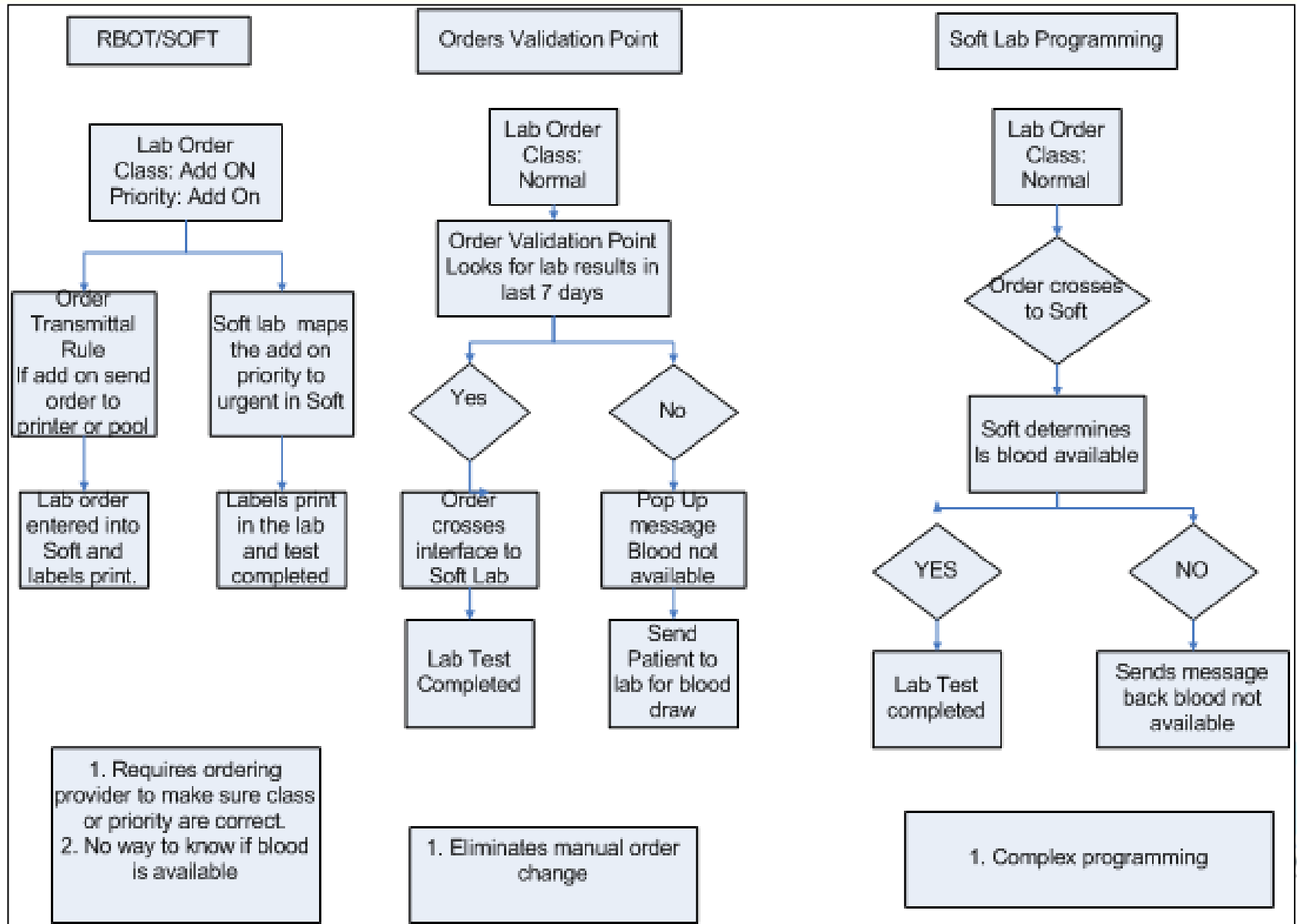
# Process Analysis



# Process Analysis



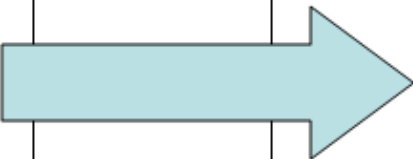
C	O	P	I	S
Customer	Output	Process	Input	Supplier
<ul style="list-style-type: none"> <li>Practitioner</li> <li>Patient</li> </ul>	<ul style="list-style-type: none"> <li>Laboratory Testing/Result on previously collected patient sample</li> </ul>	Practitioner decides to order additional lab testing	<ul style="list-style-type: none"> <li>Practitioner/CA/RN- phone call, paper note, verbal request to lab</li> <li>Patient specimen</li> <li>Lab instrumentation and testing supplies</li> </ul>	<ul style="list-style-type: none"> <li>Practitioner-order</li> <li>Patient - specimen</li> </ul>
		Order entered in Epic		
	<b>Output Measures:</b> <ul style="list-style-type: none"> <li>Number of labs on expired order list?(this is not specific to missed add on labs)</li> </ul>	Lab Performs Test	<b>Input Measures:</b> <ul style="list-style-type: none"> <li>Number (%) of add on requests submitted by approved process</li> <li>Number of missed requests on pending worklist</li> </ul>	
	Results to patient chart and physician			

# Process Analysis





# Stakeholders Analysis—Mobilizing Commitment

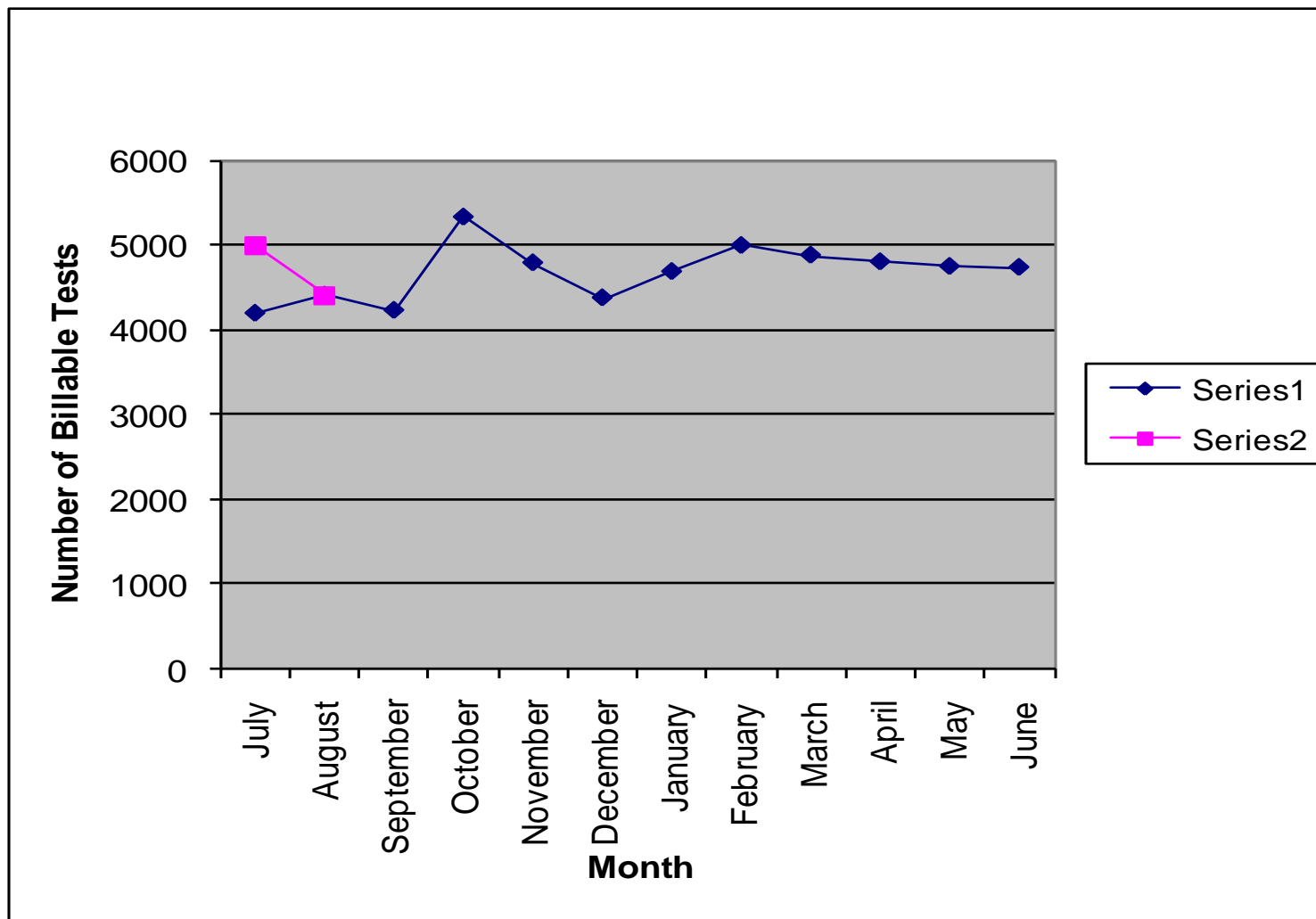
Name	Strongly Against --	Moderately Against -	Neutral 0	Moderately Supportive +	Strongly Supportive ++	Reason	Action W W W
Dr. Morud				X		Doesn't want more work-auto solution	Process Team Involvement
Dan Critchley			X	Movement dependent on EPIC changes		Not enough info	Process Team Involvement or through Julie Newman
Kris Curtis			X			Not enough info	Process Team Involvement
Mike Motley			X	 Commitment after sponsor meeting	X	Not enough info	Sponsor meeting discussion 10/20/08
Julie Newman					X	Epic utilization	
Emily, Phleb Mark, MT Lynn & Kathy, MA			X			Change	Process Team Involvement and Ongoing two way communication Date: Per communication plan



# Stakeholders Analysis—Mobilizing Commitment

Name	Strongly Against --	Moderately Against -	Neutral 0	Moderately Supportive +	Strongly Supportive ++	Reason	Action		
							W	W	W
Lab Personnel		√				change			
Practitioners		√				change			
CA's		√				change			

# DC—Ashland Lab Volume



# Communication Plan

<b>Communication Plan PE- Add on Lab Consistency</b>		
<b>Information Communicated</b>	<b>Who Receives</b>	<b>Frequency/Interval</b>
Minutes of Team Meeting	Team members including Mike Motley, DC-Ashland Lab Staff, Sheree Paulus (SMDC Lab), Carol Anderson (DC-Ashland Admin.), Dr. Van Pernis (DC-Ashland Lab Director)	Within two days of meeting
Verbal Updates on Team Progress	DC-Ashland physicians and practitioners	Monthly at Committee of the Whole meetings
E-mail Updates on Team Progress	Regional lab supervisors	As appropriate. Every other meeting minimum.
Verbal updates on Team Progress	DC-Ashland RN's and CA's	Monthly at regular departmental meetings.

## Optimization Tip

**Date:** March 11, 2009  
**To:** Ashland EpicCare Users  
**From:** EpicCare Team  
**Re:** Add On Lab Priority Workflow

Author: Jan Ringer

Starting, Monday, March 16<sup>th</sup>, there will be the opportunity to order additional lab tests within a specified period of time after an original blood draw. It is very important that the Add On Labs are ordered correctly so that the lab is notified electronically when an Add On is ordered.

- To order an Add On, you can enter an encounter in a number of ways. You can
- Go into the original encounter where labs were ordered if it is not yet closed
  - Do an addendum to the original encounter if it has been closed
  - Open an Orders Only encounter for the patient

The Add On labs are ordered with a specific new PRIORITY in order entry. They must be ordered with an order class of FUTURE. Here is an example of Clinician Order Entry, where the provider is ordering an Add On A1C:

The screenshot shows the Epic Interface (Backups) - Hyperspace window. The patient is Ashland, Addone, 35 years old, DOB 5/18/1973, MRN 5002544. The order is for A1C(HGB A1C) with a status of Future, priority of Add On, and class of Normal. The expected date is 3/11/2009 and the expires date is 3/11/2009. The quantity is 1. A comment is entered: "CMS will re-imburse only 4 Hgb A1c tests per year, unless the patient is pregnant or has uncontrolled diabetes." The interface also shows a navigation menu on the left, a taskbar at the bottom, and a status bar at the bottom indicating the provider is MORUD, CLAIR M and the pharmacy is none selected.

Note that the **PRIORITY** is **ADD ON** and the **STATUS** is **FUTURE**.

Note that the **PRIORITY** is **ADD ON** and the **STATUS** is **FUTURE**.

The provider could also order the add on lab through the Add On portion of the Preference list:

**EpicInterface(Backups) - Hyperspace**

Desktop Action Patient Care Scheduling HIM Charge Router Reg/ADT Referrals Home Health Reports Report Mgmt Tools Admin Help Links

← Back → Forward Home Schedule In Basket Chart Enc Tel Enc Triage Call Patient Lists Secure Record Viewer Appts Print Log Out

**Epic** Home Ashland, Addone EpicCare

**Ashland, Addone** Age: 35 year old DOB: 5/18/1973 Allergies: Not on File INS: BCBS OF WIS\*MyHealth: Inactive  
Sex: M MDM: 5002544 PCP: MORRIS, CLAIR M Alert: HM, Overdue or Due Soon

**Preference Lists - Ashland, Addone [Z1050013]**

**Labs**

- .ADD ON
- .MY FAVORITES
- 1 MONTH FOLLOW UP
- CHEMISTRY
- DIABETES
  - DIABETES 12 MONTH
  - DIABETES 3 MONTH
  - DIABETES 6 MONTH
- HEMATOLOGY & BLOOD E
- MICROBIOLOGY
- SEROLOGY
- URINE & BODY FLUIDS
- Imaging
- Procedures
- Supplies
- Referrals

U	Name	Code	Type	Pref List
	<b>.ADD ON</b>			
	ALT add on	LAB8	Lab	ASH FP LAB OP
	Glucose add on	LAB1	Lab	ASH FP LAB OP
	Hemogram add on	LAB2999	Lab	ASH FP LAB OP
	Urine Culture add on	LAB6002	Lab	ASH FP LAB OP
	<b>.MY FAVORITES</b>			
U	PAP LIQUID BASED	LAB4530	PATHOLOGY	RINGER, JANIC...
	<b>1 MONTH FOLLOW UP</b>			
	ALT 1 MONTH	LAB8	Lab	ASH FP LAB OP
	AST 1 MONTH	LAB7	Lab	ASH FP LAB OP
	BMP 1 MONTH	LAB4532	Lab	ASH FP LAB OP
	CMP 1 MONTH	LAB4921	Lab	ASH FP LAB OP
	CREATININE 1 MONTH	LAB11	Lab	ASH FP LAB OP

Labs in this section of the preference list already have the correct priority and status chosen. See the ALT on this order:

**Allergies**

**History**

**Problem List**

**Demographics**

**Letters**

**EMPI Demographics**

**Forms**

**Imm/Injections**

**Patient Education**

**Procedures (2)**

**A1C(HGB A1C)** [Remove]

**ALT add on** [Remove]

Expected-3/11/2009, Expires-3/11/2009, Add On, Normal

Expected-3/11/2009, Expires-3/16/2009, Add On, Normal

F7- Prev Order F8- Next Order

All labs that are ordered correctly as an Add On will produce a printed order sheet in the lab which will look like this:

Priority: Add On

Class: Normal

SMDC-ASHLAND FAMILY PRACTICE~1625 MAPLE LANE~ASHLAND WI 54806

**LAB REQUISITION**

ZZZ,ALPHA 3218249 02/14/1982 F

Order Specific Information

**Test: BUN [LAB12] Order #: 29983559 Qty: 1 FUTURE**

Priority: Add On

Future Order Information

Expires on: 3/6/2009

Expected by: 3/6/2009

Associated Diagnoses

692.9 CONTACT DERMATITIS AND OTHER ECZEMA, DUE TO UNSPECIFIED CAUSE

Order Date: 3/6/2009

Ordering User: RINGER, JANICE E [18752]

Encounter Provider: SAARINEN, DAVID M [643]

Authorizing Provider: SAARINEN, DAVID M [643]

Department: ASH FAMILY PRACTICE[103000281828]

---

Ordering and Authenticating Provider: B56234 David M. Saarinen, MD



# For More Information

---

- Learn more about SMDC Health System:  
[www.smdc.org](http://www.smdc.org).
- More case study presentations are available from the ASQ Healthcare Division:  
[www.asq.org/health/quality-information/library](http://www.asq.org/health/quality-information/library).
- Read healthcare case study articles from ASQ:  
[www.asq.org/healthcare-use/why-quality/case-studies.html](http://www.asq.org/healthcare-use/why-quality/case-studies.html).
- To find articles, books, courses, and other resources on healthcare quality, search the ASQ Knowledge Center:  
[www.asq.org/knowledge-center/search](http://www.asq.org/knowledge-center/search).

