

Somerset Medical Center

Information Services
Patient Safety Initiative
CPOE

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Somerset Medical Center

- **Non-Profit Community Minor Teaching Hospital**
- **355 Licensed bed**
- **298 maintained / 240 average census**
- **Annual Statistics**
 - **56,000+ Emergency visits**
 - **30,000+ Inpatient / Same Day Visits**
 - **250,000+ Outpatient procedures**
 - **1800 FTEs (2100 people)**
 - **700 Independent Staff Doctors**
- **Payer mix 45% Medicare / 45% commercial**
- **Average LOS = 4.8 – 5.2 days**
- **Net revenue = \$240 million**
- **Positive operating margin**



Agenda

- **Healthcare Industry Drivers for Change**
- **SMC's Information Services Patient Safety Strategy**
- **Intended Benefits and Reasons for Change**
- **Implementation time line**
- **Adoption to Date**

Healthcare Industry Drivers for Improvements in Patient Safety

- 1999 Institute of Medicine Report (IOM) “To Err is Human” finds that approximately 44,000 deaths occur per year due to medication errors
- 2000 Leapfrog Group Responds recommending Hospitals implement the following by 2010:
 - Computerized Physician Order Entry
 - Intensivists in ICUs
- 2003 FDA proposes Federal Legislation to bar code all medications and Adverse Drug Event Reporting
- 2004 JCAHO requires full medication profiling
- 2004 Presidential State of the Union Address emphasizes the need for electronic health records to improve patient safety
- CA State Legislation requires IS patient safety initiatives be implemented by 2005
- July 2004 – IOM updates error statistics and predicts # of deaths maybe double the original estimate

Healthcare Industry Drivers for Improvements in Patient Safety

- 2007 Joint Commission Standards
 - Medication Reconciliation
 - 2009 ARRA Act signed into law in February
 - Meaningful Use Criteria
 - 10% CPOE for all orders by 10/1/2010
 - 100% CPOE for all orders by 10/1/2012
- {Providers defined as MD, DO, RN, PA, NP)

Most Common Causes of Medication Errors and Healthcare Technologies Markets Response

Common Errors

- Illegible hand written doctor orders
- Incorrect Medication
- Drug & IV Administration

Technology Response

- CPOE
- Medication Bar Coding
- Electronic Medication Administration

Goal: Reduce Patient Medication Errors

SMC Information Services

Patient Safety Strategy - Prerequisites

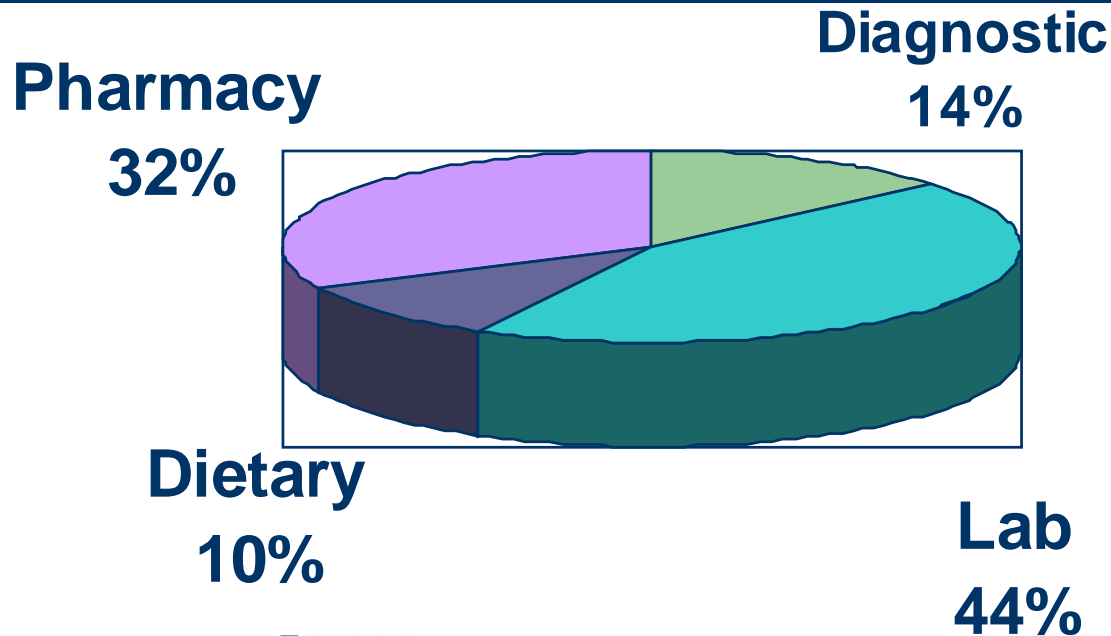
- **Project Millennium Phase I**
 - **Integrated Pharmacy, Order Entry, and Lab systems**
 - **Integrated Electronic Clinical Data Repository**
 - **Orders, Results**
 - **Nursing Documentation and Vital Signs**
 - **Nursing Task and Patient Access Lists (PAL)**
 - **Pre & Post-Op reports & discharge summaries**
- **24x7 Pharmacy Operations**
- **Expanded pharmaceutical profiling**
- **Limited floor-based cabinet Medications and access**
- **“Care Set” (Order Set) build**
- **Pharmaceutical “order sentences” build**

Intended Benefits and Reasons for Change

- **Computerized Physician Order Entry**
 - **Elimination of order illegibility**
 - **Increased speed of care delivery from order to result**
 - => **Reduced Average Length of Stay**
 - **Reduce duplicative testing**
 - => **Reduced cost per admission**
 - **Leapfrog Certification and compliance with national quality initiatives**
 - **Auto product selection within the Pharmacy**

Order Distribution – September 2008

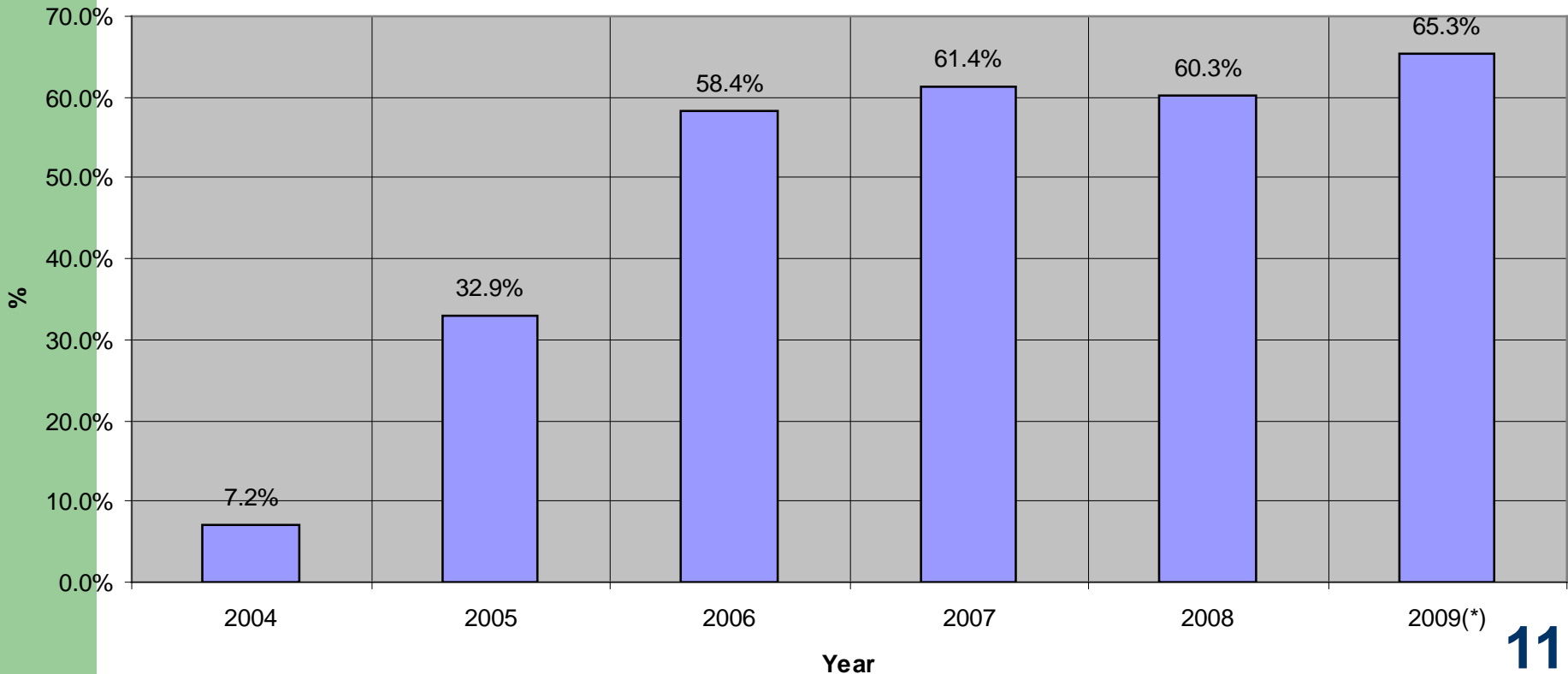
{Data Source = Budget to Actual Report}



Lab	=	58,362
Diagnostic	=	18,136 {Includes rehabilitation & respiratory treatments}
Pharmacy	=	42,797
Dietary	=	13,156 {Meals / ALOS}

SMC CPOE Adoption Over Time

Inpatient Medication CPOE % Adoption (*-thru Q309)



EMR Adoption ModelSM

Stage	Cumulative Capabilities	2008 Final	2009 Q1
Stage 7	Medical record fully electronic; HCO able to contribute CCD as byproduct of EMR; Data warehousing in use	0.3%	0.3%
Stage 6	Physician documentation (structured templates), full CDSS (variance & compliance), full R-PACS	0.5%	0.8%
Stage 5	Closed loop medication administration	2.5%	3.6%
Stage 4	CPOE, CDSS (clinical protocols)	2.5%	2.8%
Stage 3	Clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology	35.7%	37.0%
Stage 2	Clinical Data Repository, Controlled Medical Vocabulary, Clinical Dec, may have Document Imaging	31.4%	32.1%
Stage 1	Ancillaries – Lab, Rad, Pharmacy – All Installed	11.5%	9.0%
Stage 0	All Three Ancillaries Not Installed	15.6%	14.5%
	Total Hospitals	n = 5166	n = 5170



SMC Now

Data from HIMSS Analytics™ Database N = 5166/5170 ©2009 HIMSS Analytics

Improvements With CPOE

- Patient Care
 - Visual Display
 - Suggested Orders
 - System Logic
- Regulatory Compliance
 - Suggested Orders
 - Automated Orders

ZZZTEST, ALSPEC - Add Order

ZZZTEST, ALSPEC Age: 49 years Sex: Male MRN: 00610749 Location: 3 W...
 Allergies: heparin DOB: 1/21/1960 Fin Number: ... Inpatient [8/1...

Find: Starts with: Type: Inpatient

Folder: Search within: All At location: Somerset Med C

Clobetasol 0.05% Cream
 Clobetasol 0.05% Gel
 Clobetasol 0.05% Oint
 Clobetasol 0.05% Soln
 Clomid
 clomiPHENE
 clomiPRAMINE
 Clomipramine Level

clonazepam
 Clonazepam Level
 Clonidine Inject
 Clonidine Patch 0.1mg
 Clonidine Patch 0.2mg
 Clonidine Patch 0.3mg
Clonidine Tab (Antihypertensive)
 Clopidogrel

ZZZTEST, ALSPEC - 00610749

Order Sentences

Order sentences for: Clonidine (Clonidine Tab (Antihypertensive))

0.1 mg, By Mouth, ONCE, NOW (within the hour), Tab
 0.1 mg, By Mouth, Tab, ONCE
 0.1 mg, By Mouth, Tab, OnCall
 0.1 mg, By Mouth, Tab, Daily
 0.1 mg, By Mouth, Tab, q12hr
 0.1 mg, By Mouth, Tab, q8hr
 ..
 0.2 mg, By Mouth, ONCE, NOW (within the hour), Tab
 0.2 mg, By Mouth, Tab, ONCE
 0.2 mg, By Mouth, Tab, OnCall
 0.2 mg, By Mouth, Tab, Daily
0.2 mg, By Mouth, Tab, q12hr
 0.2 mg, By Mouth, Tab, q8hr
 ..
 0.3 mg, By Mouth, ONCE, NOW (within the hour), Tab
 0.3 mg, By Mouth, Tab, ONCE

1. Tall Man
2. Clinical Cues (Klonopin)
3. Dose/Freq Suggestions
4. Next Dose Timing

Clonidine (Clonidine Tab (Antihypertensive)) Order 9/30/2009 10:00 PM 0.2 mg, By Mouth, q12hr, 9/30/2009 10:00 PM, 30, day(s), Tab, Stop date 10/30/2009 10:00 AM

Details for Clonidine (Clonidine Tab (Antihypertensive))

Details | Order Comments

Remaining Administrations: 60 Stop: 10/30/2009 10:00:00 AM

Order details	Detail values
Strength dose [0.2]	0.2
Strength dose unit [mg]	
Route of administration [By Mouth]	
Frequency [q12hr]	
First Dose Timing Priority	
Requested start date and time [9/30/2009 10:00 PM]	
PRN [No]	
PRN Reason	
Duration [30]	
Duration unit [day(s)]	



Component	Order Details
<input checked="" type="checkbox"/> Order Set Name	T;N
Warfarin (Coumadin) Orders	
Previously resulted lab tests and warfarin administrations will display in the lower left corner of this order set.	
To see the CHEST 2008 reference for administering Warfarin: Right Click on any warfarin order and click on Reference Click on the "Reference" tab (NOT Drug Reference)	
To designate yourself as the Warfarin Designated Prescriber please enter your name in the Communication Order below.	
<input type="checkbox"/> Physician Communication Orders - Continuous	T;N, Designated Warfarin Prescriber:
Single Day Dosing (one time orders)	
If you order "Warfarin 0mg" all "Daily" orders will be discontinued assuming you want to order Warfarin separately every day.	
<input type="checkbox"/> Warfarin (Warfarin 0mg (Zero mg) Dose)	No Dose Today, By Mouth, One Time
<input type="checkbox"/> Warfarin	0.5 mg, By Mouth, One Time, 1, dose(s)/times, Tab
<input type="checkbox"/> Warfarin	1 mg, By Mouth, One Time, 1, dose(s)/times, Tab
<input type="checkbox"/> Warfarin	2 mg, By Mouth, One Time, 1, dose(s)/times, Tab
<input checked="" type="checkbox"/> Warfarin	2.5 mg, By Mouth, One Time, 9/30/2009 2:00 PM, 1, dose(s)/times, Tab, Stop date 9/30/2009 2:00 PM

1. Transmit Information
2. Patient Clinical Information
3. Evidence Based References

Decision Support

IDENTIFIED ORDER:
Warfarin

Drug Reference | Education Leaflet | Reference

Warfarin [Search]

CarePlan information
 Chart guide
 Nurse preparation
 Patient education
 Policy and procedures
 Scheduling information

In patients beginning warfarin (vitamin K antagonist) therapy, the CHEST guidelines recommend the initiation of oral anticoagulation with doses between 5 and 10 mg for the first 1 or 2 days for most individuals, with subsequent dosing based on the INR response.

In elderly patients or patients who are debilitated, are malnourished, have congestive heart failure, have liver disease

OK

	3/20/2009 10:00 AM
INRA	7.00
PT Anticoag	19.9

Patient Care - System Logic

- Dose Range Checking
 - Decimal Place Errors
 - Age Variations
 - Kidney Function
- Interaction Checking
 - Drug to Drug
 - Allergies
 - Duplicates
- Rules
 - Derived from documentation, orders, results



Component	Order Details
JCAHO: NPO until bedside swallowing screen if applicable.	
<input checked="" type="checkbox"/> Physician:Nurse One Time Communication	T;N, Bedside Swallowing Screen by Nursing
<input type="checkbox"/> S/H Dysphagia-Bedside Swallow	T;N, Urgent, CVA
<input type="checkbox"/> NPO (Diet - NPO)	Start: T;N
<input type="checkbox"/> Regular Diet (Diet - Regular)	
<input type="checkbox"/> ADA Diet (Diet - Diabetic)	
<input type="checkbox"/> Cardiac Diet (Diet - Cardiac)	
<input type="checkbox"/> Liquid Diet (Diet - Liquid)	T;N
<input type="checkbox"/> Pureed Diet (Diet Pureed)	T;N
<input type="checkbox"/> Mechanical Soft Diet (Diet - Mechanical Soft)	T;N
<input type="checkbox"/> Tube Feeding Order Set	
Respiratory	
<input type="checkbox"/> Oxygen therapy	
IV Access	
<input type="checkbox"/> Sodium Chloride 0.9% (IIC)	2,500 mL, InjSoln
<input type="checkbox"/> Dextrose 5% in Water (D5W)	1,000 mL, IV, 7, day(s), mL/hr
<input type="checkbox"/> Dextrose 5% with 0.45% NaCl (D51/2NS)	1,000 mL, IV, 7, day(s), mL/hr
<input type="checkbox"/> Sodium Chloride 0.9% (NS)	1,000 mL, IV, 7, day(s), mL/hr
Medications	
GI Prophylaxis	
NOTE: For CrCl < 50, change the frequency of Pepcid to "Daily"	
<input type="checkbox"/> famotidine (Pepcid)	20 mg, IV Push, q12hr, InjSoln
<input type="checkbox"/> famotidine (Pepcid)	20 mg, By Mouth, q12hr, Tab
DVT Prophylaxis	
JCAHO: Every non ambulatory patient should have DVT prophylaxis within 48 hrs. of admission if applicable.	
<input checked="" type="checkbox"/> Compression Boots (Pneumatic Boots)	T;N
<input type="checkbox"/> DVT Medical Prophylaxis Protocol	
<input type="checkbox"/> Physician:Nurse One Time Communication	No DVT Prophylaxis Intervention
Antiplatelet/Anticoagulant	
If t-PA used, reset the Antiplatelet Starting Dose/Time to 24 hours after t-PA.	
JCAHO: If Atrial Fibrillation, discharge on anticoagulation, unless contraindicated.	
**** BY MOUTH:	
<input type="checkbox"/> Aspirin	81 mg, By Mouth, Chew Tab, Daily
<input type="checkbox"/> Aspirin	325 mg, By Mouth, Tab, Daily
<input type="checkbox"/> Clopidogrel (Plavix)	75 mg, By Mouth, Tab, Daily

**SMC is a Designated Stroke Center
Stroke Protocol Order Set
Joint Commission Requirements**

Vaccinations - Flu Season

This is a READ ONLY box. Previous documented Vaccine data from previous admissions will populate here.

The top documentation is what was documented on the PREVIOUS admission - date and time is when it was recorded.

IF the patient received a vaccine here at SMC, the date and time it was administered will be documented BELOW the Admission Documentation

Documented Vaccine Info:

Automated Vaccine Orders

Based on Nursing Documentation

Pneumococcal Vaccine Received

- Yes
- No
- Unable to assess

Required Field

Year Received

*Note ** Pneumovax should have been received within past 5 years to qualify it under 65, (Immunized more than 5yrs. ago and was not yet 65 at the time of immunization)*

Contraindications for Pneumo Vaccine

- Previous reaction to pneumo vac
- None

Required Field

Risk Assessment for PneumoVax

- Age 65 or > & never received pneumo vac
- Immunized > 5 yrs & not 65 at time
- Age 65 or > & vaccine hx uncertain
- <65yr, no pneumovax hx, has disease risk

Disease Risks:
Pulmonary Disease
Cardiac Disease
Diabetes
Immunosuppression (Di
Medication Induced)

This Season Flu Vaccine Received

- Yes
- No
- Unable to assess

Required if pt did not receive vaccine

Contraindications for Flu Vaccine

Required if pt did not receive vaccine

- Allergy to eggs
- Has received Flu vac this season
- Allergy to thimersol (preserv)
- Hx of Guillian Barre
- None

****NOTE**
Disease Risks for Flu
patients <65 are same
Pneumovax and rule w
fire off of Admission H

Pneumococcal

- Yes
- Pt does not meet criteria

Flu Vaccine

- Yes
- Pt does not meet criteria
- Pt unable to answer

**Only offer flu vaccine on
pts < 65 with same
disease risks as**

SMC Status



The next leap forward.....



Process.....process.....process.....

- **Admission Orders – pre hospital**
 - never admitted before
- **Telephone Orders**
 - need to design process (pharmacy & nursing buy in)

Process.....process.....process.....

- **Short term orders – auto D/C ??**
 - *Anesthesia Orders – Recovery Room*
 - *ED Physician Orders – Dialysis orders*
- **Conditional Orders**
 - *Regular Diet if tolerating liquid diet*
 - *switch to PO (by mouth) when tolerating diet*

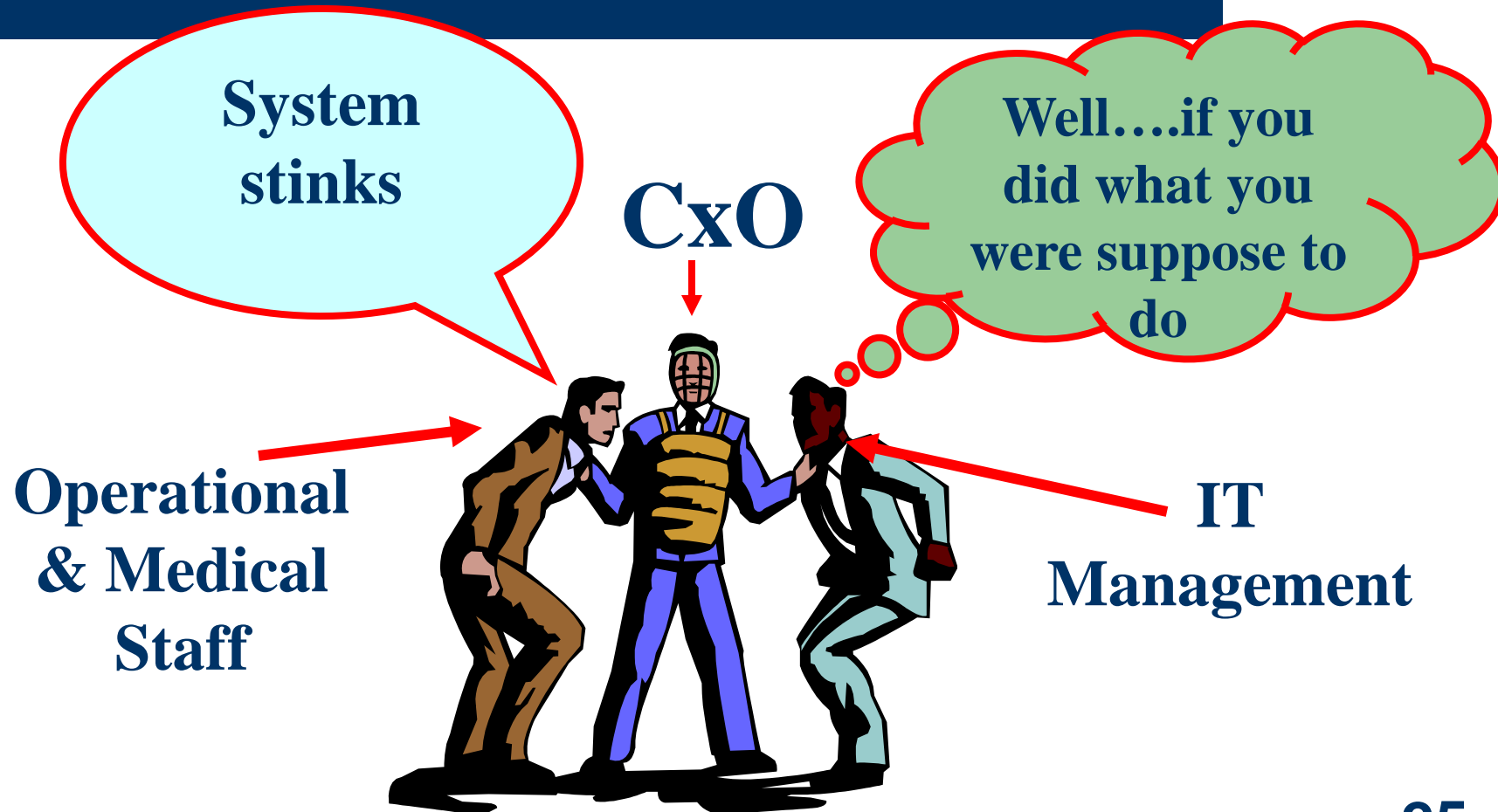
Process.....process.....process.....

- **Make sure that nursing has:**
 - **been involved with process development**
 - **agrees, buys-in and understands process**
 - **is educated and well-versed on the process**

.....**if not**



Noncompliance results in.....



Other barriers...

- **Device availability**

Types: netbooks, rovers,
tablets

- **Automation of Workflow**

Florence Nightingale

