

## KEY PRACTICES TO IMPROVE INFECTION RATES AND CLINICAL QUALITY



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Roper St. Francis Healthcare  
Charleston, South Carolina

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**HEALING ALL PEOPLE WITH  
COMPASSION, FAITH AND EXCELLENCE**

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## Who We Are...

Roper St. Francis Healthcare is the South Carolina Lowcountry's only private, not-for-profit health care system.

The 657-bed system consists of 90 facilities and services in seven counties.

Member hospitals include Roper Hospital, Bon Secours St. Francis Hospital, Mount Pleasant Hospital and Roper Rehabilitation Hospital.

Plans to build a hospital in Berkeley County are in progress.

Roper St. Francis Physician Partners is a comprehensive network of more than 180 physicians that covers a complete range of primary care and 20 subspecialties.

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## The Legacy



- Roper St. Francis is a nonprofit, non-stock, public benefit corporation.
  - Created by an affiliation of three Founding Members:
    - Carolinas Healthcare System
    - Bon Secours Health System
    - Medical Society of South Carolina
- The affiliation enables us to share resources, best practices and values while maintaining individuals identities.

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## The Legacy




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## The Legacy

### Roper Hospital

Founded in 1857 by the Medical Society of South Carolina as the first community hospital in the Carolinas

### Bon Secours St. Francis Hospital

First opened its doors in 1882 as St. Francis Xavier Infirmary, the first Catholic hospital in the




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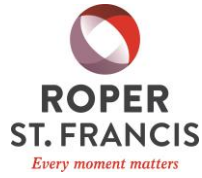
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## The Brand



Roper and Bon Secours St. Francis Hospitals came together in 1998, forming the largest healthcare system in the area, known today as Roper St. Francis.

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## About

- 90+ Facilities in 7 Counties
- 14 Diagnostic Centers
- 5 Emergency Rooms
- 3 Full-Service Hospitals
- 3 Ambulatory Surgery Centers
- 2 Air Transport Helipads
- 2 After Hours Clinics
- 1 Rehabilitation Hospital




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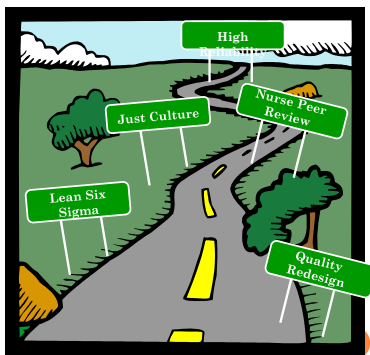
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## Our Journey to High Reliability




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## The History of Process Improvement Approaches

- 1950 ● Work Efficiency
- 1965 ● Management by objectives (MBO)
- 1975 ● Quality Control and Zero Defects
- 1980 ● Re-engineering the corporation
- 1990 ● Lean manufacturing and Six Sigma
- 1995 ● Balanced Scorecard
- Today ● Lean Six Sigma

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## WHAT HAS LEAN SIX SIGMA DONE FOR THE INFECTION PREVENTION DEPARTMENT?

- Helps to identify: Our role in the RSFH System
  - Walking the Gemba
  - Muda
  - 5S (Sort, Storage, Shine, Standardize, Sustain)
- Specifics
  - Workflow Steps
  - Involving a Single Process
  - Involving Multiple Departments
  - Complex or Simple
  - Issues that require standardization at multiple sites
  - Before and After Views
- Brainstorming Improvements
- Creating Working Teams with Involvement in Defined Processes
- Progress Changes
  - Run Charts
  - Control Charts




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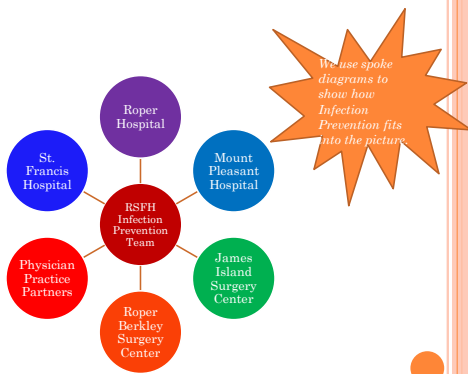
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## WALKING THE GEMBA

### Rounding on Nursing Units and other Departments

- We look for:
  - Handwashing
  - Foley Care
  - Central Line Care
  - Proper Isolation of Patients
    - Signage
    - PPE Availability
  - Safe Environment
  - Assist with Staff Questions
    - Provide education as requested
  - Regulatory Agency Compliance

### Participation on teams System-wide to decrease infections

- CAUTI
- CLABSI
- C-diff
- Surgery SSI
  - Joints
  - CABG
  - Spine
  - C-section
  - Hysterectomies
  - Colons

## MUDA – WASTE

WE ASSIST IN STANDARDIZATION

- Forms
  - Cidex OPA
  - C-diff Protocol and Order Sets
  - CAUTI Order sets
- Processes
  - CHG Bathing
  - Foley Care
  - Management of Hepatitis B Dialysis Patient
- Products
  - Surgical Dressings
  - Cleaning Products
  - Foley and Central Line Supplies



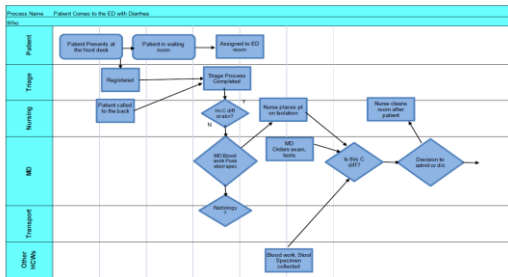
## 5S

### SORT, STORAGE, SHINE, STANDARDIZE, SUSTAIN

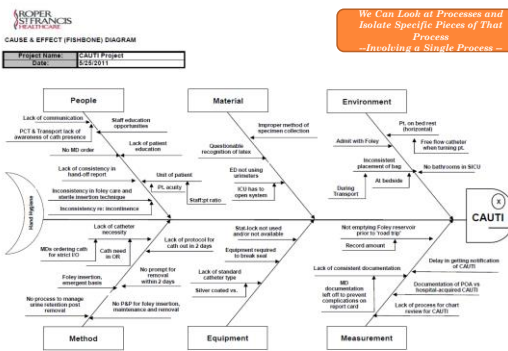
- Members of Value Analysis Team
  - Charged with cutting costs, standardizing products and increasing the safety of our patients
- Policy Review
  - Update and Simplify
    - Involvement of Department Staff / Managers
    - Delete Duplication Within Policies
- Data
  - Collect
  - Define
  - Report
  - Manage
- IP Department Standardization
  - Weekly Huddles
  - Purgig Retention Records
    - Labeling of remaining records



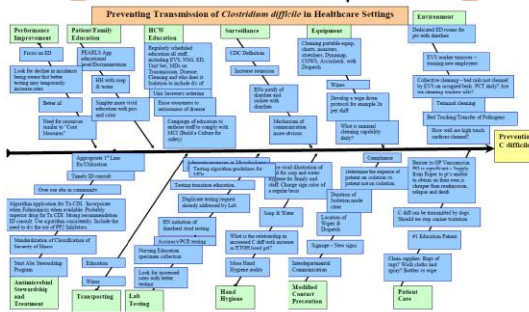
Swim Lane developed 2-9-2011



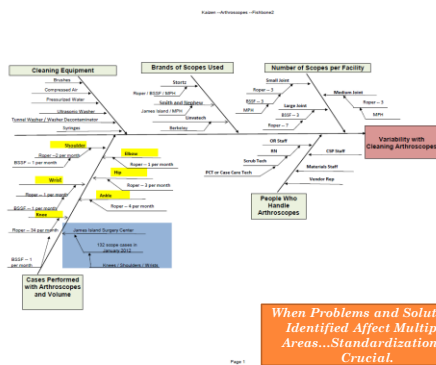
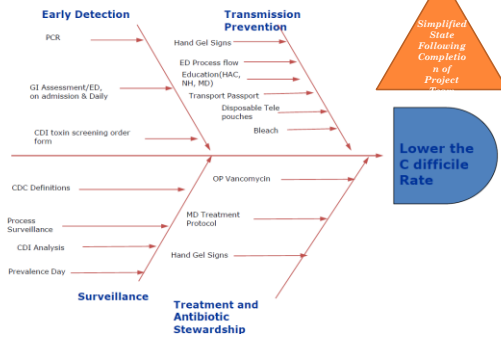
### Steps For Admitting In The ER



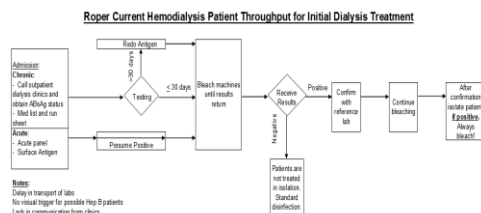
## Fishbone Graph



## Clostridium difficile – Current State May 2012



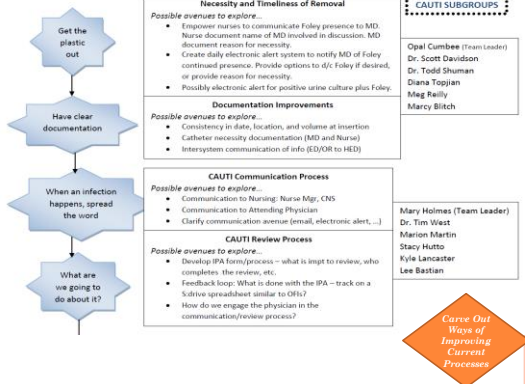
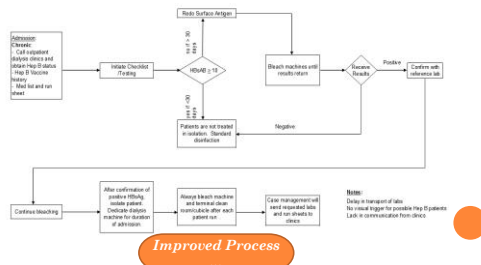
## ROPER'S PRE-KAIZEN PROCESS MAP



*Previous Process...*

## ROPER ST. FRANCIS HEALTHCARE'S POST KAIZEN CHRONIC PROCESS MAP

RSFH Future State Chronic Patient Hemodialysis Throughput for Initial Dialysis Treatment

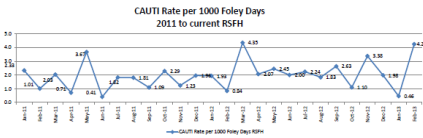
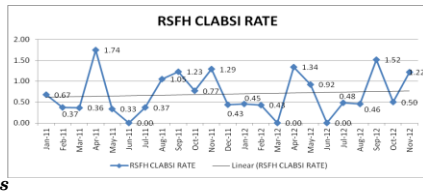


Team	Arthroscopic Cleaning Process for RSFH System	Realization Date	3/7/2013																																																		
Category	Patient Safety / Infection Prevention	Tracking Number																																																			
Initiative	Arthroscopic Cleaning Process	Date Submitted																																																			
Description of Opportunity	To identify ways to improve the cleaning process of Arthroscopes being used in surgical cases.																																																				
Scope & Boundaries	Only Arthroscopes being used in surgical cases in the RSFH System. We are not looking at any other types of surgical instruments. We are not looking at other hospitals.																																																				
Initiative Team	<table><tr><th>Role</th><th>Name</th><th>Title</th><th>Phone</th><th>Manager</th></tr><tr><td>MD Champion</td><td>Dr. West</td><td>Hospital Epidemiologist</td><td>843-276-3239</td><td></td></tr><tr><td>Process Champion</td><td>James Wilson</td><td>Infection Prevention Specialist</td><td>843-276-3239</td><td>Marion Martin</td></tr><tr><td></td><td>Griffiths King</td><td>Risk Management</td><td>843-276-3239</td><td>Marion Martin</td></tr><tr><td>Project Champion</td><td>Roger Jeffrey</td><td>Supervisor SPD BGSF</td><td></td><td></td></tr><tr><td></td><td>Kim Coleman</td><td>Clinical Manager Peri-Cy Resp</td><td></td><td></td></tr><tr><td></td><td>Tamara Madson / Veronica McVicar</td><td>Behavioral Surgery Center</td><td></td><td></td></tr><tr><td></td><td>Elaine Davis</td><td>Mount Pleasant Hospital</td><td></td><td></td></tr><tr><td></td><td>Johna Rees</td><td>Arthroscopic Surgery Center</td><td></td><td></td></tr><tr><td>Executive Champion</td><td>Marion Martin</td><td>Director of Quality</td><td>843-227-8513</td><td></td></tr></table>			Role	Name	Title	Phone	Manager	MD Champion	Dr. West	Hospital Epidemiologist	843-276-3239		Process Champion	James Wilson	Infection Prevention Specialist	843-276-3239	Marion Martin		Griffiths King	Risk Management	843-276-3239	Marion Martin	Project Champion	Roger Jeffrey	Supervisor SPD BGSF				Kim Coleman	Clinical Manager Peri-Cy Resp				Tamara Madson / Veronica McVicar	Behavioral Surgery Center				Elaine Davis	Mount Pleasant Hospital				Johna Rees	Arthroscopic Surgery Center			Executive Champion	Marion Martin	Director of Quality	843-227-8513	
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Who Should Be Involved... and Why?

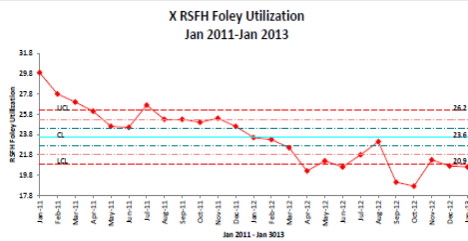


## Run Charts



*Demonstrates Progress  
Changes*

## Control Charts



*Demonstrates Progress  
Changes*

## NUMBER OF HA CDI RSFH

	2010	2011	2012	2013 YTD (Feb)
Roper	82	70	52	12
St Francis	41	36	22	6
MPH	0	1	2	0
RSFH	123	107	76	18

Average cost of 1 HA CDI at RSFH = \$14,551

Cost of HA CDI 2010 \$1,789,773

Cost of HA CDI 2011 \$ 1,556,957

Cost of C diff YTD 2012 = \$1,105,876

Savings from 2011 to 2012 = \$451,081

### C DIFF COST PER DAY BEFORE AND AFTER TEST RESULTS

CDIFF COST PER DAY BEFORE AND AFTER TEST RESULT				
Dates of Service July 1, 2011 to June 30, 2012				
RESULT	NEGATIVE			
	DAYS	AVG DAYS	DIRECT COST	COST/DAY
AFTER	8746	3.30	\$10,189,711	\$1,165
BEFORE	9676	3.65	\$12,808,411	\$1,324
REDUCTION IN COST PER DAY				\$159
AFTER NEGATIVE RESULT				
2654 PATIENTS WITH NEGATIVE RESULT				
REDUCE "BEFORE" TIME BY 1 DAY				
= 2654 X 1 X \$159				
\$421,986				

### CDIFF COST PER DAY BEFORE AND AFTER TEST RESULTS

CDIFF COST PER DAY BEFORE AND AFTER TEST RESULT				
Dates of Service July 1, 2011 to June 30, 2012				
RESULT	POSITIVE			
	DAYS	AVG DAYS	DIRECT COST	COST/DAY
AFTER	1518	3.64	\$1,511,578	\$996
BEFORE	1273	3.05	\$1,560,169	\$1,226
REDUCTION IN COST PER DAY				\$230
AFTER POSITIVE RESULT				
417 PATIENTS WITH POSITIVE RESULT				
REDUCE LOS 1 DAY - FROM "BEFORE"				
= 417 X 1 X \$1,226				
\$511,242				

### POTENTIAL COST REDUCTION FOR RSFH C DIFF PCR ON DEMAND TESTING

2654 x 1 x \$159 = \$421,986 (for patients with a negative test)

+

417 x 1 x \$1,226 = \$511,242 (for patients with a positive test)

= \$933,228 (Total potential cost reduction for 1 year)

### COST OF CEPHEID PCR ON DEMAND TESTING

- Cost of instruments (1 large and 1 small)  
\$119,000.
- Cost impact to Lab
  - Reagent Costs for C Diff. will increase by \$20.00 / test  
X 3071 patients is \$61,420.
- Total Cost first year - \$180,420

### COST SAVINGS

#### C difficile

$\$933,228 - \$180,420 = \$752,808$   
 (Cost Avoidances) - (Cost of Cepheid) = (Potential Cost Prevention)  
 potential cost prevention for the first year



### BLOOD CULTURE COST REDUCTION

BLOOD CULTURE COST REDUCTION					
July 1, 2011 to June 30, 2012					
	IP Cases	DAYS	AVG DAYS PER CASE	DIRECT COST	Total Cost
Current	389	4640	11.93	\$18,400	\$7,157,600
Target with PCR	389	3294	8.47	\$13,064	\$5,081,896
REDUCE LOS by 29% - per results from the OSU study				REDUCTION IN COST	\$2,075,704

## COST SAVINGS

### Blood Cultures growing Staph

Cost impact to the lab  
\$57.46 per test X 550 tests = \$31,603

Potential Cost Prevention – New Cost to lab  
\$2,075,704 - \$31,603 = \$2,044,101

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## COST SAVINGS USING CEPHEID PCR ON DEMAND TESTING



### C difficile

\$933,228 - \$180,420 = \$752,808  
potential cost prevention for the first year

### Blood Culture

\$2,041,929 reduction in cost per year  
Potential Total Cost Prevention On demand PCR testing  
\$752,808 + \$2,044,101 = \$2,796,909

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## MULTIDISCIPLINARY PRE OP CLINIC

### o Centralized Process

- Coordinate interdisciplinary approach
  - o PT/OT
  - o Nursing
  - o Case Management
  - o Pharmacy
  - o PAT
- Reduce gaps and variation in preoperative education
- Improve patient satisfaction
- Compliance with protocols
  - o Glucose control
  - o Standard pre op skin prep

Identify medical issues  
Avoid OR cancellations  
Improved peri operative management  
Reduce 30 day readmissions

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Continued....

- **NP (Anesthesiologists as supervisors)**
  - H & P
  - Nursing Assessment
  - Pre-anesthesia evaluation
  - Pre-op risk assessments
  - Standard protocols
- **Individualized plan of care based on patient's clinical profile**
  - Nutrition
  - Smoking cessation
  - Glucose control
  - Infection Prevention
  - Pre op workup
  - Pre op education
  - Discharge criteria

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### WHAT'S NEW? BEST PRACTICE

- **BSSF Quality & Patient Safety Council**
  - Dedicating 1 hour of each monthly meeting to rounding on the nursing units
    - Conducting process audits
    - Assessing needs of staff
    - Providing Education
- Utilizing Quality Roll Call report to assess central line and foley necessity
- VAT approval of the Neutral Valve for Central lines
- VAT approval for CHG bathing in the ICUs and Targeted surgical patients

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### CARE FUSION

- **Implementation Phase**
  - Location Mapping
  - Crosswalk for Locations
    - Submission of data to CDC NHSN for reporting
- **Webinar Training Sessions**




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Questions?

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