AMERICA'S ESSENTIAL HOSPITALS

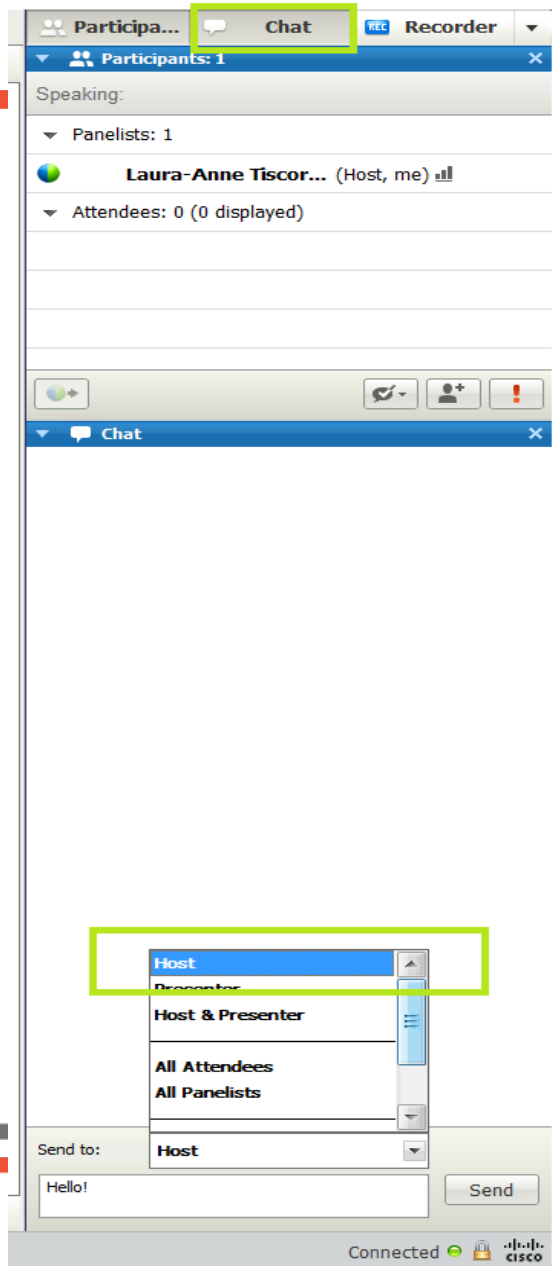
# Patient Harm Series III: VTE Measures and Prevention

Essential Hospitals Engagement Network

*May 8, 2014*

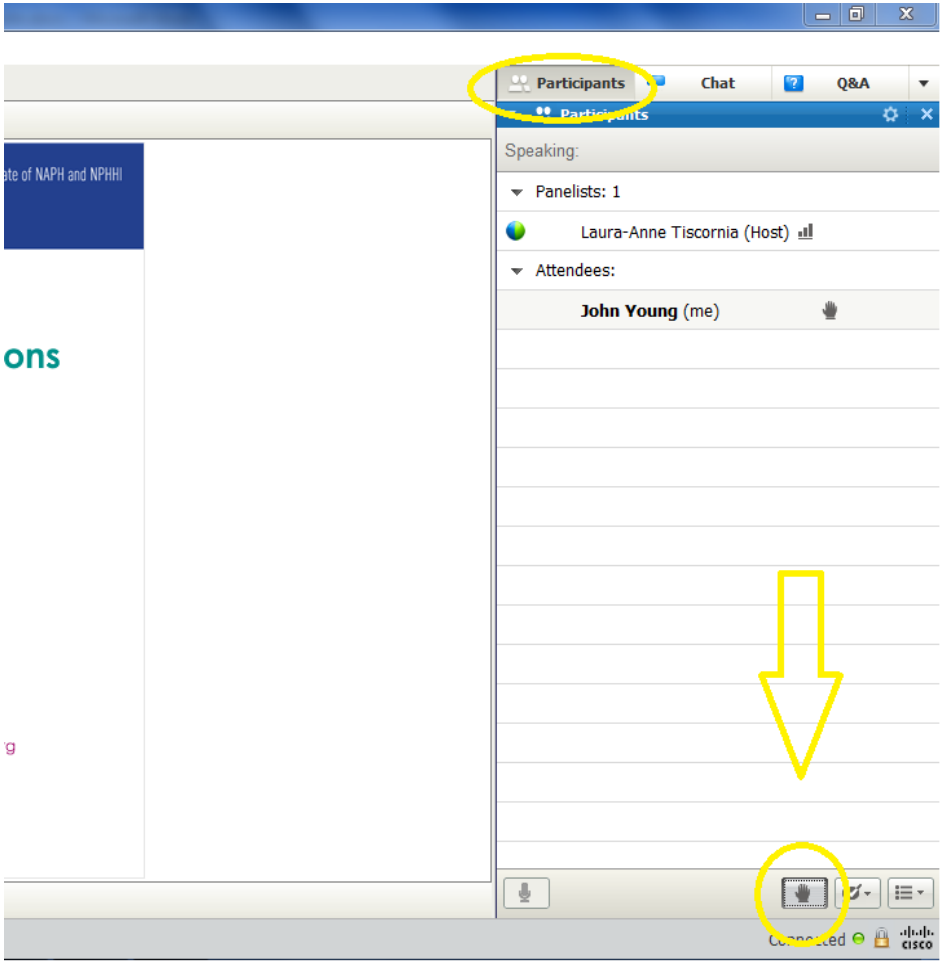
# CHAT FEATURE

The chat tool is available to ask questions or comments at any time during this event.

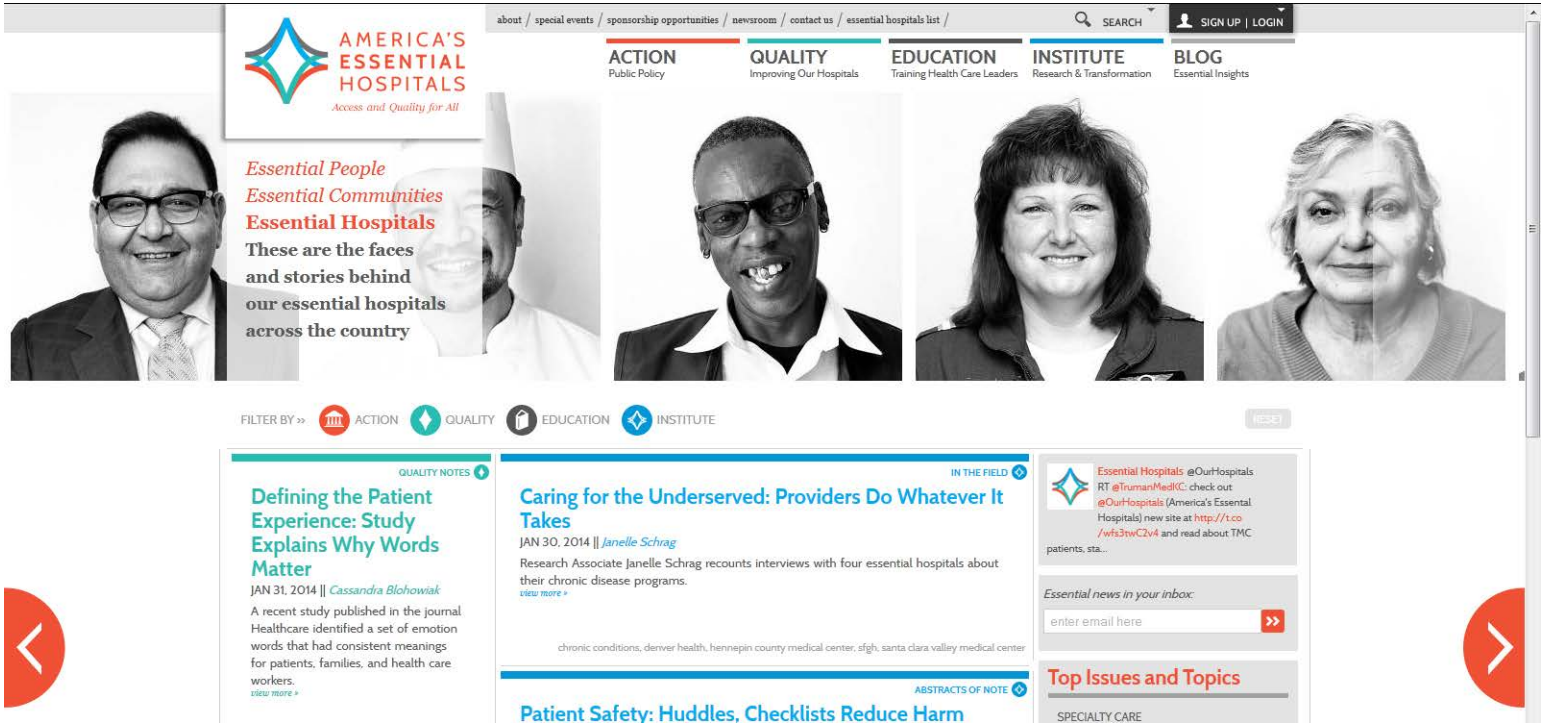


# RAISE YOUR HAND

If you wish to speak telephonically, please "raise your hand." We will call your name, when your phone line is unmuted.



# ENGAGE AT OUR NEW WEBSITE!




Network with peers, learn how essential hospitals are changing lives
Now live at essentialhospitals.org

# AGENDA

- Partnership for Patients and 2014
- AHRQ PSI-12 and Postoperative VTE after TKA (Banafsheh Sadeghi, MD, PhD)
- VTE prevention system (Anneliese Schleyer, MD, MHA/Ellen F. Robinson, PT)
- Q & A
- Upcoming events

# 2014 PARTNERSHIP FOR PATIENTS

**Partnership for Patients (PfP)**

- CMS-funded
- Reduce nine hospital-acquired conditions by 40 percent
- Reduce readmissions by 20 percent

**Hospital Engagement Networks (HENs)**

- 27 contracted organizations
- 3,700 U.S. hospitals

**Essential Hospitals Engagement Network (EHEN)**

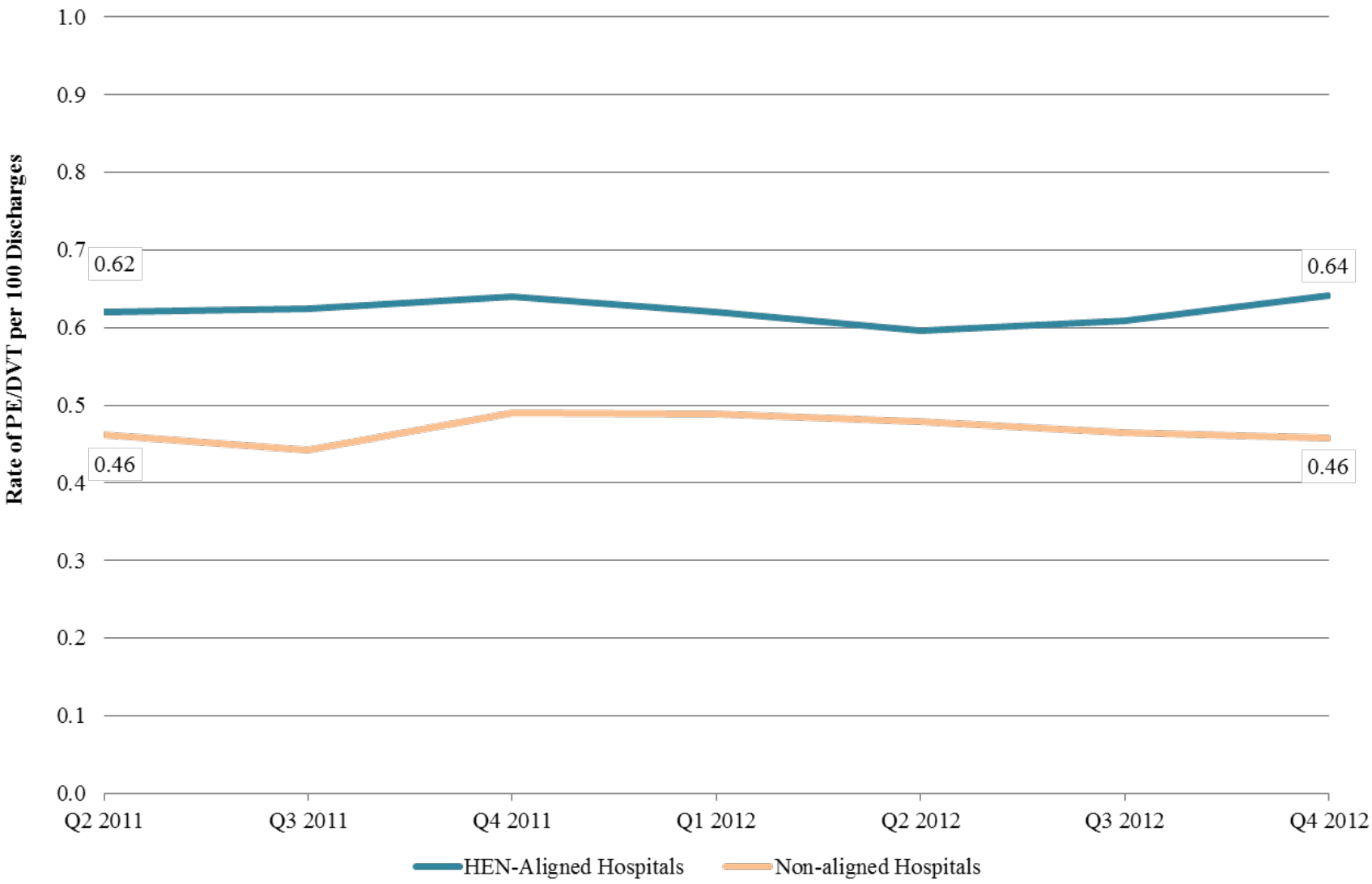
- 22 hospitals nationwide
- Only essential hospital-focused HEN
- Special focus on health equity

# MEMBERS-ONLY VTE RESOURCES

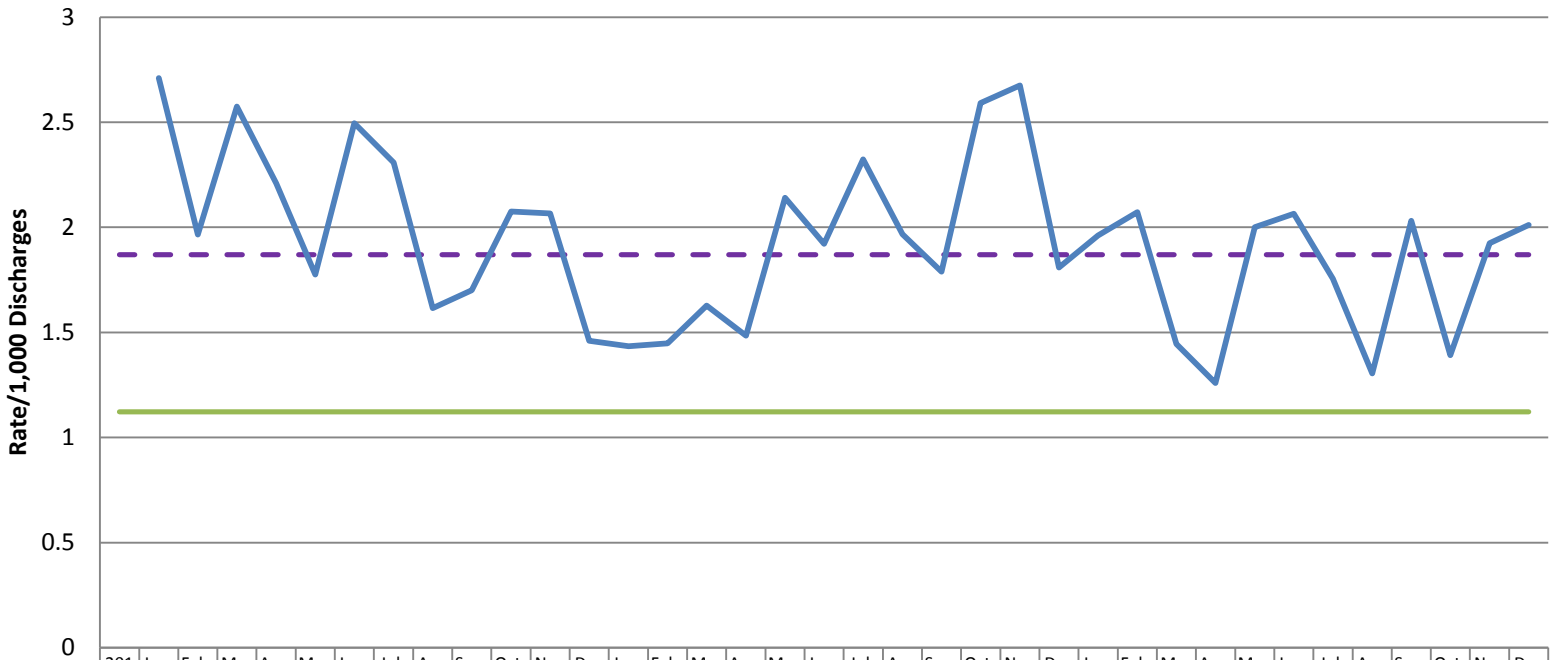
- VTE tab includes
  - » Resources
  - » Links
  - » Discussion thread
  - » Recordings of past webinars

- http://essentialhospitals.org/groups/ehen/venous-thromboembolism/

# Post-Operative Pulmonary Embolism or DVT, Medicare FFS (PSI 12)



# EHEN VTE: PE/DVT RATE (ALL DISCHARGES) [UHC-MODIFIED AHRQ PSI-12]




| | 2010 | Jan-11 | Feb-11 | Mar-11 | Apr-11 | May-11 | Jun-11 | Jul-11 | Aug-11 | Sep-11 | Oct-11 | Nov-11 | Dec-11 | Jan-12 | Feb-12 | Mar-12 | Apr-12 | May-12 | Jun-12 | Jul-12 | Aug-12 | Sep-12 | Oct-12 | Nov-12 | Dec-12 | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov-13 | Dec-13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Baseline | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 | 1.87 |
| Rate | | 2.71 | 1.97 | 2.57 | 2.21 | 1.78 | 2.50 | 2.31 | 1.62 | 1.70 | 2.08 | 2.07 | 1.46 | 1.43 | 1.45 | 1.63 | 1.48 | 2.14 | 1.92 | 2.32 | 1.97 | 1.79 | 2.59 | 2.68 | 1.81 | 1.96 | 2.07 | 1.45 | 1.26 | 2.00 | 2.06 | 1.76 | 1.31 | 2.03 | 1.39 | 1.93 | 2.01 |
| Goal | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 | 1.12 |

# SPEAKER INFORMATION

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# Overview AHRQ Quality Indicators: PSIs

- The AHRQ Patient Safety Indicators (PSIs)
- In hospital complications and adverse events following surgeries, procedures, and childbirth.
- Comprehensive literature review, analysis of ICD-9-CM codes

# AHRQ Quality Indicators: PSIs

- Improve the safety of inpatient care
- Public reporting and pay-for-performance
- Identify potentially avoidable events
- Incidence of adverse events and in hospital complications
- using administrative data
  - hospital avoidable adverse events
  - regional level avoidable adverse event


www.quality indicators.ahrq.gov/psi_download.htm

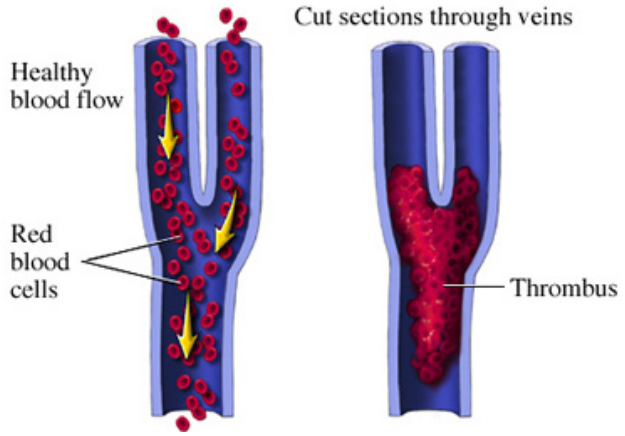
# Postoperative Venous Thromboembolism (PSI #12)

**Patient Safety Indicators #12 (PSI #12)**

**Numerator**

- Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with a secondary ICD-9-CM diagnosis code for deep vein thrombosis or a secondary ICD-9-CM diagnosis code for pulmonary embolism.

- **ICD-9-CM Deep vein thrombosis diagnosis codes1:**
  45111, 45119, *4512,* 45181, *4519,* 45340, *4538, 4539*
- **ICD-9-CM Pulmonary embolism diagnosis codes1:**
  *4151,* 41513, 41511, 41519



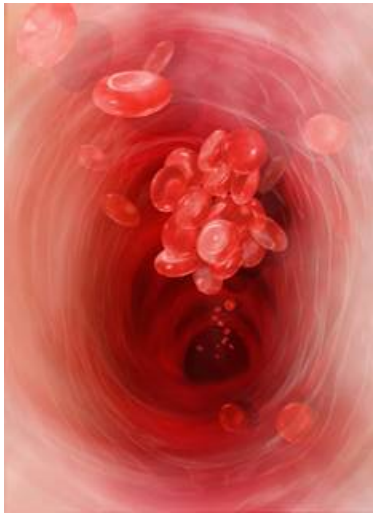
# Postoperative Venous Thromboembolism (PSI #12)

**Denominator**

- Surgical discharges, for patients ages 18 years and older, with any-listed ICD-9-CM procedure codes for an operating room procedure. Surgical discharges are defined by specific DRG or MS-DRG codes.

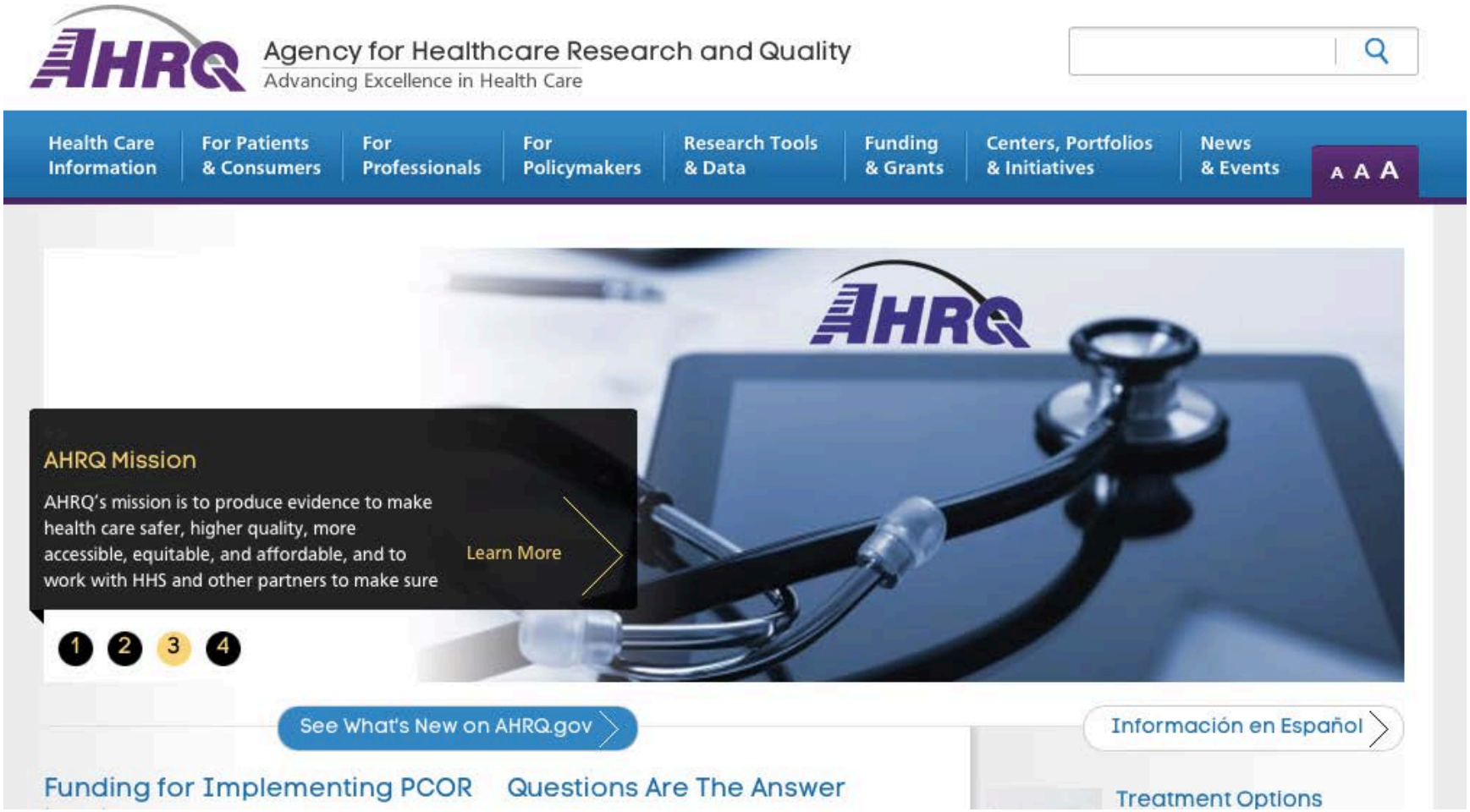
**Exclude cases:**

- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for deep vein thrombosis (see above)
- with a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for pulmonary embolism (see above)
- where the only operating room procedure is interruption of vena cava
- where a procedure for interruption of vena cava occurs before or on the same day as the first operating room procedure†
- MDC 14 (pregnancy, childbirth, and puerperium)
- with missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)



# More Information

## www.ahrq.gov



Journal of HOSPITAL MEDICINE www.journalofhospitalmedicine.com

ORIGINAL RESEARCH

# Mechanical and Suboptimal Pharmacologic Prophylaxis and Delayed Mobilization but Not Morbid Obesity Are Associated With Venous Thromboembolism After Total Knee Arthroplasty: A Case-Control Study

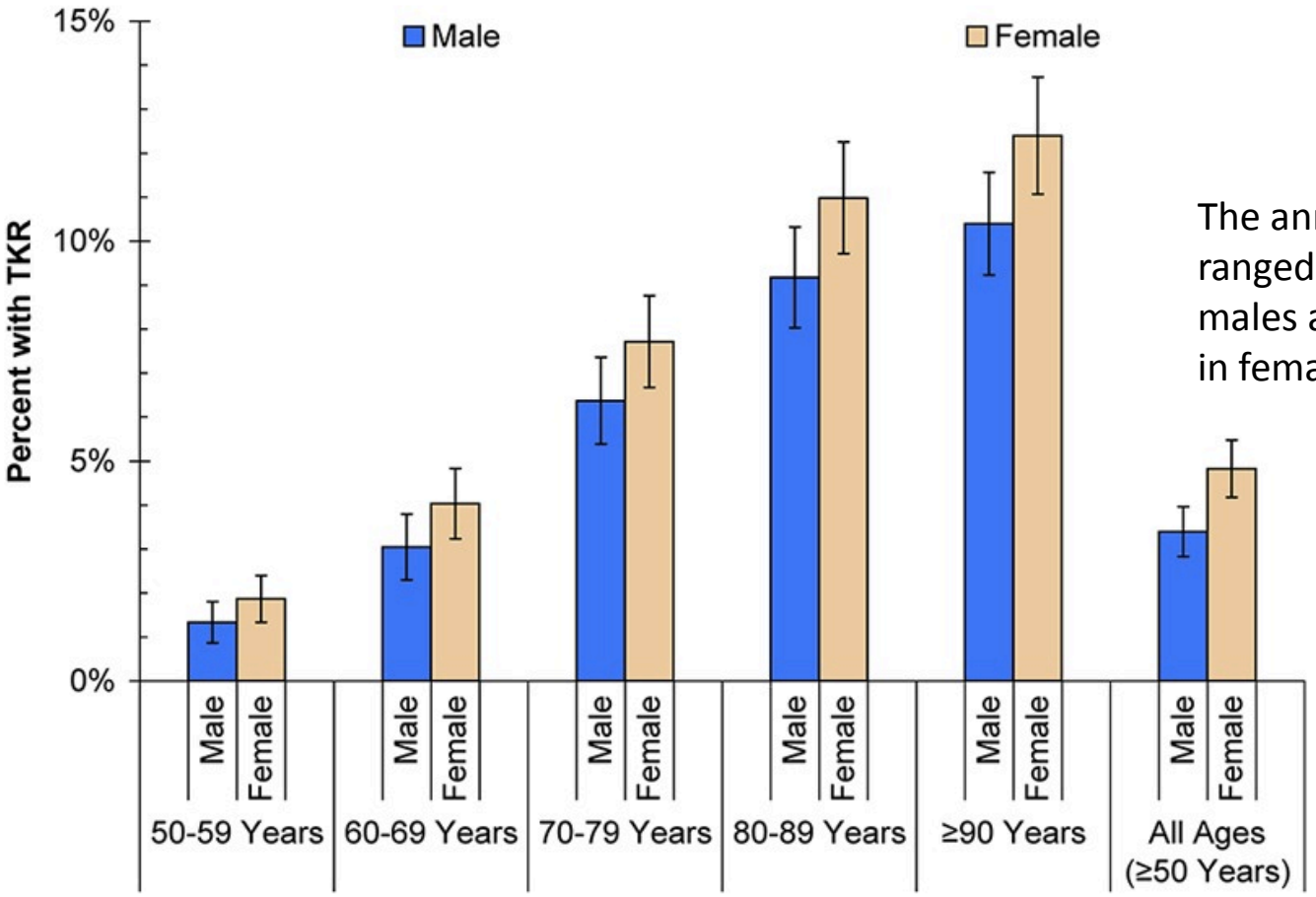
Banafsheh Sadeghi, MD, PhD[1]*, Patrick S. Romano, MD, MPH[1], Gregory Maynard, MD, MS[2], Amy L. Strater, MPH, MBA[3], Laurie Hensley, MHA[3], Julie Cerese, RN, MSN[3], Richard H. White, MD, FACP[1]

*[1]School of Medicine, Department of Internal Medicine, Division of General Medicine; [2]School of Medicine, Division of Hospital Medicine; [3]University HealthSystem Consortium, Chicago, Illinois.*


**Sadeghi B, Romano PS, Maynard G, Strater AL, Hensley L, Cerese J, White RH.**

J Hosp Med. 2012 Nov-Dec;7(9):665-71.
PMID: 23042665

# Total Knee Replacement (TKA)




The annual incidence of TKA ranged from 1.6% to 11.9% in males and from 2.0% to 10.9% in females.

J Bone Joint Surg Am. 2013 Mar 6;95(5):385-92. doi: 10.2106/JBJS.L.00206.
**Estimating the burden of total knee replacement in the United States.**

Weinstein AM1, Rome BN, Reichmann WM, Collins JE, Burbine SA, Thornhill TS, Wright J, Katz JN, Losina E.


# Possible TKA Complications

- **Infection.** Major or deep infections may require more surgery and removal of the prosthesis.
- **VTE.** Blood clots in the leg veins are **the most common complication of knee replacement surgery.** PE can be life-threatening.
- **Implant problems.** Implant surfaces may wear down and the components may loosen. Additionally, although an average of 115° of motion is generally anticipated after surgery, scarring of the knee can occasionally occur, and motion may be more limited.
- **Continued pain.** A small number of patients continue to have pain after a knee replacement. This complication is rare.
- **Neurovascular injury.** While rare, injury to the nerves or blood vessels around the knee can occur during surgery.

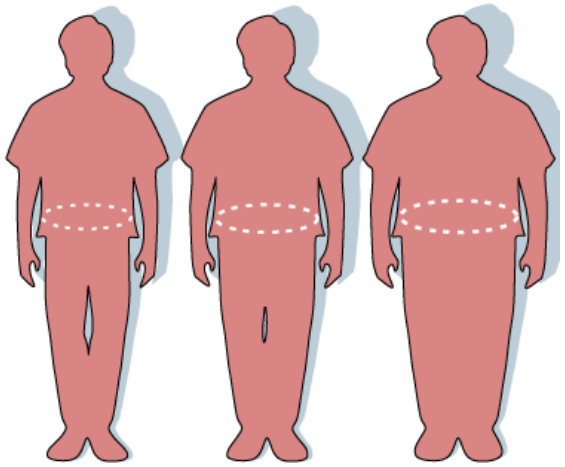
# VTE Prophylaxis after TKA

- Most guidelines from North America recommend the use of postoperative low-molecular-weight heparin (LMWH), fondaparinux, or warfarin for at least 10 days after TKA.

# VTE Prophylaxis after TKA

Thromboprophylaxis reduces the risk of developing asymptomatic VTE by more than 60%.

Pharmacologic prophylaxis using LMWH, fondaparinux, or warfarin alone is recommended by the ACCP and other organizations, with use of mechanical pneumatic compression, low-dose unfractionated heparin, or aspirin as alternative options.



# Study Hypothesis and Goals:

1. Use of standard pharmacological thromboprophylaxis drug is associated with lower risk of acute VTE compared with mechanical prophylaxis only.
2. Among patients given LMWH/fondaparinyx, excessive obesity (BMI>35) is associated with a higher risk of developing VTE.
3. Delayed ambulation after TKA is associated with higher risk for VTE.

# Methods: Partnership

- Univ. of California Davis (UCD)
  - 631-bed hospital serves
  - key referral center for 33 counties and 6 million residents.
  - Northern California's only level I trauma center
  - UC Davis Medical Center ranks among the top 50 hospitals in America according to annual U.S. News & World Report survey


- University HealthSystem Consortium (UHC)
  - UHC is an alliance of 120 academic medical centers and 299 of their affiliated hospitals.

# Methods: Study Design

- Retrospective case-control study.
- Fifteen volunteer hospitals nationwide abstracted medical records up to 40.

**Cases:**

- Having one or more secondary diagnosis codes for VTE as defined by AHRQ PSI-12 coupled with a POA flag of “no”

OR

- Were readmitted with principal diagnosis of VTE within 90 days of date of surgery

**Controls:**

- Patients who did not develop acute VTE during the index hospitalization or within 90 days of surgery.

# Methods: Inclusion & Exclusion Criteria

- Inclusion:
  - Admission between Oct. 1, 2008 and March 31, 2010;
  - ICD-9-CM procedure code of 81.54 or 81.55;
  - Age of 40 years or more;
- Exclusion:
  - Pregnancy related principal diagnosis;
  - Inferior vena cava interruption on or before the date of the first operating room procedure.

# Data Collection: Chart Abstraction Tool

A chart abstraction tool was constructed and personnel at each site were taught how to obtain the desired information.

UHC University HealthSystem Consortium

**VTE Prophylaxis in Total Knee Replacement (TKR)**
**Benchmarking Project**
**Patient Level Data Collection Form**

BENCHMARKING & IMPROVEMENT SERVICES

**Methods:**
Retrospective review of up to 40 cases undergoing total knee replacement (TKR) surgery and discharged between October 1, 2008, and March 31, 2010, and meeting specific enrollment criteria for each of 2 patient groups described below.

**Inclusion Criteria for all patients:**
- Adult patients ≥ 40 years of age
- Total Knee Replacement (TKR) procedure (unilateral, bilateral, or revision not for infection) performed during index admission

**Group 1a:**
Patients who developed acute VTE after TKR surgery during the index admission and/or
**Group 1b:**
Patients who developed acute VTE within 90 days of discharge from the index admission
*(NOTE: If the number of eligible cases per site exceeds 20, Group 1 cases will be selected via a randomization scheme constructed by UHC.)*
**Group 2:**
A sample of control cases that did not develop acute VTE after TKR surgery during the index admission or within 90 days of discharge from the index admission

**Exclusion Criteria for all patients:**
- Had another hip or knee surgery within 90 days prior to the indexed TKR
- Patients with **principal** ICD-9-CM diagnosis code for DVT/PE for the index admission
- Patients with **secondary** ICD-9-CM diagnosis code for DVT/PE that is POA=yes for the index admission
- A primary diagnosis or reason for admission related to pregnancy, childbirth or puerperium (MDC 14)

**A. ADMINISTRATIVE**

1. Encounter number: **(CDB)** (required) |__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|__|
2. Age: ___ years **(CDB)** (required)
3. Hospital admission date **(CDB)** (required)

   Date: / / **(mm/dd/yyyy)**

# Data Collection: Chart Abstraction Tool

Data elements:

- Age
- Gender
- Height
- Weight
- Type of TKA
- Use of pharmacologic and mechanical prophylaxis
- Ambulation status

Types of prophylaxis categories:

1. LMWH/fondaparinux with or without mechanical prophylaxis;
2. Warfarin alone, with or without mechanical prophylaxis;
3. LMWH/fondaparinux and warfarin with or without mechanical prophylaxis;
4. Mechanical prophylaxis (Pneumatic compression devices, graduated compression stockings, or foot pump) alone (without any pharmacological prophylaxis but with or without aspirin);
5. Aspirin only, without any other pharmacologic or mechanical prophylaxis.

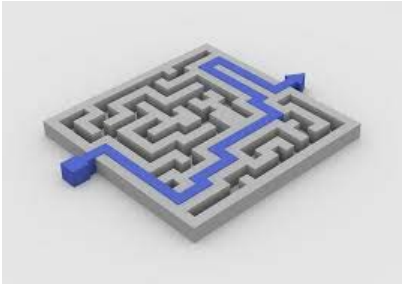
FDA-approval status:

FDA-approved Pharmacologic prophylaxis

Other prophylaxis

# Outcome of Study

- Principal outcome:
  - Validated symptomatic objectively confirmed VTE
    - Patients with VTE on the day of surgery or the day after surgery were not included in the principal analysis.



- Statistical analysis:
  - Bivariate analysis: student t-test, chi-square, unadjusted Odds Ratio (OR)
  - Multivariate analysis: logistic regression and two-way interactions adjusted for correlated data, using SAS-PC 9.2

# Results:

Total of 593 TKA record were abstracted

All patients underwent TKA on the day of admission or the day after:

- 114 cases (44 PE, 68 DVT, 2 both)
- 463 controls
- 16 cases (12 PE and 4 DVT) excluded.

# Result: Bivariate Analysis

- Age in cases significantly higher than controls: 65.5±10.4 vs. 63.5±10.4 (P<0.05)

- Cases underwent more bilateral:
  23% vs. 7% (P< 0.001)

- Cases had marginally higher BMI than controls: 34.6± 8.0 vs. 33.3 ±7.1 (P = 0.07)
  - Among PE cases, there were more morbidly obese cases compared with controls: 30% vs. 16% (P = 0.01)

# Result: Bivariate Analysis

- Fewer VTE cases began ambulation on or before the second post-op day compared with controls: 47% vs. 73% (P<0.001).

- All patients received at least 1 type of pharmacological or mechanical prophylaxis within 24 hrs. after TKA.


- Controls had marginally higher odds of receiving FDA-approved pharmacologic prophylaxis than cases 61% vs. 48% (P = 0.07).

# Results: Multivariable Analysis

| Predictive Factor | Odds Ratio (95% CI) | P value |
|---|---|---|
| Age | 1.02 (0.99 – 1.05) | 0.20 |
| Gender (ref: male) | 1.7 (0.9 – 2.9) | 0.90 |
| Ambulation (ref: no ambulation) | | |
| • Taking steps day 1 or 2 | 0.3 (0.1 – 0.9) | 0.005 |
| • Taking steps after day 2 | 0.7 (0.2 – 2.1) | 0.56 |
| Type of TKA (ref: unilateral TKA) | | |
| • Bilateral TKR | 4.2 (1.9 – 9.1) | 0.004 |
| Recommended pharmacologic prophylaxis (ref: only mechanical) | 0.5 (0.3 – 0.8) | 0.01 |
| BMI ≥ 35 (ref: BMI < 35) | 0.9 (0.5 – 1.6) | 0.66 |

# Results: Prophylaxis

- FDA-approved pharmacologic prophylaxis:
  - LMWH, fondaparinux, or warfarin

  Odds Ratio = 0.5; 95% CI: 0.3 – 0.8, P-value= 0.01

- Risk of VTE across the BMI levels

# Results: Ambulation

- Early mobilization in the first 2 days after:
  - Odds Ratio = 0.3, 95% CI: 0.1 – 0.9, P-value = 0.005
- Mobilization at or after day 3

# Results: Bilateral vs. Unilateral

- Bilateral simultaneous TKA strongly associated with VTE:
  - Odds Ratio = 4.2, 95% CI: 1.9 – 9.1, P-value <0.001
  - The effect still existed after adjusting for obesity or time of mobilization.

# Study limitations

- No record of readmission to other hospitals
- Effect of hospital volume and specialization
- Data collection by employees and no double collection
- All teaching hospitals
- Inherent case-control limitations


- Actionable opportunities to improve care to prevent VTE persist despite 100% compliance with existing TJC process measures
- FDA approved pharmacologic prophylaxis
- Early mobilization
- Bilateral vs. unilateral
- AHRQ PSI#12
- Further research studies needed

# Evidence-Based Clinical Practice Guidelines

| Guideline | Accepted VTE Prophylaxis | Defined Risk |
|---|---|---|
| American College of Chest Physicians: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed.<br><br>Guyatt GH, Akl EA, Crowther M. Executive summary: Evidence-Based Clinical Practice Guidelines. *Chest*. 2012;141(2 suppl):7S-47S.<br><br>Geerts WH, Bergquist D, Pineo GF, et al. Prevention of venous thromboembolism. *Chest*. 2008;133(6):381S-453S. | • One of the following for 10-14 days<br>– LMWH started ≥ 12 h before or after surgery<br>– Low-dose unfractionated heparin<br>– Factor Xa inhibitor (fondaparinux, apixaban, rivaroxaban)<br>– Warfarin<br>– Dabigatran<br>• Recommends against the use of aspirin alone for any group<br>• In patients with elevated bleeding risk:<br>– Intermittent pneumatic compression device (18 hours daily) | Total knee surgeries are considered high risk for VTE, regardless of age, activity level, or comorbidities |
| American Academy of Orthopedic Surgeons<br><br>http://www.aaos.org/research/guidelines/VTE/VTE_guideline.asp | Pharmacologic prophylaxis as above<br>Mechanical prophylaxis for patients with elevated bleeding risk:<br>• Pneumatic compression devices<br>• Foot and leg pumps | Total knee surgeries are considered standard risk for PE.<br>Bleeding risk defined as:<br>• History of a bleeding disorder<br>• History of recent gastrointestinal bleed<br>• History of recent hemorrhagic stroke |
| Surgical Care Improvement Project | • LMWH<br>• Factor Xa inhibitor (fondaparinux)<br>• Warfarin<br>• Intermittent pneumatic compression devices<br>• Venous foot pump | Orthopedic surgeries with surgical time > 60 min and LOS > 3 days |

# Q & A

Banafsheh Sadeghi, M.D., Ph.D.
Assistant Adjunct Professor, School of Medicine
UC Davis Department of Internal Medicine
Sacramento, CA

# Today's Objectives

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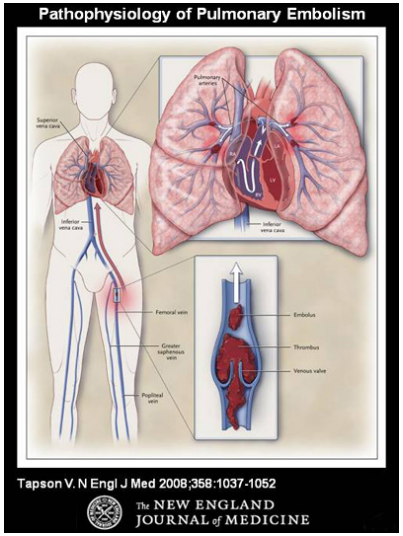
- Describe Multidisciplinary VTE Team
- Discuss innovative approaches that have reduced post-operative DVT/PE
- Outline systematic event review methods
- Provide overview of the tools developed for engaging front line staff



# Harborview Medical Center

## Key Centers of Excellence

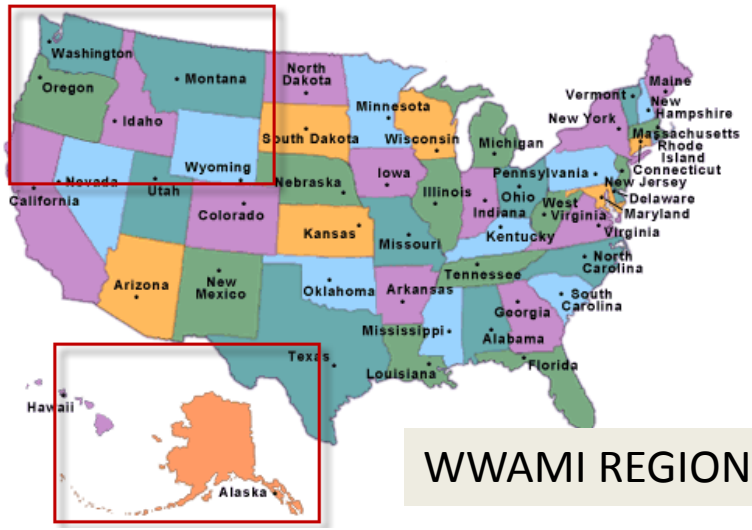
- Level I adult and pediatric trauma and burn care
- Neurosciences Institute
- Orthopaedic reconstruction and rehabilitation
- Comprehensive Eye Institute and vision science center
- Vascular
- Behavioral health
- AIDS/STD

## 2012 Statistics

| | |
|---|---|
| Licensed beds | 413 |
| Employees | 4,684 |
| Physicians | 1,243 |
| Admissions | 19,094 |
| Emergency Department visits | 62,432 |
| Clinic visits | 247,246 |
| Surgery cases | 14,872 |

## Charity Care

Provided $210 million in charity care in fiscal year 2012.


UW Medicine

HARBORVIEW MEDICAL CENTER

WWAMI REGION

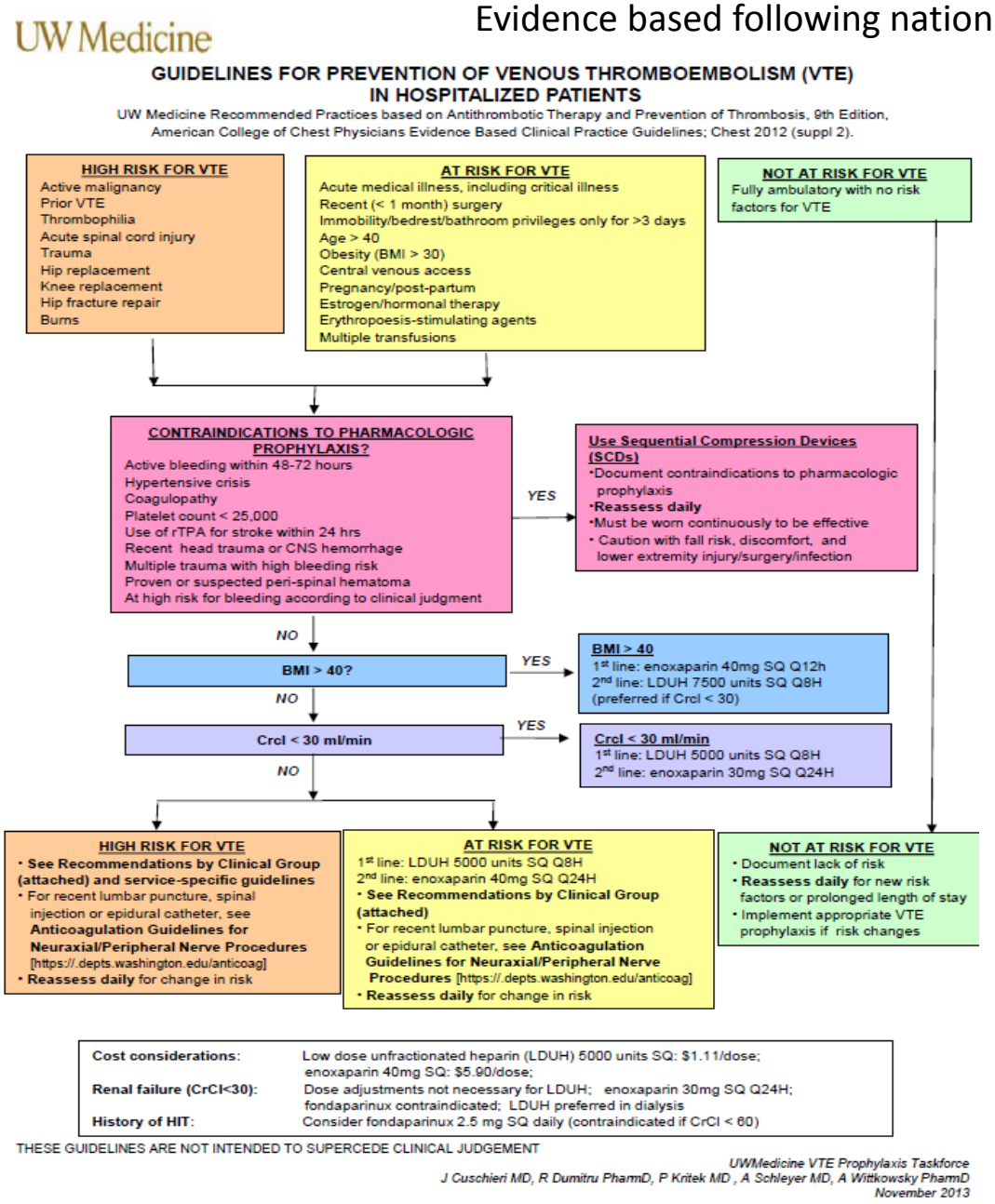
# VTE Team Members

UW Medicine
HARBORVIEW MEDICAL CENTER

- Physician Co-Chair – Surgeon and Hospitalist
- Pharmacy – clinical, safety, administration
- Nursing – trauma, clinical education
- Quality Improvement – analyst, programmer
- Input from Orthopedic, Neurology, Neurosurgery physicians, EMAR IT analysts, UWMC pharmacy team, discharge planning

# UW Medicine Guidelines for Prevention of VTE

Evidence based following national guidelines




***http://uwmcacc.org***

# VTE Case Reviews

UW Medicine
HARBORVIEW MEDICAL CENTER

*Hospital Acquired VTE

- Clinical information for quality review imbedded complex electronic medical record (EMR - Cerner)
- Time consuming, not systematic
- Created an electronic tool to allow for efficient monthly team review

- <u>For all HAC VTE</u>
- Team reviews following elements for guideline adherence
  - Risk Assessment performed
  - Chemical Prophylaxis timing, drug selection, dosing
  - Mechanical Prophylaxis utilized if chemical not appropriate
  - Charted Contraindications

# Retrospective Clinical Event Review Tool

UW Medicine
HARBORVIEW MEDICAL CENTER

| MRN | Name | Age | Admit Dt Tm | Disch Dt Tm | BMI | Notes |
|---|---|---|---|---|---|---|
| [redacted] | | | | | | |

| Observation Dt Tm | Source System | Pos Flag | POA? | Vasc Type |
|---|---|---|---|---|
| [redacted] | Vascular | + | | LE |

Patient presents with right lower extremity swelling.
Deep vein thrombosis (non-occlusive) in the right mid femoral vein. Deep vein thrombosis (occlusive) in the right posterior tibial veins. Could not rule out non-occlusive thrombus in the right peroneal veins due to vessel depth and poor visualization. No deep vein thrombosis in the right common femoral, proximal profunda femoris, popliteal, or left lower extremity veins.
[redacted]

Patient with Multiple trauma, arm fx, pelvic fx, small SDH + LOC

| Date | Time | Src | Event | Result |
|---|---|---|---|---|
| [redacted] | | | | |
| | 03:40 | Lab | Platelet Count | 153 |
| | 03:40 | Lab | Prothrombin INR | 1.3 |
| | 11:03 | Event | enoxaparin | 30 mg |
| | 15:47 | Order | Order | VTE Risk Assessment - At Risk |
| | 16:11 | Lab | Platelet Count | 167 |
| | 16:33 | Svc | Service | H SURGERY I |
| | 20:00 | Event | SCD(s) | ON Legs - Bilaterally |
| | 21:00 | Event | enoxaparin | 30 mg |
| | | | | |
| | 03:10 | Lab | Platelet Count | 164 |
| | 03:10 | Lab | Prothrombin INR | 1.2 |
| | 03:46 | Event | SCD(s) | ON Legs - Bilaterally |
| | 06:57 | Unit | Unit | PAC |
| | 07:30 | Surg | Surgery | ACET/PELV/HIP ORIF ACETABULUM PELVIS |
| | 07:58 | Unit | Unit | OR |
| | 09:00 | Event | enoxaparin | Not Done: Not Appropriate at this Time |
| | 18:41 | Unit | Unit | PAC |
| | 21:00 | Event | enoxaparin | 30 mg |
| | 21:27 | Unit | Unit | 8E |
| | 22:00 | Event | SCD(s) | OFF Legs - Bilaterally |
| | | | | |
| | 07:30 | Lab | Platelet Count | 220 |
| | 07:30 | Lab | Prothrombin INR | 1.2 |
| | 08:30 | Event | SCD(s) | OFF Legs - Bilaterally |
| | 11:00 | Event | enoxaparin | 30 mg |
| | 12:51 | Study | Vascular | + |

Team review utilizing pertinent data points

- Source system for PE/VTE identification
- Radiology (NLP), Vascular (coded event)
- Reason for admission
- Labs, BMI
- VTE Risk Assessment
- Chemical administered
- Mechanical administered
- Surgery impact, held doses

** J Hosp Med 2014 Jan; 9(1) 48-53*

# From Retrospective to "Real Time"

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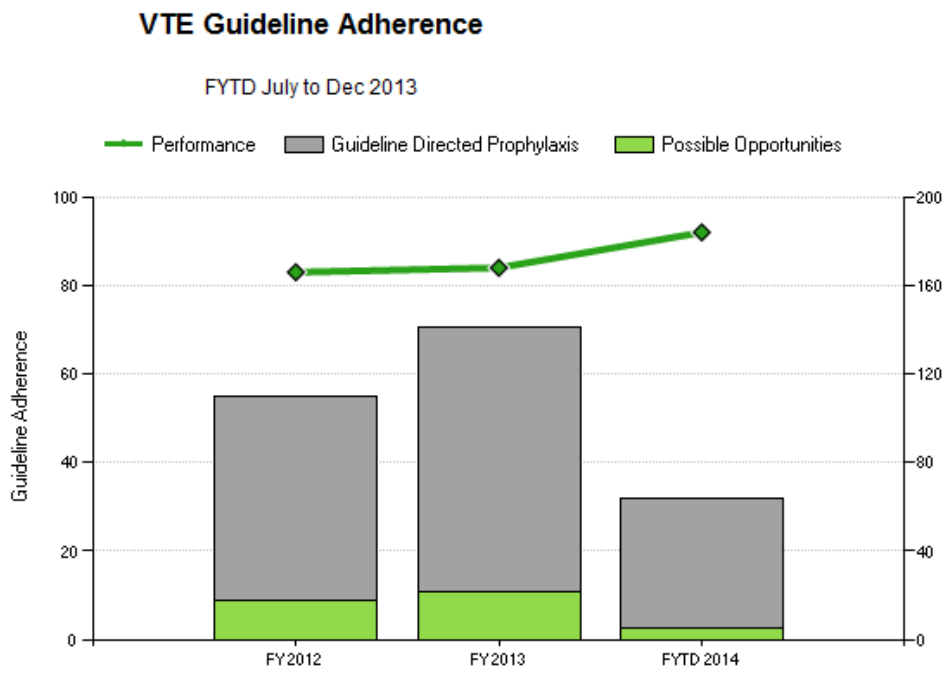
| Room | Admit Date | Age | LOS | Reason | INR | SCD | Drug Dose | Drug Ordered |
|---|---|---|---|---|---|---|---|---|
| [redacted] | | | 3 | LEFT INTERTROCHANTERIC FEMUR FRACTURE; LEFT PARASYMPHYSEAL PELVIC FRACTURE | 1.1<br>2013-12-09<br>15:35 | OFF | Not Given: Pt still on PNC<br>enoxaparin<br>2013-12-11 21:00 | |
| | | | 9 | LUMBAR 2 BURST FRACTURE | 1.1<br>2013-12-03<br>11:40 | OFF | Not Done: hold per MD order, capping PNC's in am<br>enoxaparin<br>2013-12-11 21:00 | |
| | | | 1 | Ulcer of other part of foot | | OFF | | Not Ordered |
| | | | 4 | GUN SHOT WOUND TO LEFT HAND | 1.0<br>2013-12-08<br>16:30 | None Applied | | Not Ordered |
| | | | 2 | Acquired spondylolisthesis | | ON | | Not Ordered |
| | | | 1 | Spondylolisthesis of lumbar region | | ON | | Not Ordered |
| | | | 2 | Hallux valgus (acquired) | | ON | 40 mg<br>enoxaparin<br>2013-12-11 09:00 | |
| | | | 11 | LEFT HUMERUS FRACTURE | 1.1<br>2013-12-12<br>07:26 | OFF | 5,000 units<br>heparin<br>2013-12-05 17:00 | |
| | | | 1 | SUBARACHNOID HEMORRHAGE | 0.9<br>2013-12-12<br>06:22 | None Applied | | Not Ordered |
| | | | 1 | Spinal stenosis, lumbar region, without neurogenic claudication | 1.2<br>2013-12-11<br>22:00 | ON | | Not Ordered |
| | | | 1 | GASTROINTESTINAL BLEED | 1.7<br>2013-12-12<br>04:45 | None Applied | | warfarin<br>2013-12-11 19:39 |
| | | | 2 | POLYTRAUMA | 1.0<br>2013-12-12<br>04:12 | None Applied | | Not Ordered |
| | | | 6 | Gunshot Wound to the Left Chest and Neck | 1.0<br>2013-12-12<br>06:05 | None Applied | Not Given: Patient Refused<br>heparin<br>2013-12-12 01:00 | |

Intervention can be related to resident, nursing or patient education

# Guideline Directed Prophylaxis

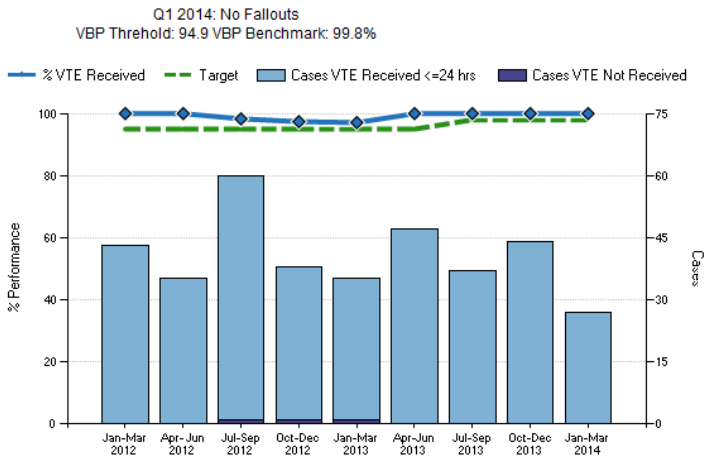
Cases that do not adhere to guidelines per VTE team review sent for secondary review to each medical service and results reported through Medical QI Committee




| | FY 2012 | FY 2013 | FYTD 2014 |
|---|---|---|---|
| Performance | 83% | 84% | 92% |

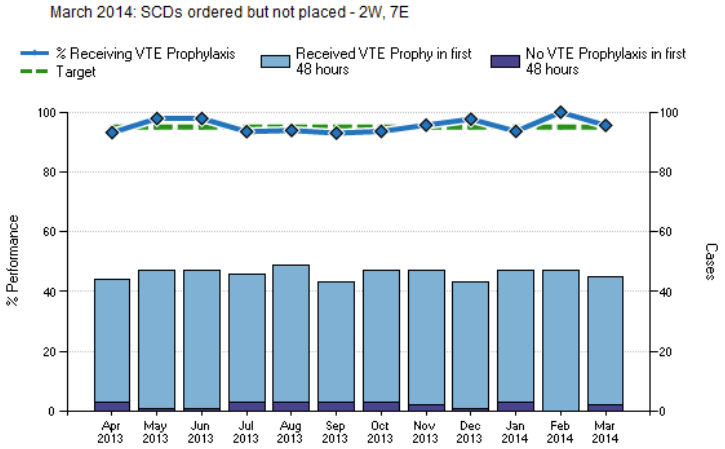
# SCIP/VTE Prophylaxis Core Measures

**HMC Core Measures SCIP**
**Appropriate Venous Thromboembolism Prophylaxis Received within 24 hrs**




| | Jan-Mar 2012 | Apr- Jun 2012 | Jul-Sep 2012 | Oct-Dec 2012 | Jan-Mar 2013 | Apr-Jun 2013 | Jul-Sep 2013 | Oct-Dec 2013 | Jan-Mar 2014 |
|---|---|---|---|---|---|---|---|---|---|
| % VTE Received | 100% | 100% | 98.3% | 97.4% | 97.1% | 100% | 100% | 100% | 100% |
| Cases VTE Received <=24 hrs | 43 | 35 | 59 | 37 | 34 | 47 | 37 | 44 | 27 |
| Cases VTE Not Received | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |
| Eligible Cases | 43 | 35 | 60 | 38 | 35 | 47 | 37 | 44 | 27 |
| Target | 95% | 95% | 95% | 95% | 95% | 95% | 98% | 98% | 98% |

**Venous Thromboembolism - Prophylaxis Acute Care and ICU**




| | Apr 2013 | May 2013 | Jun 2013 | Jul 2013 | Aug 2013 | Sep 2013 | Oct 2013 | Nov 2013 | Dec 2013 | Jan 2014 | Feb 2014 | Mar 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| % Receiving VTE Prophylaxis | 93.2% | 97.9% | 97.9% | 93.5% | 93.9% | 93.0% | 93.6% | 95.7% | 97.7% | 93.6% | 100% | 95.6% |
| Received VTE Prophy in first 48 hours | 41 | 46 | 46 | 43 | 46 | 40 | 44 | 45 | 42 | 44 | 47 | 43 |
| No VTE Prophylaxis in first 48 hours | 3 | 1 | 1 | 3 | 3 | 3 | 3 | 2 | 1 | 3 | 0 | 2 |
| Total Patients (sampled) | 44 | 47 | 47 | 46 | 49 | 43 | 47 | 47 | 43 | 47 | 47 | 45 |
| Target | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% |

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# Expanding to “All Patients”

- Take findings from Case Reviews and implement system change for all hospitalized patients
- Areas for ongoing improvement
  - VTE Risk Assessment
  - Chemical prophylaxis dosing
  - Held chemical doses
  - SCD utilization

UW Medicine | PATIENTS ARE FIRST

# Ongoing Improvement – VTE Risk Assessment

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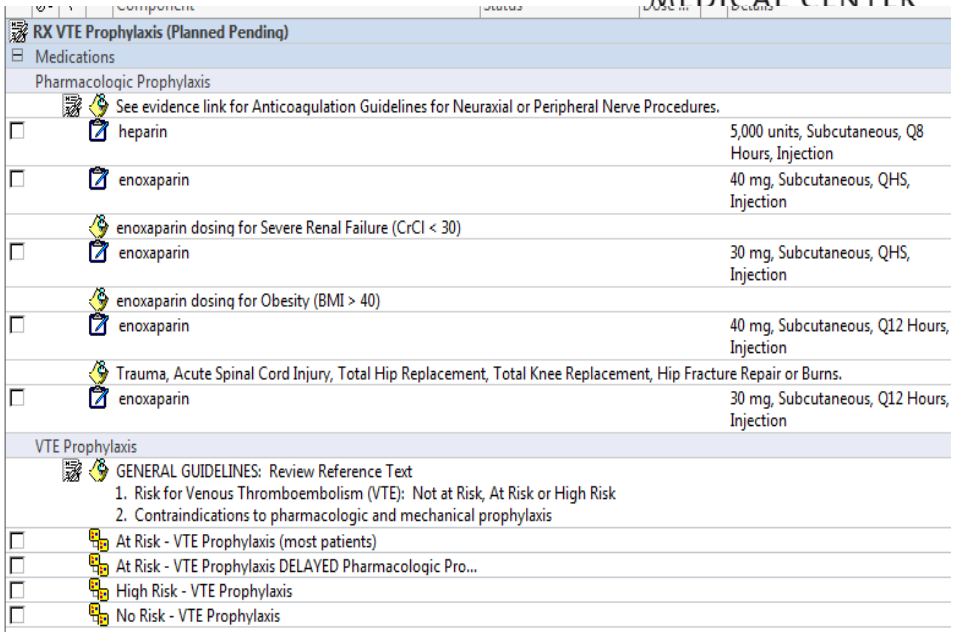
CPOE VTE Prophylaxis order set April 2013
Allowed Risk Assessment to be captured

Ongoing Monthly Monitoring (March 2014)
93% of inpatients had risk assessed

Educated Epilepsy to assess risk

Medical and Surgical Teams educating "high risk" versus "at risk"




| March 2014 | LOS > 1 day | | | |
|---|---|---|---|---|
| Service at time of | No Risk Assessed | VTE Risk Assessment - At Risk | VTE Risk Assessment - High Risk | VTE Risk Assessment - No Risk |
| H EPILEPSY | 0 | 9 | 0 | 6 |
| H MED H1 A | 2 | 25 | 0 | 1 |
| H MED H2 A | 0 | 6 | 0 | 0 |
| H MED H3 A | 0 | 13 | 2 | 0 |
| H SICU A | 0 | 71 | 9 | 0 |
| H SICU B | 3 | 71 | 21 | 1 |
| H SURGERY I | 1 | 31 | 3 | 0 |
| H SURGERY II | 1 | 34 | 6 | 0 |
| **Grand Total** | **91** | **1045** | **145** | **18** |
| % Distribution | 7% | 80% | 11% | 1% |

**HIGH RISK FOR VTE**

Active malignancy
Prior VTE
Thrombophilia
Acute spinal cord injury
Trauma
Hip replacement
Knee replacement
Hip fracture repair
Burns

# Ongoing Improvement – Enoxaparin Dosing

Prophylactic enoxaparin doses (6 months admissions)
30mg and 40mg; q12h and q24h

- Analysis to compare Risk Assessment to drug dosing by a review of on patient clinical factors/disease process
- 47% were accurately "Risk Assessed"
  - Reasons related to Trauma patients "at risk" *(high risk)*
  - Patients with history of/active cancer "at risk" *(high risk)*
- 85% received the correct dosing
  - Reasons related to BMI > 40 - given 30 mg dosing
  - CCRL > or < 30 given 30 vs. 40 mg dosing
  - Trauma patients given Q24 vs. Q12 dosing

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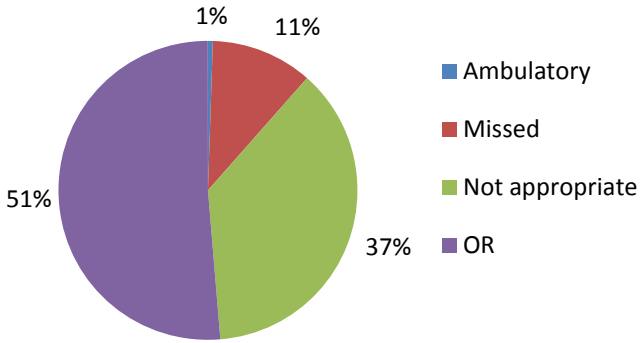
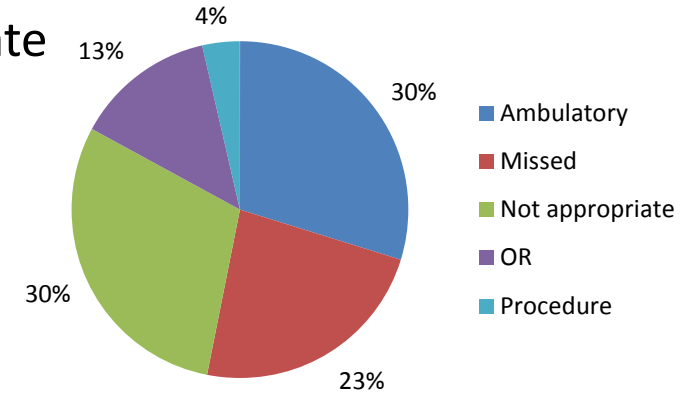
# Ongoing Improvement – Held Doses
# 3 months of chemical prophylaxis reviewed

- Enoxaparin – 88% given – 12% Held
- Majority related to OR




- Heparin – 85% given – 15% held
- Majority related to Ambulatory or Not appropriate

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# Held for OR by Service

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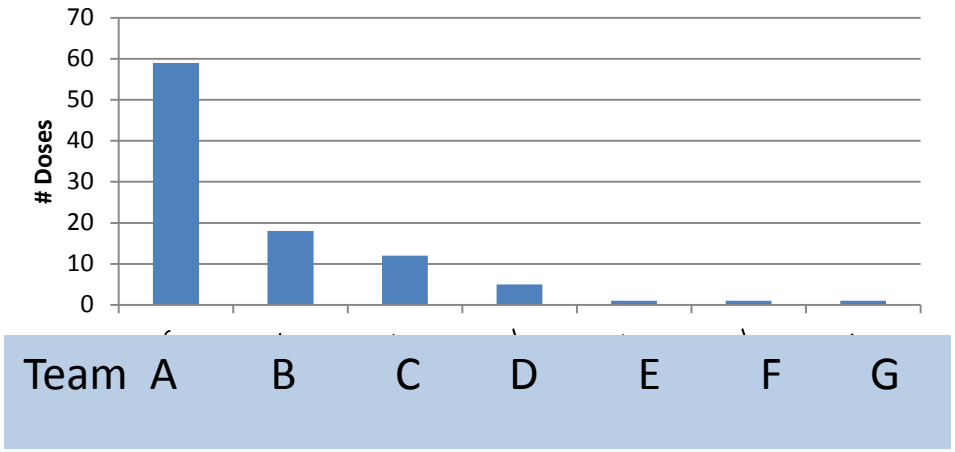
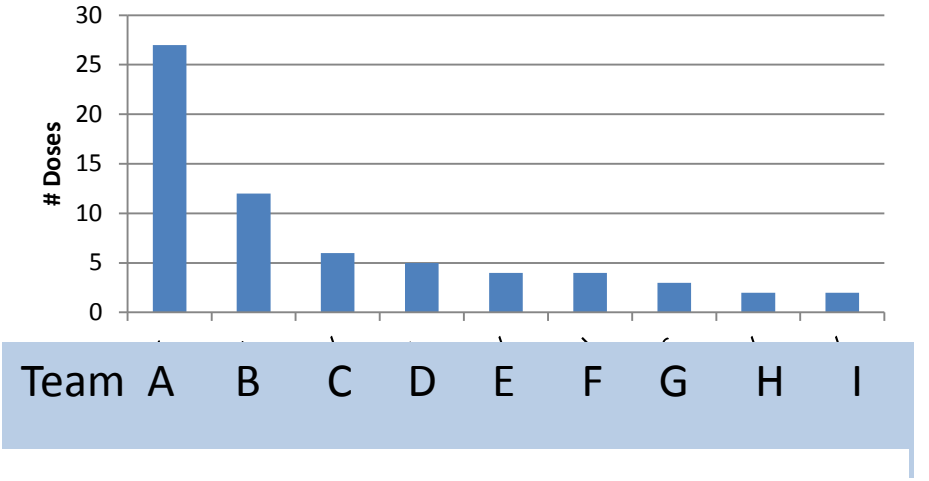
**Variation for Holding doses: May be appropriate for certain cases**
**Working to standardize practice across services**

**Enoxaparin**




**Heparin**



# Held Doses: "Ambulating" and "Refused" By Nursing Unit

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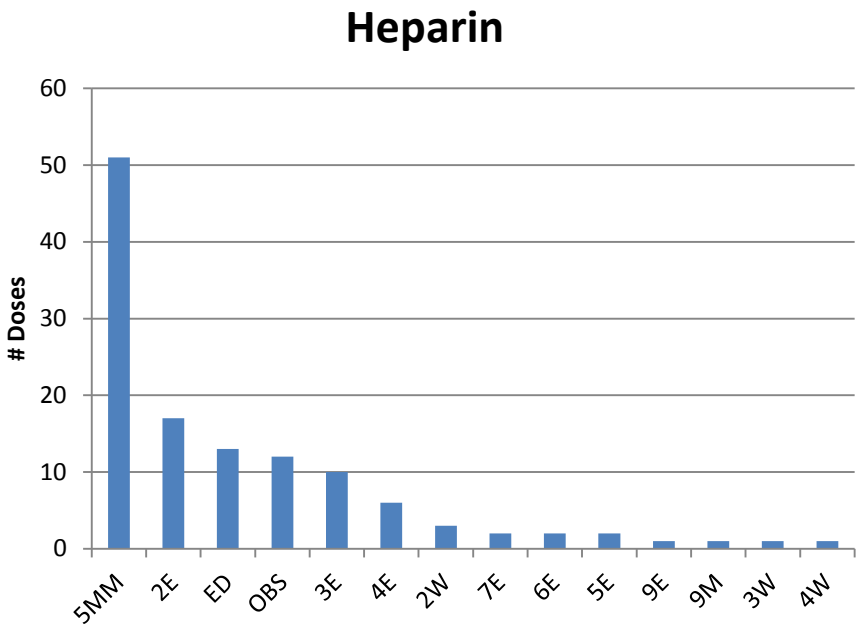
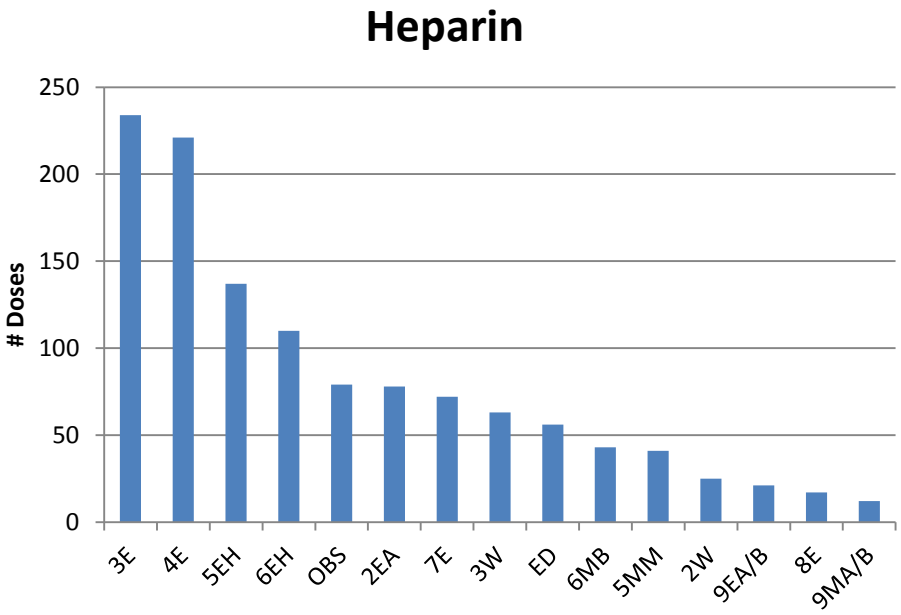
## "Ambulating"




## "Patient Refused"



# Ongoing Improvement - SCDs

| Service | Admit Dt | Admit Reason | SCD Order Reason (may be blank) | Order By | Last Chart | Chart By | Chart Dt |
|---|---|---|---|---|---|---|---|
| H SURGERY II | 12/5/2013 1:23:00 PM | pleural effusion; other pneumothorax; ot... | Contraindication to pharmacologic VTE prophylaxis. Continue until pharmacologic prophylaxis is started. | [redacted] | OFF Legs - Bilaterally | [redacted] | 12/12/2013 12:30:00 AM |
| H SURGERY I | 12/7/2013 5:10:00 PM | pancreas injury nos-clo; inj liv no op w... | Contraindication to pharmacologic VTE prophylaxis. Continue until pharmacologic prophylaxis is started. | | OFF Legs - Bilaterally | | 12/12/2013 12:15:00 AM |
| H THORACIC SURGERY | 11/28/2013 2:33:00 PM | atrial fibrillation; occlu,sten carotid ... | Contraindication to pharmacologic VTE prophylaxis. Continue until pharmacologic prophylaxis is started. Do not place on RLE!!!! | | OFF Legs - Bilaterally | | 12/12/2013 12:10:00 AM |
| H SURGERY II | 12/7/2013 6:17:00 PM | swelling of limb; nb subarachnoid hemorr... | Contraindication to pharmacologic VTE prophylaxis. Continue until pharmacologic prophylaxis is started. | | OFF Legs - Bilaterally | | 12/11/2013 8:15:00 PM |
| H SURGERY II | 12/7/2013 6:23:00 PM | traumatic subdural hem; other and unspec... | Contraindication to pharmacologic VTE prophylaxis. Continue until pharmacologic prophylaxis is started. | | OFF Legs - Bilaterally | | 12/11/2013 9:35:00 PM |
| H ORTHOPEDICS | 12/3/2013 11:04:00 AM | joint pain-upper arm; pain in limb; fx l... | Contraindication to pharmacologic VTE prophylaxis. Continue until pharmacologic prophylaxis is started. | | OFF Legs - Bilaterally | | 12/11/2013 8:16:00 PM |

Daily review – 30 to 35 patients per day had SCD orders with the devices charted as “off” sometime in the previous 24 hours

Allows for real time education interventions with nursing staff

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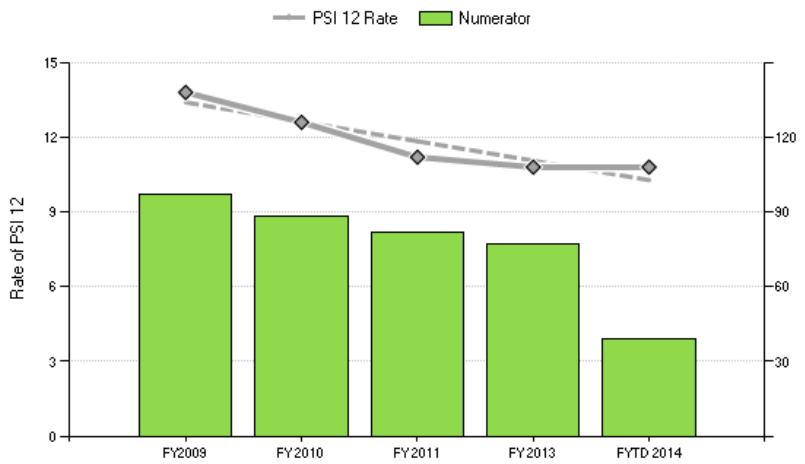
# Results: Rate of VTE – PSI 12

**AHRQ PSI 12 - Post Operative Pulmonary Embolism or Deep Vein Thrombosis**

FYTD: July to Dec 2014




| | FY2009 | FY 2010 | FY 2011 | FY 2013 | FYTD 2014 |
|---|---|---|---|---|---|
| PSI 12 Rate | 13.8 | 12.6 | 11.2 | 10.8 | 10.8 |
| Numerator | 97 | 88 | 82 | 77 | 39 |
| Denominator | 7027 | 6989 | 7295 | 7154 | 3595 |

Focus on VTE prevention has resulted in a decrease in VTE events

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# VTE 6 -Incidence of Potentially Preventable VTE

Welcome Ellen Robinson! Wednesday, April 30, 2014

UHC Hospital Quality Measures Report

Report Resources

## Harborview Medical Center

### Jul - Sep 2013 (Q3)

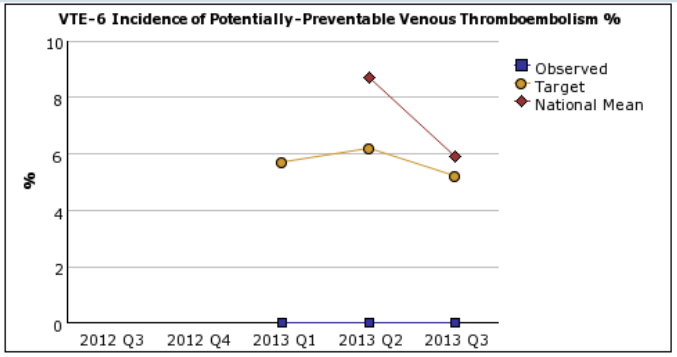
**VTE-6 Incidence of Potentially-Preventable Venous Thromboembolism %**

**Definition:** The percentage of patients diagnosed with confirmed VTE during hospitalization (not POA) who did not receive VTE prophylaxis between hospital admission and the day before the VTE diagnostic testing order date.
**Denominator:** Patients who developed confirmed VTE during hospitalization. Excludes patients less than 18 years of age; who have a LOS greater than 120 days; with comfort measures only; enrolled in clinical trials; with a principal diagnosis code of VTE; with VTE POA; with reasons for not administering mechanical and pharmacologic prophylaxis; without VTE confirmed by diagnostic testing.
**Numerator:** Patients who received no VTE prophylaxis prior to the VTE diagnostic test order date.
**Target:** The Joint Commission target upper limit
**National Mean:** The mean of all comparison group observed rates obtained from the Core Measure National Comparison Group File.
**See Also:** http://www.jointcommission.org/performance_measurement.aspx

**Jul - Sep 2013 (Q3)**

| | Relative Performance | Numerator (n) | Denom (n) | Observed | UHC Median-TJC Method | Target |
|---|---|---|---|---|---|---|
| Current Quarter | ⊙⊙! | 0 | 24 | 0.0 | 0.0 | 5.2 |

| | UHC Population | | | | | | |
|---|---|---|---|---|---|---|---|
| | Value | %tile | 10th | 25th | 50th | 75th | 90th | Mean |
| Cases (denom.) | 24 | 79 | 2 | 4 | 11 | 21 | 30 | 15 |
| Observed | 0.0 | 0 | 0.0 | 0.0 | 0.0 | 9.8 | 22.2 | 7.5 |
| Target | 5.2 | | | | | | | |
| National Mean | 5.9 | | | | | | | |




**Oct 2012 - Sep 2013 (recent year)**

| | Relative Performance | Numerator (n) | Denom (n) | Observed | UHC Median-TJC Method | Target |
|---|---|---|---|---|---|---|
| Recent Year | ⊙⊙ | 0 | 58 | 0.0 | 0.0 | 5.2 |

| | UHC Population | | | | | | |
|---|---|---|---|---|---|---|---|
| | Value | %tile | 10th | 25th | 50th | 75th | 90th | Mean |
| Cases (denom.) | 58.0 | 66 | 10 | 15 | 39 | 67 | 84 | 47 |
| Observed | 0.0 | 0 | 0.0 | 2.0 | 5.6 | 11.1 | 20.0 | 8.4 |
| Target | 5.2 | | | | | | | |

| Recent Year UHC Top 10 in This Metric | Observed | Denom |
|---|---|---|
| The Ohio State University Wexner Medical Center | 0.0 | 77 |
| Mayo Clinic Hospital - Rochester | 0.0 | 75 |
| UC Irvine Medical Center | 0.0 | 67 |
| UMass Memorial Health Care | 0.0 | 58 |
| Harborview Medical Center | 0.0 | 58 |
| West Virginia University Hospitals, Inc. | 0.0 | 33 |
| Beaumont Hospital, Troy | 0.0 | 31 |
| Cedars-Sinai Medical Center | 1.2 | 85 |
| The Cleveland Clinic Foundation | 1.8 | 168 |
| Rush University Medical Center | 1.8 | 56 |

* To qualify, facilities must meet the metric target and have an annual volume of at least 30 cases. Fewer than 10 facilities will be listed if less than 10 facilities meet these criteria.

# Conclusion

- Systematic Processes have resulted in a decrease in VTE events
- Success of the project can be attributed to physician leadership, communicated expectations, and front line staff engagement

- Questions and contact:


- Ellen Robinson, PT (206) 744 9550 lnrobin@u.washington.edu
- Anneliese Schleyer, MD, MHA, FHM schleyer@u.washington.edu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# Q & A

Anneliese Schleyer , MD,  MHA
Associate Medical Director of Hospital Quality and Patient Safety
Harborview Medical Center
Seattle, WA

Ellen F. Robinson, PT
Manager, Quality Improvement
Harborview Medical Center
Seattle, WA

# UPCOMING EVENTS

- **Webinar: Antimicrobial Stewardship and *C. difficile* Infection**
  June 5, 2-3 pm ET

# JOIN US JUNE 25 – 27 IN THE LONE STAR STATE!

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# THANK YOU FOR ATTENDING

- **Evaluation:** When you close out of WebEx following the webinar, an evaluation will open in your browser. Please take a moment to complete. We greatly appreciate your feedback!

- **Check out the NEW Essential Hospitals Engagement Network website:** http://essentialhospitals.org/groups/ehen/