



Clinical Safety & Effectiveness Cohort # 7

Venous Thromboembolism Prophylaxis



Educating for Quality Improvement & Patient Safety

DISCLOSURE

Kevin Schindler, MD has no relevant financial relationships with commercial interests to disclose.

Sheryl Cobb, MSN, RN has no relevant financial relationships with commercial interests to disclose.

What We Are Trying to Accomplish?

OUR AIM STATEMENT

The aim of this project is to increase the compliance of ordering Venous Thromboembolism Prophylaxis for at risk 9th Floor General Medicine patients at University Hospital from 76% to 95% by June 1, 2011.

The Team

- **CS&E Participants**

- **Kevin Schindler, MD**
 - UHS Hospitalist
- **Sheryl Cobb, RN MSN**
 - Q&PI Director

- **Sponsor Departments**

- **UHS, Quality & Process Improvement and Pharmacy Departments**
- **UHS, QC and Anticoag. Safety Comm.**
- **UTHSCA, Dept. of Medicine**

- **Support Staff (IT)**

- **Dr. Alton Powell**
 - Chief Medical Information Officer
- **Lorri Savoie**
 - Director, Computer Training Services

- **Team Members**

- **Michael Johnson, MD**
 - UHS Hospitalist
- **Crystal Franco-Martinez, PharmD**
 - Clinical Pharmacist, Anticoagulation
- **Carla McDaniel RN**
 - Sr. Analyst, Q&PI, Data Abstractor
- **Bonnie Jones, RN BC**
 - RN Educator, 9th General Medicine
- **Elizabeth Wilson, RN BSN**
 - Admin. Dir. , 9th General Medicine
- **Carol Mancinas, MHA**
 - Sr. Analyst, Q&PI, Data Support

- **Facilitator**

- **Amruta Parekh, MD MPH**

Project Milestones

- **Team Created** Jan 21, 2011
- **AIM statement created** Feb 4, 2011
- **Weekly Team Meetings** Jan 28 – Mar 4, 2011
- **5 Additional Team Meetings** Mar 25 – May 27, 2011
- **Background Data, Workflow, Fishbone, and Brainstorming** Jan 24 - Mar 4, 2011
- **Interventions Implemented** Mar 18/21 (Initial) - Ongoing
- **Data Analysis** Jan 24 – May 27, 2011
 - Weekly x 9wks, then Bi Weekly
- **CS&E Presentation** June 24, 2011

Background

- **VTE adopted by CMS as a Core Measure**
 - Voluntary participation: Began 4th Qtr 2009
 - Required participation: Anticipate ~Jan 2012
 - Linked to Pay for Performance (P4P)
 - Posted publicly on the Internet w/other Core Measures
- **What Cases are Reviewed?**
 - Hospitals accepting CMS “dollars” contract through a CMS approved vendor.
 - Cases selected by vendor and not by the facility
 - Based on ICD-9 and CPT coding at discharge
 - Each case does not always meet criteria for all measures
 - Meets criteria for VTE prophylaxis at admission but not at d/c

Core Measure Objectives

- **Improve Quality of Patient Care**
 - Utilization of Best Practice
 - Positive Patient Outcomes
 - Reduce Re-Admissions
 - Provide Care in the most Cost Effective Manner
- **Information Provided Publicly on the Internet**
 - Provide consumers with quality of care information
 - Provide consumers in making more informed decisions about their healthcare

VTE Core Measures

- **VTE-1 VTE Prophylaxis** *(focus of the project)*
- **VTE-2 Intensive Care Unit VTE Prophylaxis**
- **VTE-3 VTE Patients with Anticoagulation Overlap Therapy**
- **VTE-4 VTE Patients Receiving Unfractionated Heparin with Dosages/Platelet Count Monitoring by Protocol**
- **VTE-5 VTE Discharge Instructions**
- **VTE-6 VTE Incidence of Potentially-Preventable VTE**

Note: Additionally, there are two VTE measures included in the SCIP Core Measure (Surgical Care Improvement Project)

Components of VTE-1 Measure

- **Numerator Statement**

Patients who received VTE prophylaxis **OR** have documentation why no VTE prophylaxis was given

--- **Medicine Patients**.....by the end of day 2 from admission (Day 1 is admission date)

--- **Surgery Patients**.....based on the correlation between the date of surgery and the admission date.

- **Denominator Statement**

All patients selected for the review

Included Population

- **Patients age 18 and over**
- **Length of Stay**
 - **greater than 24 hours *and***
 - **less than 120 days**
- **Discharged with at least one of the eligible ICD 9 Codes**

Incidence of DVT/PE and Deaths

Annual	Surgeon General Call to Action 2008	John Heit Data (Mayo Clinic) 2005
<p>United States</p> <p>Incidence of DVT/PE Deaths (Mortality)</p>	<p>350,000 – 600,000 100,000</p>	<p>900,000 300,000</p>
<p>Texas (# 2 in the nation)</p> <p>Incidence of DVT/PE Deaths (Mortality)</p>	<p>27,335 - 46,860 7,810</p>	<p>70,290 23,430</p>

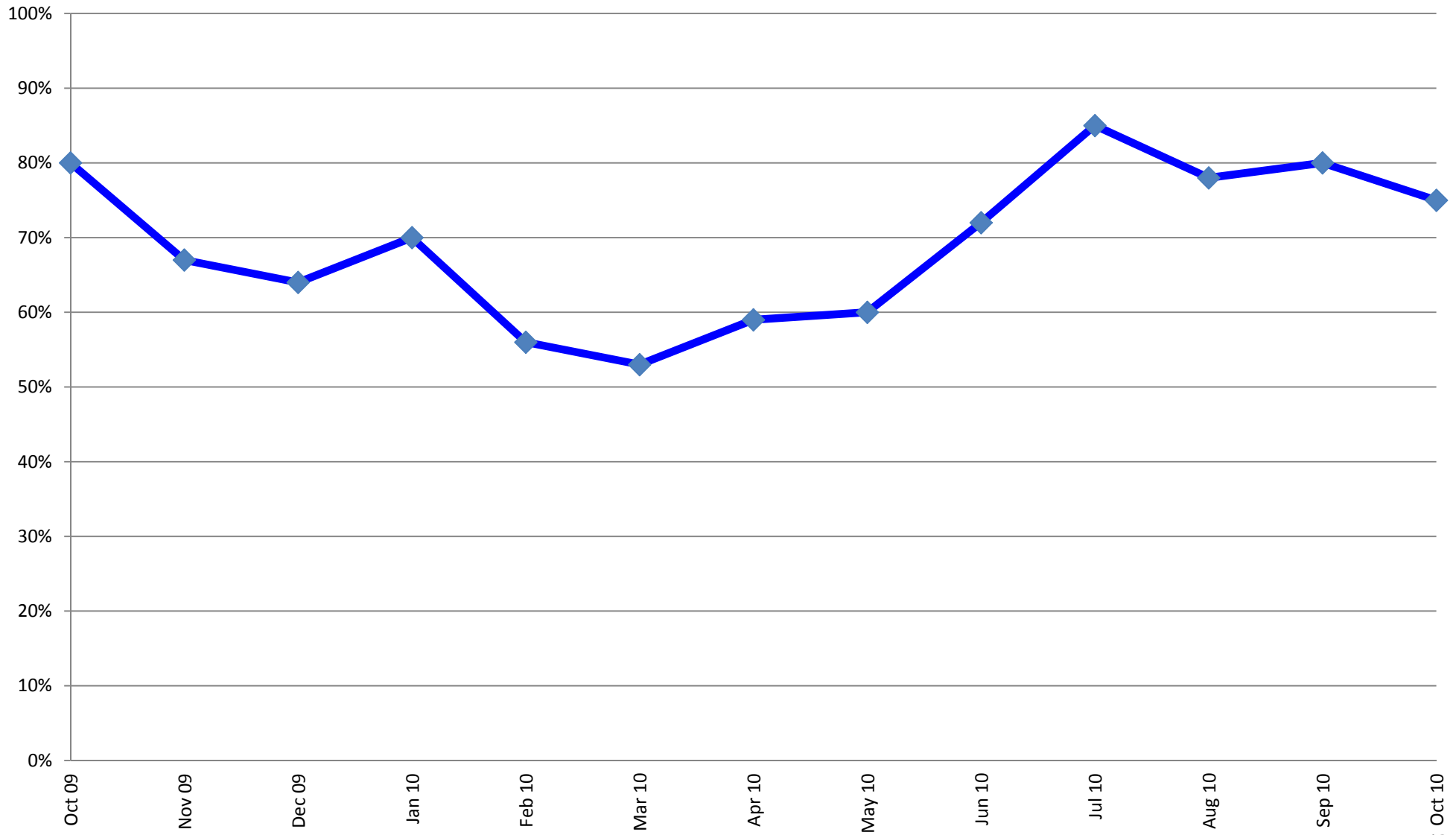
National Blood Clot Alliance. Stop The Clot. *Deep Vein Thrombosis (DVT) Incidence Map*. Website: <http://www.stoptheclot.org/News/article163.htm>

The Facts

- Over one year, a 300 bed hospital that lacks a systematic approach to VTE prevention can expect roughly 150 cases of hospital-acquired VTE.
- Approx. 5 of those will die from potentially preventable pulmonary embolism.
- Each hospital acquired DVT represents an incremental inpatient cost of \$10K, while each PE represents a \$20K price tag.

Why Did We Choose This Project?

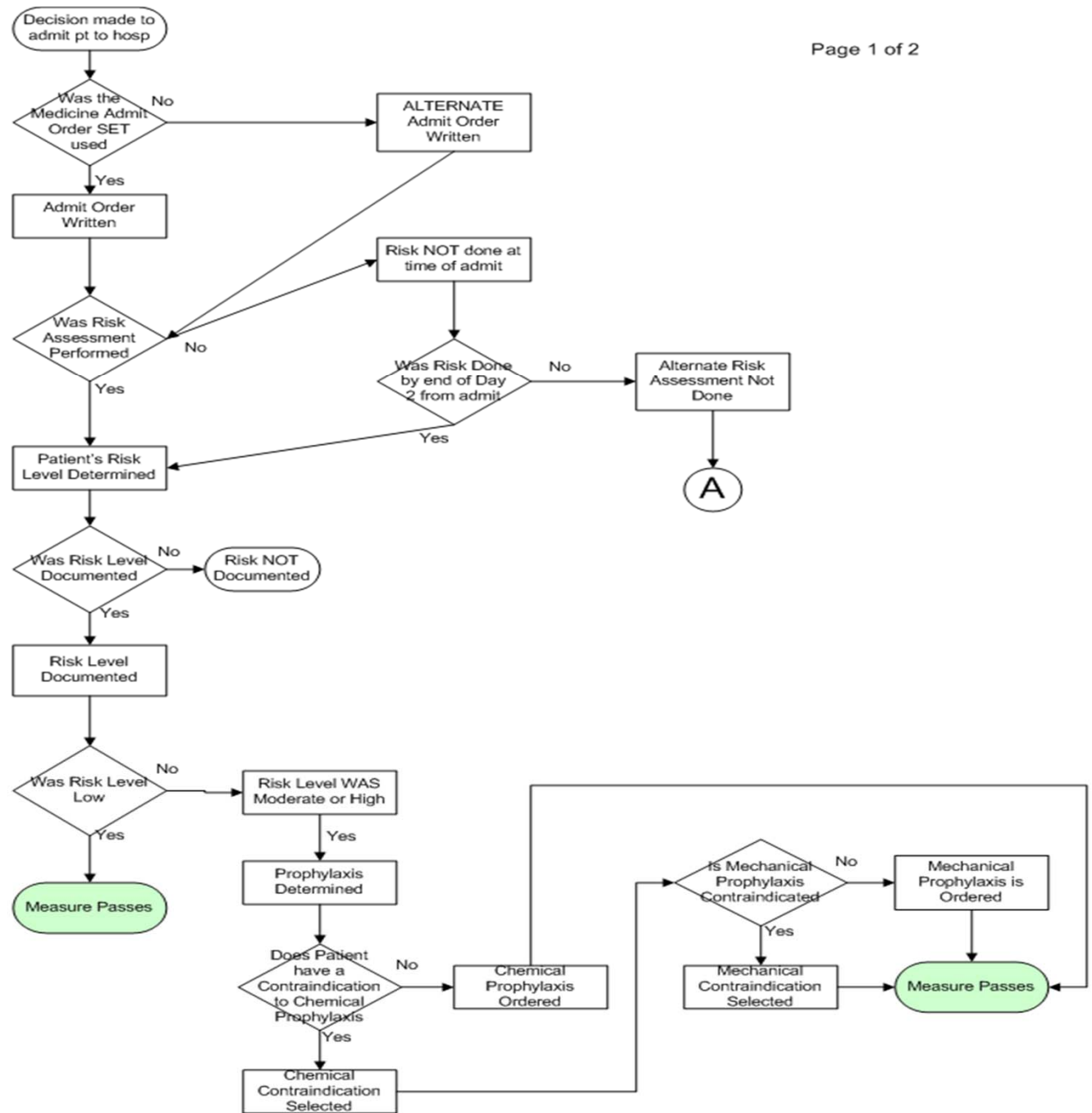
UHS Overall VTE 1 Venous Thromboembolism Prophylaxis (Oct 09-Oct 10)



Flow Diagram

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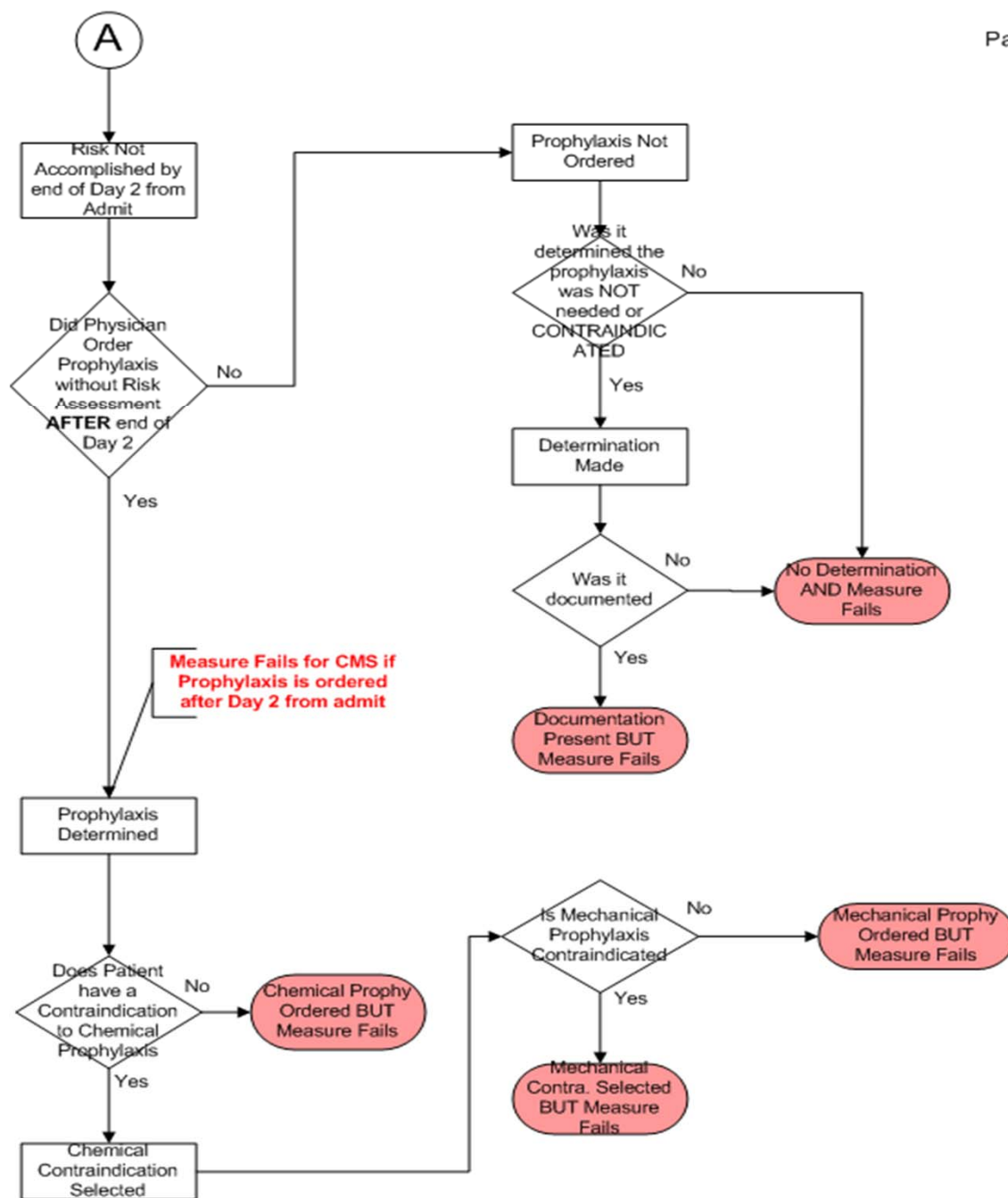
Two Opportunities to PASS the Measure

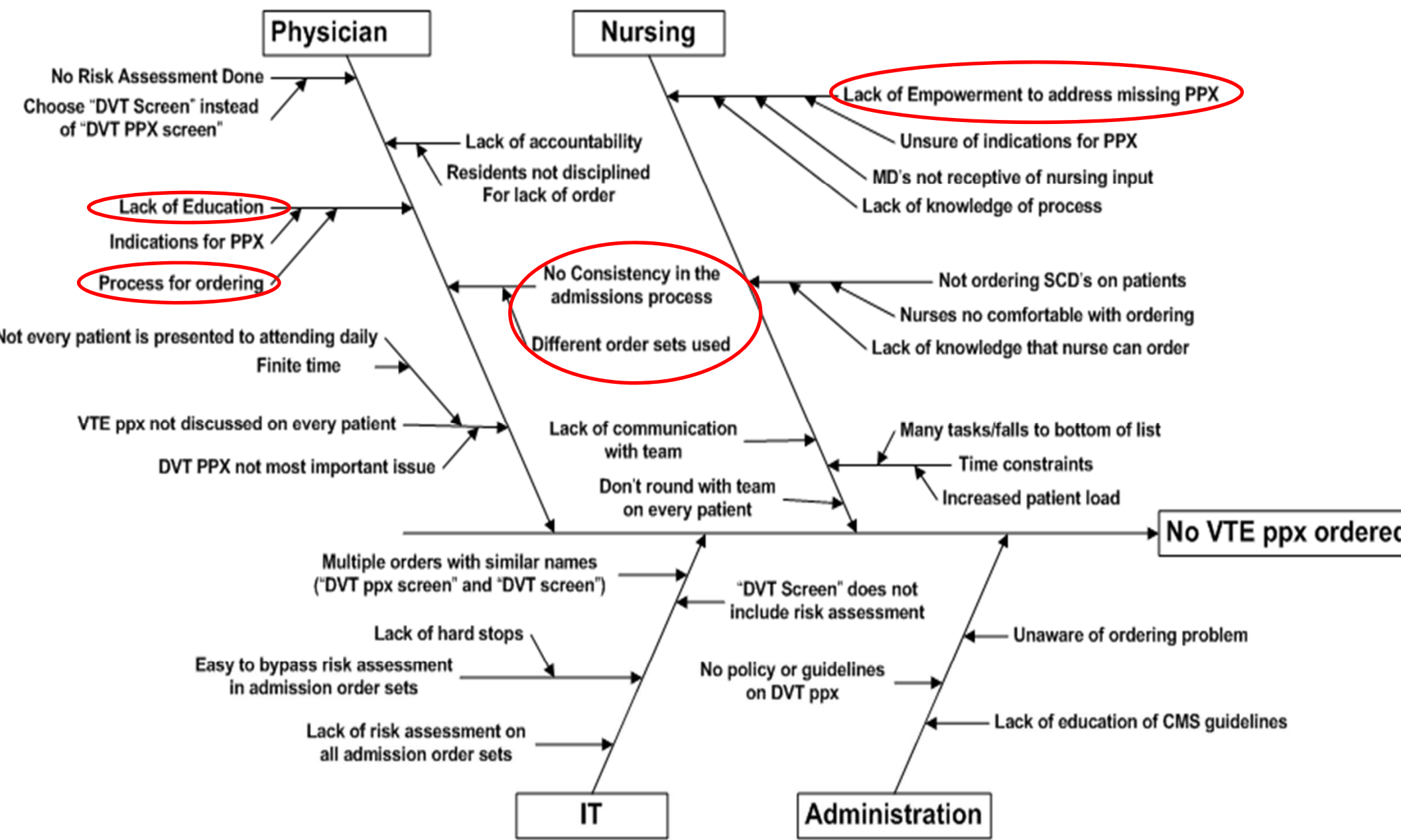


Flow Diagram

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Five Opportunities to FAIL the Measure





Brainstorming Ideas

Find out why attending and residents don't buy-in to tool

- Solicit input
- Education program for housestaff and attending
 - Multiprong approach
 - Conferences
 - E-mail
 - Target night float (8p-7a)
 - Pamphlets
 - 5-minute sessions
 - 1-on-1 for fallouts
 - Screen saver
 - Flyers In call rooms
 - Memo at opening of SR – on log-in screen
 - Let MDs know that the nurse will be calling if screen not done
 - Include nursing
 - Empower to talk to MDs
 - Flash ad
 - Include criteria for understanding and follow-up of high, medium and low risk on screening
- Push “Low Risk” on screening into a Sunrise location so the nurse can see it
- Create a Sunrise alert if screening is not done by end of Day 2 or within 12 hours of admission
- Add a hard stop on the admission order
- Incorporate into Medicine template note
- Establish nursing guideline for what to do if no orders – need concrete actions
- Charge nurse can look at admission orders to see if screening done and let MD know if needed (second look)
- Patient's nurse looks at admission orders to see if screening done and calls MD if screening is not done
- Add question to RN assessment (or somewhere) that asks “Has DVT prophylaxis been addressed?”
 - If No, RN is to call MD
 - RN to document when called
 - Roll out as a pilot
- Nurse should write an ERAF when MD is verbally abusive (include in education)
- Staff should wear SCDs to visually remind MDs
- Buttons for staff
- Make this important to administration by tying to
 - Core measures
 - Money
 - Reassessment
 - Find a champion (Mary Ann Mote, Dr. Alsip, or Nancy Ray)
- Add as a responsibility to case managers (CM doesn't change for patient)

Most Creative Idea.....

Staff should wear

SCDs to visually

remind the MDs

Achievable Ideas

- **Solicit Input**
 - Why isn't it used by attending and/or residents (Buy In?)
- **Education**
 - Physician: Awareness and utilization of the tool
 - Nursing: Awareness of low, medium, high risk patients with recommended treatments
 - Other: Email, Pamphlets, Flash Ad's, Podcast, Posters
- **Nursing Empowerment:** contact MD, charge nurse review of admit orders
- **Executive Buy In:** Core Measures and Reimbursement

Action plans

- **Educational program given to faculty and house staff**
 - Focused on utilization of risk assessment tool
- **Educational program for nurses**
- **Direct feedback to failures**
- **Nurse managers empowered to call providers if no screen done**
- **Flyers made for call rooms**

The DVT Prophylaxis Screen

**Developed by Dr. Michael Johnson and
Crystal Franco-Martinez**

Order Set:

Order Items

Admit		
<input type="checkbox"/>	Bed Status Request This will print in Bed Control. You will be notified when the patient can be placed in a bed.	T Routine
<input checked="" type="checkbox"/>	DVT Prophylaxis Screening	
Activity		
<input checked="" type="checkbox"/>	Activity - Ambulate as tolerated	T Routine
<input type="checkbox"/>	Activity - Bedrest w/ Bathroom Privileges	T Routine
<input type="checkbox"/>	Activity - Ambulate with assistance	T Routine
Vitals		
<input checked="" type="checkbox"/>	Vital signs - Every 8 hours	T Routine
<input type="checkbox"/>	Vital signs - Every 4 hours	T Routine
<input checked="" type="checkbox"/>	Isolation Precautions - Standard	T Routine
<input type="checkbox"/>	I & O - Strict I/O's.	T Routine
<input type="checkbox"/>	I & O - Every Shift	T Routine
<input type="checkbox"/>	Blood glucose monitoring - Before Meals and At Bedtime	T Routine
Dietary		
<input type="checkbox"/>	Adult Regular Diet	T Routine
<input type="checkbox"/>	1800 Calorie Carb-Controlled Diet	T Routine
<input type="checkbox"/>	2400 Calorie Carb-Controlled Diet	T Routine
<input type="checkbox"/>	Clear Liquid Diet	T Routine
<input type="checkbox"/>	Low Sodium Diet	T Routine
<input type="checkbox"/>	Renal Failure Diet Do not order "double portions " as this will double the potassium, phosphorous, and protein load.	T Routine
<input type="checkbox"/>	Liver Failure Diet (Low Na) - Continue Prior Dietary Orders: No This diet no longer automatically includes fluid restriction. If fluid restriction is needed, please specify amount in Special Instructions.	T Routine
<input type="checkbox"/>	Cardiac Diet (Low Fat, NAS)	T Routine
<input type="checkbox"/>	Renal Hemodialysis (OP) Diet Order Do not order "Double Portions". Will double K, Protein, PO4 load.	T Routine
<input type="checkbox"/>	NPO	T Routine
<input type="checkbox"/>	NPO after midnight	T Routine

NOTE: All patients are presumed to be at MODERATE RISK unless you select a contraindication to DVT prophylaxis OR indicate that the patient meets high or low risk criteria.

Does Patient Meet

High Risk Criteria?

*

High Risk Criteria

High Risk Level is Reserved for: Hip, pelvic or severe lower extremity fractures OR lower extremity arthroplasty OR major trauma (lower extremity, head, fractures, face, chest, abdomen) OR acute spinal cord injury, paraplegia OR abdominal/pelvic surgery for cancer.

Height (inches)	Height (cm)	Weight (lb)	Weight (kg)	BSA
72	182.9	160	72.6	1.94

Does Patient Meet

Low Risk Criteria?

*

Low Risk Criteria

Low Risk Level is Reserved for: Ambulatory patients without additional risk factors OR ambulatory patients with expected length of stay less than 3 days OR same day / minor surgery patients OR no pharmacologic prophylaxis agent necessary.

Creatinine Clearance (Actual)	Creat Clear (actual)	<input checked="" type="radio"/> Actual	<input type="radio"/> Estimated

Anticoagulant Contraindications

Age 57y BMI 21.7

DVT Prophylaxis - Moderate Risk Options

Order	Dose	UOM	Route	Frequency	Administration Instructions
<input checked="" type="checkbox"/> Enoxaparin Inj	40	mg	Subcutaneous	Once Daily	
<input type="checkbox"/> Fondaparinux Inj	2.5	mg	Subcutaneous	Once Daily	
- Patients w/ BMI > 40 - 1 item(s)					
<input type="checkbox"/> Enoxaparin Inj	40	mg	Subcutaneous	Every 12 Hours	
- Patients w/ CrCl < 30 - 2 item(s)					
<input type="checkbox"/> Heparin Sodium...	5,000	Units	Subcutaneous	Every 8 Hours	
<input type="checkbox"/> Enoxaparin Inj	30	mg	Subcutaneous	Once Daily	
- Patients < 50 kg or 75 yrs old - 1 item(s)					
<input type="checkbox"/> Heparin Sodium...	5,000	Units	Subcutaneous	Every 12 Hours	

DVT Prophylaxis - High Risk Options

Order	Dose	UOM	Route	Frequency	Administration Instructions
- High Risk Prophylaxis - 2 item(s)					
<input type="checkbox"/> Enoxaparin Inj	30	mg	Subcutaneous	Every 12 Hours	
<input type="checkbox"/> Fondaparinux Inj	2.5	mg	Subcutaneous	Once Daily	

Drug Info

OK

Cancel

NOTE: All patients are presumed to be at MODERATE RISK unless you select a contraindication to DVT prophylaxis OR indicate that the patient meets high or low risk criteria.

Does Patient Meet High Risk Criteria?

No

High Risk Criteria

High Risk Level is Reserved for: Hip, pelvic or severe lower extremity fractures OR lower extremity arthroplasty OR major trauma (lower extremity, head, fractures, face, chest, abdomen) OR acute spinal cord injury, paraplegia OR abdominal/pelvic surgery for cancer.

Height (inches)	Height (cm)	Weight (lb)	Weight (kg)	BSA
72	182.9	160	72.6	1.94

Does Patient Meet Low Risk Criteria?

No

Low Risk Criteria

Low Risk Level is Reserved for: Ambulatory patients without additional risk factors OR ambulatory patients with expected length of stay less than 3 days OR same day / minor surgery patients OR no pharmacologic prophylaxis agent necessary.

Creatinine (mg/dl)	Creat Clear (actual)	Actual	Estimated
		<input checked="" type="radio"/>	<input type="radio"/>

Anticoagulant Contraindications

- General Surgery within the next 24 hours
- Already receiving IV Heparin or other anticoagulant
- Platelets <50,000, Coagulopathy (INR >1.5)
- Active hemorrhage from wounds, drains, or lesions
- Recent intraocular, intracranial or spinal surgery
- Multiple trauma with bleeding risk
- Suspected intracranial hemorrhage
- End-stage liver disease
- Bleeding risk
- Comfort Care Hospice

Age	BMI
57y	21.7

	Frequency	Administration Instructions
<input type="checkbox"/> Heparin Sodium...	Once Daily	
<input type="checkbox"/> Enoxaparin Inj	Once Daily	
<input type="checkbox"/> Heparin Sodium...	Every 12 Hours	
<input type="checkbox"/> Heparin Sodium...	Every 8 Hours	
<input type="checkbox"/> Enoxaparin Inj	Once Daily	
<input type="checkbox"/> Heparin Sodium...	Every 12 Hours	

DVT Prophylaxis - High Risk Options

Order	Dose	UOM	Route	Frequency	Administration Instructions
High Risk Prophylaxis - 2 item(s)					
<input type="checkbox"/> Enoxaparin Inj	30	mg	Subcutaneous	Every 12 Hours	
<input type="checkbox"/> Fondaparinux Inj	2.5	mg	Subcutaneous	Once Daily	

- Patients w/ BMI > 40 - 1 item(s)

<input type="checkbox"/>	Enoxaparin Inj	40	mg	Subcutaneous	Every 12 Hours	
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- Patients w/ CrCl < 30 - 2 item(s)

<input type="checkbox"/>	Heparin Sodium...	5,000	Units	Subcutaneous	Every 8 Hours	
<input type="checkbox"/>	Enoxaparin Inj	30	mg	Subcutaneous	Once Daily	

- Patients < 50 kg or 75 yrs old - 1 item(s)

<input type="checkbox"/>	Heparin Sodium...	5,000	Units	Subcutaneous	Every 12 Hours	
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DVT Prophylaxis - High Risk Options

Order	Dose	UOM	Route	Frequency	Administration Instructions
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- High Risk Prophylaxis - 2 item(s)

<input type="checkbox"/>	Enoxaparin Inj	30	mg	Subcutaneous	Every 12 Hours	
<input type="checkbox"/>	Fondaparinux Inj	2.5	mg	Subcutaneous	Once Daily	

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- Patients w/ CrCl < 30 - 2 item(s)

<input type="checkbox"/>	Heparin Sodium...	5,000	Units	Subcutaneous	Every 8 Hours	
<input type="checkbox"/>	Enoxaparin Inj	30	mg	Subcutaneous	Once Daily	

- Target INR 2-3 - 1 item(s)

<input type="checkbox"/>	Warfarin Tab		mg	Oral	Once Daily-At 5 PM	Always check INR before giving dose; if INR is greater...
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SCD Contraindication

*

Nonpharmalogic DVT Prophylaxis

Order	Device	Frequency	Additional Information
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- Nonphamalogic DVT Prophylaxis - 1 item(s)

<input type="checkbox"/>	Venous...	Pneumatic Compression Device	Every 8 hours	
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- Screening Orders (No Action Needed)

<input checked="" type="checkbox"/>	DVT Screen
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Drug Info

OK

Cancel

- Patients w/ BMI > 40 - 1 item(s)

<input type="checkbox"/>	Enoxaparin Inj	40	mg	Subcutaneous	Every 12 Hours	
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- Patients w/ CrCl < 30 - 2 item(s)

<input type="checkbox"/>	Heparin Sodium...	5,000	Units	Subcutaneous	Every 8 Hours	
<input type="checkbox"/>	Enoxaparin Inj	30	mg	Subcutaneous	Once Daily	

- Patients < 50 kg or 75 yrs old - 1 item(s)

<input type="checkbox"/>	Heparin Sodium...	5,000	Units	Subcutaneous	Every 12 Hours	
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DVT Prophylaxis - High Risk Options

Order	Dose	UOM	Route	Frequency	Administration Instructions
- High Risk Prophylaxis - 2 item(s)					
<input type="checkbox"/>	Enoxaparin Inj	30	mg	Subcutaneous	Every 12 Hours
<input type="checkbox"/>	Fondaparinux Inj	2.5	mg	Subcutaneous	Once Daily
- Patients w/ BMI > 40 - 1 item(s)					
<input type="checkbox"/>	Enoxaparin Inj	40	mg	Subcutaneous	Every 12 Hours
- Patients w/ CrCl < 30 - 2 item(s)					
<input type="checkbox"/>	Heparin Sodium...	5,000	Units	Subcutaneous	Every 8 Hours
<input type="checkbox"/>	Enoxaparin Inj	30	mg	Subcutaneous	Once Daily
- Target INR 2-3 - 1 item(s)					
<input type="checkbox"/>	Warfarin Tab		mg	Oral	Once Daily-At 5 PM Once Daily Always check INR before giving dose; if INR is greater...

SCD Contraindication

None

Nonpharmalogic DVT Prophylaxis

Order	Device	Frequency	Additional Information
- Nonphamalogic DVT Prophylaxis - 1 item(s)			
<input checked="" type="checkbox"/>	Venous_	Pneumatic Compression Device	Every 8 hours

- Screening Orders (No Action Needed)

<input checked="" type="checkbox"/>	DVT Screen
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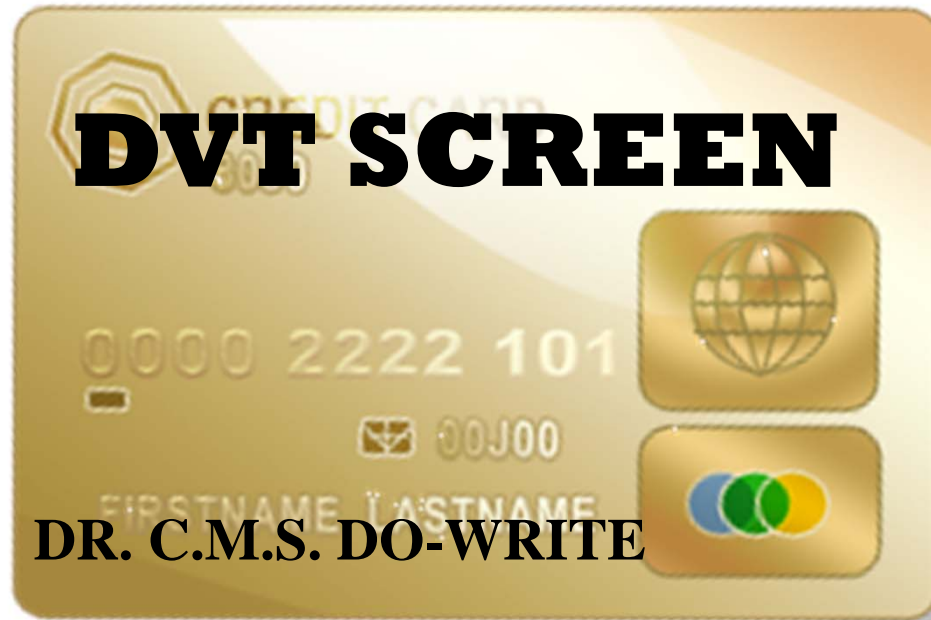
Drug Info

OK

Cancel

Educational program

- **Presentation given to Hospitalist group**
- **Presentation given to Internal Medicine Residents**
- **Distribution of educational handouts**
- **Emails sent to faculty and house staff**
- **Feedback given directly to physicians**
- **Nursing education given to 9th floor nurses**

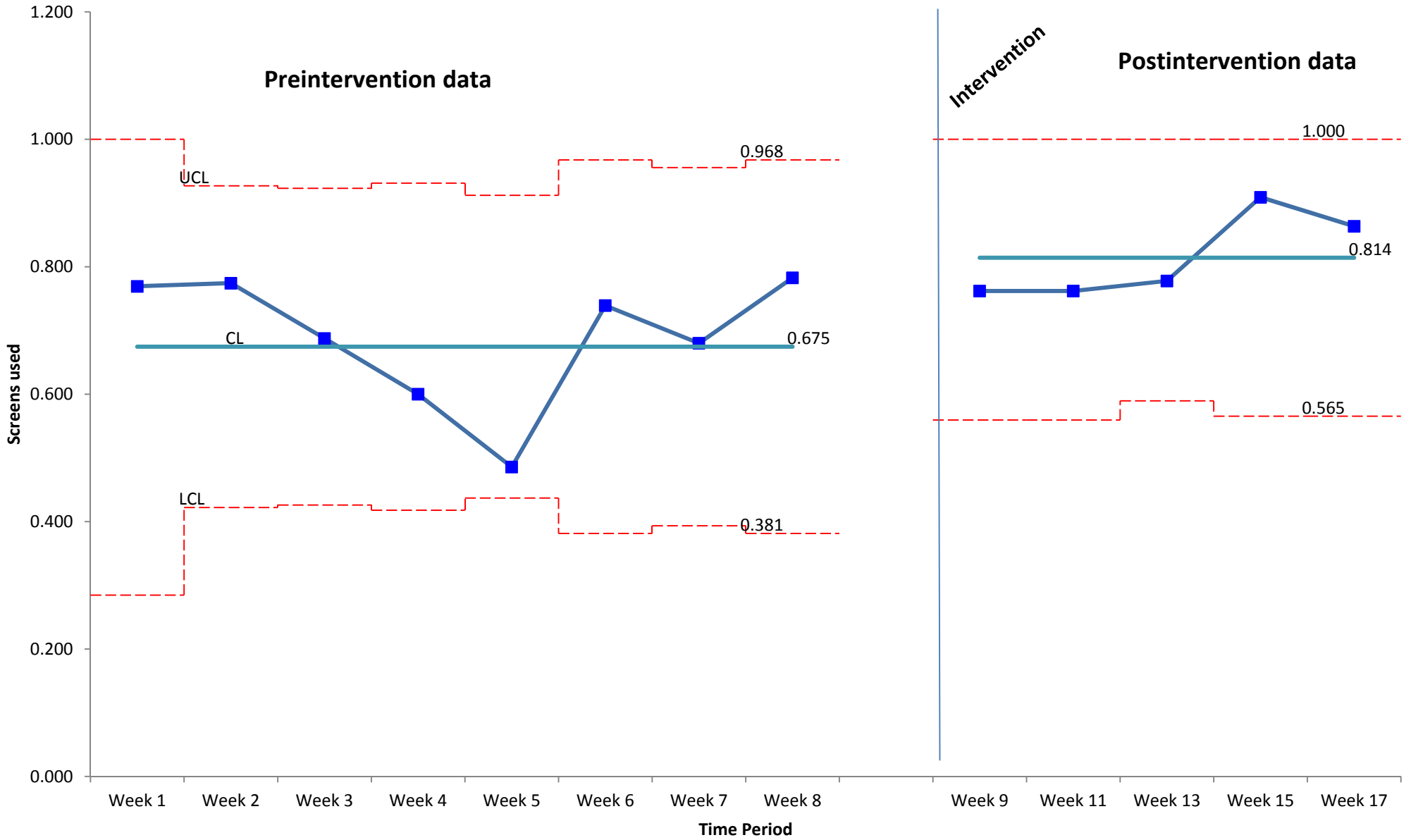


**DON'T ADMIT
WITHOUT
IT!**

Data Collection

- **Weekly audits of new admissions to 9th floor (changed to biweekly)**
- **Monitored for ordering of DVT prophylaxis (or documented contraindications) and use of DVT screen**
- **“Failed Measures” reviewed and physicians contacted**

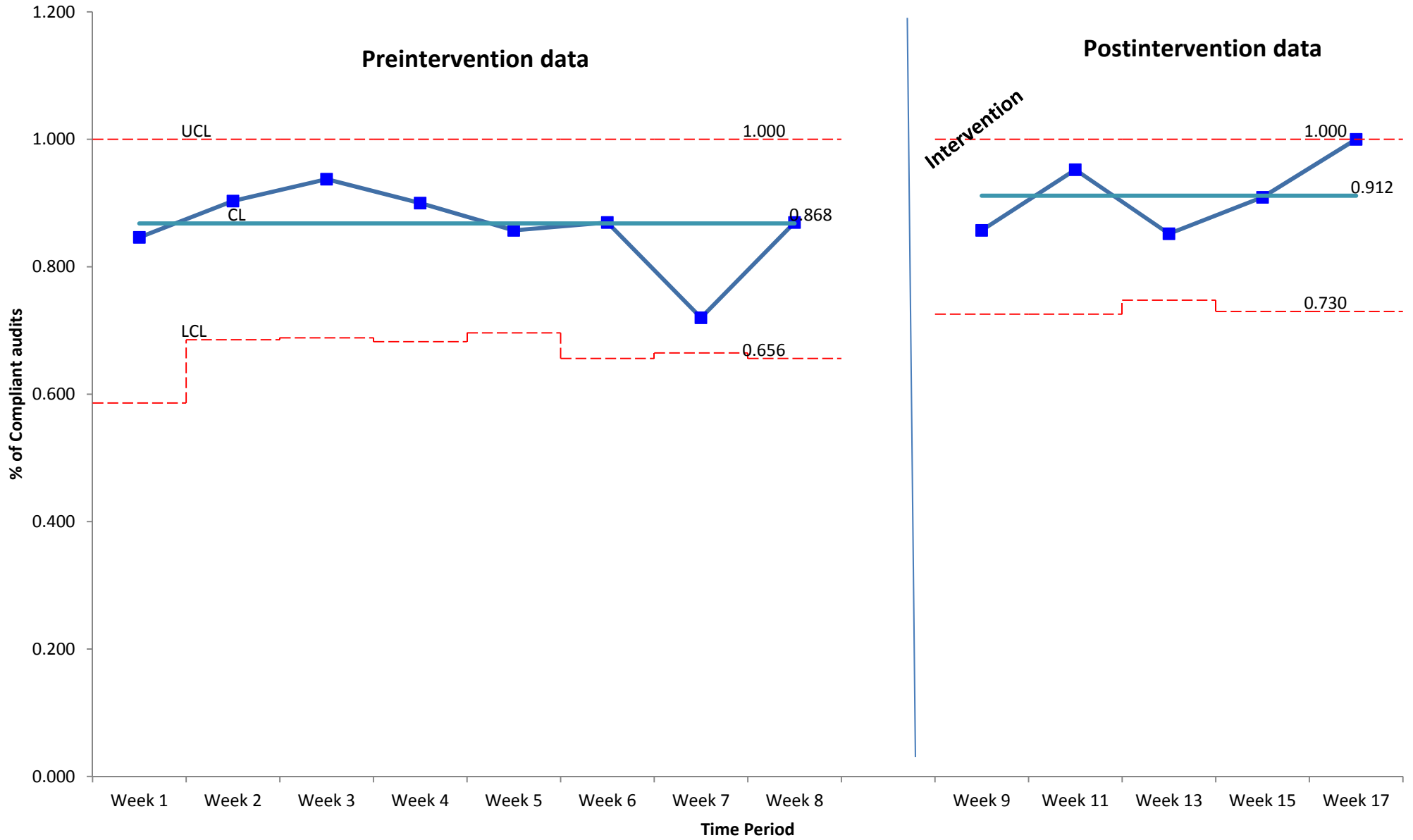
Percentage of Admissions with Screening Tool Utilized



Percentage of Compliant Audits

Preintervention data

Postintervention data



Return on Investment

- **It's Not About What We Make.... but what we lose....**
 - Patient and Family Trust
 - Increased Risk of Chronic Health Issues and/or Loss of Life
 - Potential Loss of Reimbursement with Re-admission
 - DVT Diagnosis \$10,000
 - PE Diagnosis \$20,000
- **Cost of Prophylaxis**
 - 80 kg male, moderate to high risk for DVT, 5 day LOS
 - SCD's and Lovenox at approximately \$750.00

**UHS 2010 Average
(Inpatient Visit)**
DVT: \$9,505 PE: \$18,163

Future plans

- **Rollout to entire hospital**
 - **Cooperation with other services**
 - **Corporate endorsement**
- **Podcast for usage of DVT screen**
- **Working with IT and other services to make DVT screen required**

References

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