“Stop the Clot”
Using Data & Analytics to Decrease Inpatient Complications

Paul Lewis, MD, FAAFP, CPE, CPHIMS
Director, Evidenced Based Medicine & Quality Baycare Health
Learning Objectives

• Understand how BayCare collects, regulates and uses EDW data to drive clinical outcomes for VTE patients and identify hospitalized patients at highest risk for VTE events

• Describe strategies using physician and nursing analytics to give feedback to providers and track & trend data for quality & cost

• Demonstrate how to individualize risk assess patients for blood clots including use of the order sets and clinical decision support tools.
BayCare Health System

BayCare is a leading not-for-profit health care system that connects individuals and families to a wide range of services at 15 hospitals and hundreds of other convenient locations throughout the Tampa Bay and West Central Florida regions.
About Us

$4 Billion Revenue

27,600 Team Members

36% Market Share

AA₂ Credit Rating
Focused On Entire Care Continuum

Community-Based Care
- Wellness Centers: 3
- Walk-In Care Stations: 8
- Physician Practice Locations: 139
- Urgent Care: 15
- Diagnostic/Imaging Centers: 13
- Ambulatory Surgery Centers: 4
- Free-Standing ER: 1
- Acute Care Hospitals: 15

Acute Care
- Behavioral Health Hospitals: 2
- Inpatient Acute Care Rehab Locations: 2
- Skilled Nursing Facilities: 2
- Outpatient Rehab Facilities: 19
- Home Care Offices: 11

Post Acute Care

Mission
Improve the health of all we serve through community-owned services that set the standard for high-quality, compassionate care.

Vision
BayCare is an extraordinary team leading the way to high-quality care and personalized, customer-centered health.

Values
The values of BayCare are trust, respect, and dignity, and reflect our responsibility to achieve health care excellence.
By the Numbers - 2017

- **Team Members**: 27,600
- **ER Visits**: 675,645
- **HomeCare Visits**: 858,576
- **Beds**: 3,459
- **Physicians and Medical Professionals**: 5,240
- **Operating Revenue**: $3.9 billion
- **HomeCare Visits**: 3,459
- **Community Benefit**: $391 million
- **Births**: 27,600
- **Discharges**: 176,228
- **Outpatient Surgeries**: 63,165
- **Locations In 4 Counties**: 380
- **Team Members**: 27,600
- **HomeCare Visits**: 3,459
- **Community Benefit**: $391 million

*Includes employed, credentialed and community-based physicians, and medical professionals (PAs, ARNPs, CRNAs, etc.)

**Represents unreimbursed costs for traditional charity care, Medicaid and other means-tested programs and unbilled community services

*** Includes beds at St. Joseph’s Hospital Behavioral Health Center and Morton Plant North Bay Hospital Recovery Center
Hospitals

Bartow Regional Medical Center
Founded 1925
72 Beds

Mease Countryside
Founded 1985
311 Beds

Mease Dunedin
Founded 1937
120 Beds

Morton Plant
Founded 1916
687 Beds

Morton Plant North Bay
Founded 1965
154 Beds

St. Anthony’s
Founded 1931
393 Beds

St. Joseph’s
Founded 1934
470 Beds

St. Joseph’s Children’s
Founded 1990
202 Beds

St Joseph’s Hospital- North
Founded 2010
76 Beds

St Joseph’s Hospital- South
Founded 2015
90 Beds

St Joseph’s Women’s
Founded 1976
108 Beds

South Florida Baptist
Founded 1953
147 Beds

Winter Haven Hospital
Founded 1923
468 Beds

Winter Haven Women’s
Founded 1987
61 Beds

BPP Composition

**CIN**
- 299 Practices
- 1,330 Physicians

**ACO**
- 120 TINs
- 1,001 Providers

157,000+ Managed Lives
114,000+ Lives
43,000+ Lives
BMG Single Outpatient EMR Platform 2015

Morton Plant Mease Primary Care

HealthPoint Medical Group

Suncoast Medical Clinic

BayCare Medical Group
# Team Members: 1,846 FTEs

406 Physicians

92 Advanced Care Practitioners

178 Office Sites

65 Patient Centered Medical Home Sites

5 Advanced Patient Centered Medical Home Sites
HOW TO MAKE A PATIENT FEEL INVOLVED, NOT INTIMIDATED.

It should be the number one priority. But it seems an afterthought in our current healthcare system.

BayCare is creating a brand new healthcare model. Its foundation rests on recognizing and rewarding the value of humanity.

Skepticism is the first line of defense. It is justified. But it is also an opportunity. An opportunity to build a new model of care that is a true reflection of our values.

At BayCare, we believe that every patient deserves to be treated with respect and dignity. We believe that every interaction should be as positive as possible. And we believe that every employee plays an integral role in achieving this goal.

We are committed to creating a culture where every patient feels like they are valued and appreciated. We want to make sure that they feel involved in their healthcare decisions and that they have access to all the resources they need.

The BayCare model of care is one where patients are not just treated, they are valued. It is one where healthcare is not just a transaction, it is an interaction. It is one where healthcare is about more than just the patients, it is about the entire community.

So when you don't need a hospital, you can access one of BayCare's many neighborhood facilities, including urgent care, doctors' offices, labs, imaging, home care, pharmacy and more, for friendly, compassionate care.

Nurturing these efforts to access. Our unique culture creates an atmosphere that encourages interaction between patients and physicians.

You and your medical team have instant access to your personal electronic medical record, to speak in control of your health, and discuss your condition be less than when you sit across the table. The new HealthWise app enables you to send messages and get directions on where to go for your health needs.

January 2023

BayCare | HUMANITY AT WORK
Why? Costs, Quality, and Outcomes
BayCare’s #1 goal is Clinical Excellence
BayCare Health System

• Goal: 2019

15 Top Health Systems Provided
BETTER OVERALL PATIENT EXPERIENCE

- 7% Lower Cost Per Episode
- 1.2% Better Survival Rates
- 5% Fewer Patient Complications
- 10.9% Better Patient Safety
2017 100 Top Hospital Study Results

DATA POINTS
1. OVERALL
2. Inpatient Mortality
3. Complications
4. 30-Day Mortality
5. 30-Day Readmit
6. ALOS
7. ED Measures
8. IP Expense/Disch
9. MSPB
10. Oper Profit Marg
11. HCAHPS

PROFILED HOSPITAL compared to:
2015 Teaching: n = 445
2011-2015 Teaching: n = 446
What is the Clinical or Business Question?
Before the Enterprise Data Warehouse

BayCare

- Claims
- Quality
- Patient Financial
- General Financial
- Physician Performance
- Regulatory
- Patient Clinical
- Time and Attendance
Vision
• Data as an asset for BayCare
• Timely data/analytics for problem solving and to drive decision making

Strategy
• Single source of truth
• Integrated information
• Standardized definition and processes
• Ability to answer complex business/clinical questions
"Not everything that can be counted counts, and not everything that counts can be counted."

Albert Einstein
Today

• Predictive analytics
• Population management

Application

• Clinical dashboard releases
• Operational dashboard releases

Harmonization

• Soarian/Invision transition
• Replacement of legacy databases
• Tableau deployment
• Operational dashboard releases

Acquisition

• Financial - Lawson
• Clinical – Cerner EMR
• Initial dashboard releases

Project begins

• Data Governance
• Architecture deployed
BayCare EDW Architecture

Operational Systems
- Cerner
- Soarian
- Lawson
- McKesson
- GE
- Kronos
- 3M
- Other...

BayCare Informational Systems
- Data Warehouse
- Data Marts
- Stage
- Finance
- Clinical
- Operational

User Experience
- Reports
- Dashboards

User Interface / Portal
- Data Subscription
- Data Extracts

Standardize
- Match
- Merge
- Monitor
- Audit
- Balance
- Control

DATA QUALITY

METADATA MANAGEMENT
Cost per case, compare, benchmark and identify the best practices. Adds value to drill down to various revenue groups and build standard practice patterns, including order-set utilization.

Key metrics that can be used to adjust processes and procedures to ensure efficient scheduling and operations.

Allows BayCare to quickly and easily share data with partners and vendors.

Several analytics for Readmission & LOS to help with cost control, patient satisfaction, care management.

Detailed ED Metrics that help with wait-times, efficiencies and procedures.

Ties CMS metrics with BayCare data to analyze cost and attribution. Appropriate placement of patients post hospitalization.

Track key metrics around physician quality, OPPE, performance, cost and utilization.

Enterprise wide overview of surgeries that help with patients, quality, turn-around time, surgeon productivity.

Revenue trends to allow managers to make adjustment and control cost.

Help to drive efficiency at Labs, to reduce cost and avoid high cost tests.

Allows BayCare to measure operational, financial and quality focused metrics of Urgent Care locations. Appropriate usage of antibiotics for acute pharyngitis.

Value for BayCare

- Cost per Case Analytics
- Surgical Analytics
- Lab Analytics
- Revenue Cycle Metrics
- Value Base Purchasing (MSPB)
- Physician Analytics
- ED Analytics
- LOS & Readmits Analytics
- Productive and Operational Analytics
- Data Services
- Urgent Care Analytics

Quality

Physicians

Patients

Cost
Integrated Information = Asset

- 21 million encounters
- About 4 million patients
- 5 Billion clinical events
- 22 million labs orders and results
- 2,000 dashboard and reports

- 400,000 hits annually
- 5700 team members
- 182 million records through data services
- Throughput of 800TB of data per day
- Over 30 billion rows of data
- Over 3 million SQL/day
Transformation factors

• Strong team
• “Agile” Analytics - Quick turn-around & iterative process
• Strong & engaging data-governance
• Focus on validation, reconciliation to build credibility and trust
• Desired delivery channel for reports, raw data, and information visualization
• Self-service model (push vs pull)
• Collaboration with service-lines and departments
• Consolidation of reporting teams to reduce redundancy and improve efficiency accuracy
• Cultural change around data discovery & data driven decisions
Data Governance Structure

EDW Executive Committee

Clinical Advisory Committee
Quality Advisory Committee
Operational Advisory Committee
Financial Advisory Committee
Other Advisory Committee

Business Intelligence Center (BIC)

Clinical Working Groups
Quality Working Groups
Operational Working Groups
Financial Working Groups
Other Working Groups

Clinical Analysts
Quality Analysts
Operational Analysts
Financial Analysts
Other Analysts
Why focus on VTE?

- #1 BayCare Complication in 2016
- BayCare had 646 cases diagnosed
- Known Evidence Based Practice (EBP) to prevent VTEs
- Opportunity to improve compliance with EBP

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What is Venous Thromboembolism (VTE)?

• A blood clot that starts in a vein
• 3rd leading vascular diagnosis after heart attack and stroke
• Affects 300K – 600K Americans annually
• Two Types
  • Deep Vein Thrombosis (DVT) is a clot in a deep vein, usually leg
  • Pulmonary Embolism – occurs when DVT clot breaks free from a vein wall and travels to the lungs and blocks some or all of the blood supply
What is Venous Thromboembolism (VTE)?

**Causes – slowing or changes in blood flow**
- Surgery – (major general – orthopedic)
- Immobilization
- Hospitalization
- Pregnancy or hormones

**High Risk**
- Elderly
- Obese/overweight
- Cancer/autoimmune disorders
- Genetic causes of excessive blood clotting
Incidence & Complications

- 50 percent or more of HA- VTE are preventable.
- 10 percent of VTE events can result in fatal pulmonary embolus, the most common preventable cause of hospital death.
- VTE is a significant cause of hospital readmissions after surgery

“Maynard, Greg, Preventing Hospital-Acquired Venous Thromboembolism A Guide for Effective Quality Improvement”
Pulmonary Embolism

• This is what we’re afraid of
Best Practice to Prevent VTEs

- Mandatory risk assessment & reassessment during hospital stay (VTE Advisor)
- Sequential Compression Devices (SCDs)
- Anticoagulant prophylactic therapy
- Early and frequent ambulation and activity
- Patient education

We needed DATA!
## Data Sources

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Complications 2018

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BC VTE Process Flow Diagram

Pt arrives in ED
- MD assessment
  - Pt admitted to IP unit
    - Pt arrives Direct Admit
      - Surgeon orders proph
        - SCDs placed in OR
  - OR pt-RN reassesses
    - SCDs removed (if in use) and pt ambulated by PCT or RN
      - Ambulation/Activity-
        - Equipment obtained
          - RN assesses appropriateness of SCDs
            - Appropriate?
              - Yes-PT ordered
                - PT assessment
                  - PT needed?
                    - Yes-PT provided
                      - No-PT is ambulated
                        - No-RN contacts MD for order removal & works on alternatives
                          - Yes-SCDs applied
                            - SCDs documented
  - Prophylaxis needed?
    - Yes-MD orders prophylaxis
      - Chemical Pharmacy profiles
        - Pharm verifies Renal function, BMI, interactions, etc.
          - Yes-Order verified
            - Need to hold order for procedure?
              - Yes-Call MD to confirm
                - No-contact MD to confirm
                  - Order verified
                    - No
                      - Contact MD to confirm order
                        - Yes
                          - Yes-Order verified
                            - Yes-PT ordered
                              - PT assessment
                                - PT needed?
                                  - Yes-PT provided
                                    - No-PT is ambulated
                                      - No-RN contacts MD for order removal & works on alternatives
                                        - Yes-SCDs applied
                                          - SCDs documented
    - No
      - RN reviews order
        - Appropriate?
          - Yes
            - Yes-PT ordered
              - PT assessment
                - PT needed?
                  - Yes-PT provided
                    - No-PT is ambulated
                      - No-RN contacts MD for order removal & works on alternatives
                        - Yes-SCDs applied
                          - SCDs documented

Pt arrives in OR
- SCDs placed in OR
  - RN reassesses
    - Ambulation/Activity-
      - No
        - Pt is ambulated
          - Ambulation documented (# of feet, each time, pt effort)
            - No-RN contacts MD for order removal & works on alternatives
              - Yes
                - Yes-SCDs applied
                  - SCDs documented
  - Prophylaxis needed?
    - Yes-MD orders prophylaxis
      - Chemical Pharmacy profiles
        - Pharm verifies Renal function, BMI, interactions, etc.
          - Yes-Order verified
            - Need to hold order for procedure?
              - Yes-Call MD to confirm
                - No-contact MD to confirm
                  - Order verified
                    - No
                      - Contact MD to confirm order
                        - Yes
                          - Yes-Order verified
                            - Yes-PT ordered
                              - PT assessment
                                - PT needed?
                                  - Yes-PT provided
                                    - No-PT is ambulated
                                      - No-RN contacts MD for order removal & works on alternatives
                                        - Yes-SCDs applied
                                          - SCDs documented
    - No
      - RN reviews order
        - Appropriate?
          - Yes
            - Yes-PT ordered
              - PT assessment
                - PT needed?
                  - Yes-PT provided
                    - No-PT is ambulated
                      - No-RN contacts MD for order removal & works on alternatives
                        - Yes-SCDs applied
                          - SCDs documented

Primary VTE Prevention Action Plan

I. VTE Informatics Changes – October
   a. New evidenced based order set
   b. Changes to VTE Advisor for improved evidence based guidance to physicians
   c. New VTE alert to physicians if on no prophylaxis

II. Pharmacy Change to dosing chemical prophylaxis timing on day of admission
    (1700 rule) (Sept/Oct)
Primary VTE Prevention Action Plan

I. Physician education on VTE prevention
   a. Hospital quality committees & grand rounds

II. Ambulation Initiative (Sept/Oct)
   a. Ambulation Report
   b. Standardized Ambulation Guidelines \textit{(NEW)}

III. Patient Education on Preventing Blood Clots (Nov)

IV. VTE Nursing Prophylaxis Tool Roll Out (Sept/Oct)
   a. Empowers nursing to have guidelines on contacting physicians when a patient is not on chemical prophylaxis
Initiatives Timeline

1700 Rule - Passed Pharmacy and VTE KPI Group
Aug 2

Education on Powerplan
Aug 2

VTE Advisor dismiss alert to VTE Advisor Subgroup
Aug 14

VTE Advisor dismiss alert to CDC
Aug 11

VTE Cancel Prophylaxis Rule to CDC
Aug 11

Powerplan input at VTE Advisor Subgroup
Aug 14

Powerplan to CDC for Endorsement
Aug 11

1700 Rule - Into Production
Aug 30

VTE Cancel Prophylaxis Rule into Production
Aug 30

VTE Advisor dismiss alert to VTE Advisor Subgroup
Aug 14

Powerplan into Production
Aug 30

VTE Advisor dismiss alert to MSACo
Sep 11

VTE Cancel Prophylaxis Rule into Production
Sep 19

2017

Aug

Sep

2017

Today
Changes to OB/GYN PowerPlans for VTE Prophylaxis

Effective **July 25, 2018**, VTE Prophylaxis orders for OB/GYN PowerPlans are updated to meet American Congress of Obstetricians and Gynecologists (ACOG) guidelines as approved by Perinatal Safety.

**Note:** Assess VTE risk and utilize associated orders for all OB/GYN patients.

The following changes are made to the OB/GYN PowerPlans:

- **VTE Prophylaxis OB** orders display and conform to ACOG guidelines for the following PowerPlans:
  - Admission Antepartum v3
  - Scheduled Cesarean Multiphase v2. Preop
  - Postpartum v2
  - Preop OB GYN
  - Labor Multiphase v2. Postpartum
### VTE Prophylaxis Advisor

**See VTE Prophylaxis Reference Text**

**LOW RISK FOR VTE - PADUA Less than 4 - Medical patients who are fully mobile and have no significant risk factors.**

**DOCUMENT LOW RISK WITH ORDER BELOW***

**Patient is Low Risk for VTE**

**Order** 10/01/2018 04:08 EDT

- **Ambulate** With Assistance

**HIGH RISK FOR VTE - PADUA 4 OR GREATER - Medical patients on bedrest, CHF, pneumonia, advanced age, varicose veins and other VTE risks. Suspected TIA/CVA.**

- BMI less than 40 and CrCl greater than or equal to 30 mL/min: enoxaparin (Lovenox) 40 mg Subcut 1xDaily.
- CrCl less than 30 mL/min: enoxaparin (Lovenox) 30 mg Subcut 1xDaily.
- BMI 40 or greater and CrCl greater than or equal to 30 mL/min: enoxaparin (Lovenox) 40 mg Subcut 2xDaily.
- CrCl less than 30 mL/min: enoxaparin (Lovenox) 40 mg Subcut 1xDaily.

**Compression Device Intermittent Pneumatic** Bilateral

- enoxaparin (Lovenox) 40 mg Subcut, Inj. 1xDaily at 1700
- enoxaparin (Lovenox) 30 mg Subcut, Inj. 1xDaily at 1700
- enoxaparin (Lovenox) 40 mg Subcut, Inj. 2xDaily at 1700
**Padua Risk Score - Medical and Stroke**

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<th>1 Point each</th>
<th>2 Points</th>
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<td>Recent trauma and/or surgery (within 1 month)</td>
<td>Already known thrombophilic condition*</td>
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<tr>
<td>Heart and/or respiratory failure</td>
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<tr>
<td>Acute myocardial infarction or ischemic stroke</td>
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<td>Active cancer*</td>
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<tr>
<td>Echocardiogram: CHF, &gt;4 L/min</td>
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<td>Reduced mobility*</td>
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*Carriage of defects antithrombin, protein C or S, factor V Leiden, G2021A prothrombin mutation, antiphospholipid syndrome.

*Patients with local distant metastasis and/or whom chemotherapy or radiotherapy had been performed in the previous 6 months.

*Anticipated bed rest with bathroom privileges (either because of patient’s limitations or physician’s orders) for at least 3 days.
Score 0 = No prophylaxis
Score 1 = Mechanical Prophylaxis Only
Score 2 = Chemical Prophylaxis
**VTE Prophylaxis Report**

**Facility:** St. Anthony's Hospital  
**Date:** 09/19/16  
**Time:** 15:41

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<th>Patient Name</th>
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Score: 2  
Prophylaxis: heparin 5,000 unit(s) = 1 mL, Subcut, q8hr  
First Given: 09/15/2016 14:39  
Last Given: 09/19/2016 13:17  
Compression Device Intermittent Pneumatic - 3  
Intermittent pneumatic compression devices, knee high - Applied / Turn On: 09/12/2016 12:00  
Compression Device Intermittent Pneumatic - 3  
Intermittent pneumatic compression devices, knee high - Applied / Turn On: 09/13/2016 00:00

**VTE Prophylaxis Report**

**Facility:** St. Anthony's Hospital  
**Date:** 09/19/16  
**Time:** 15:41

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Score: 1  
Prophylaxis: Mechanical Prophylaxis Only - Compression Device Intermittent Pneumatic - 3  
Intermittent pneumatic compression devices, knee high - Applied / Turn On: 09/18/2016 20:30
VTE Nursing Prophylaxis Tool

Is patient ambulatory (per BayCare Ambulation Guidelines)?
- No
- Yes

Is patient on prophylaxis (mechanical or chemical)?
- No
- Yes

Is patient on mechanical prophylaxis only?
- No
- Yes

Is patient at clear bleeding risk (see list of bleeding risks)?
- No
- Yes

No action needed
Contact physician to obtain prophylaxis order

Bleeding risk guidelines:
- Active GI bleed
- Platelet count <50,000
- INR ≥ 2
- Intracranial bleeding until cleared by neurological services
- <48 hours postoperative
- Epidural/spinal anesthesia within previous 4 hours or expected within 12 hours
BayCare Early Ambulation
Jan 2016 – October 2017

% Patients Ambulated x 3

- 2016 Q1: 48.00%
- 2016 Q2: 50.00%
- 2016 Q3: 52.00%
- 2016 Q4: 54.00%
- 2017 Q1: 56.00%
- 2017 Q2: 58.00%
- 2017 Q3: 60.00%
- 2017 Q4: 62.00%

Early Ambulation Sept.
Venous thromboembolism (VTE) is the formation of a blood clot in the vein. When a clot forms in a deep vein, usually in the leg, it is called a deep vein thrombosis or DVT. If that clot breaks loose from the vein wall and travels to the lungs, blocking some or all of the blood supply, it is called a pulmonary embolism or PE.

VTEs are a subset of Truven Complications. The Complications metric was a Key Performance Indicator (KPI) from 2014-2016. In 2017, VTEs were monitored as a KPI by Clinical Outcomes and a Performance Improvement team. In 2018, VTEs, while not a KPI, will continue to be monitored.

Truven Complications are defined by ECRI methodology, Expected Complication Rate Index (ECRI). The methodology includes secondary dxs, where POA is ‘N’ or ‘U’, and are based on ICD-9s. As of 10/1/2015, ICD-10s are used and backmapped to match the ICD_9 criteria. When two or three years of ICD-10s become available for reporting, Truven will update their methodology.

CMS identified additional criteria for 2017 which were included in the KPI, also found in Premier. The dashboard offers the ability to look at VTEs per Truven Methodology only, Premier/CMS Additional Codes only, and Truven-Permier/CMS Additional combined (KPI).

The VTE metric includes:
- Inpatient cases and does not include Rehabilitation, Psychiatric, and Substance Abuse patients.
- All payers are reported and ages 18+
- Truven identified ICD-10 Codes (therefore data not available prior to 10/1/2015)
- CMS identified ICD_10 Codes

The metric excludes:
- Discharges that are AMA and Transfers to short term facilities
- Additional exclusions have been applied per Truven Qualifiers for both DVT and PEs.

The VTE complication rate is calculated by dividing the number of patients with a qualifying secondary diagnoses by the number of eligible discharges divided by 1000.

NOTE: BayCare Alliant Hospital (BAH) VTE data is monitored separately, see BAH Tab. The KPI definition is utilized with one exception, BAH data includes Discharges to Other Short Term Facilities (which is a Truven exclusion and does not apply to the BAH population).
### Audit for Venous Thromboembolism (VTE)

**Select Hospital(s)**
All

**Select a VTE Category**
KPI - Tienan and Premier OMS VTEs

**Select Date Range**
From August 7, 2017

**Select Payer(s)**
All

**Select Age Range**
16 to 115

#### Patients with VTEs

<table>
<thead>
<tr>
<th>Encounter</th>
<th>C. Hospital</th>
<th>Admit Date</th>
<th>Discharge Date</th>
<th>Spinal</th>
<th>Med Surg</th>
<th>Surgeon Full Name</th>
<th>AGE</th>
<th>DX DESCRIPTION</th>
<th>VTE Date</th>
<th>VTE Time</th>
<th>Readmit</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAH</td>
<td>6/4/2017</td>
<td>6/8/2017</td>
<td></td>
<td></td>
<td>SURG</td>
<td></td>
<td>80</td>
<td>Acute embolism and thorobosis of right femoral vein</td>
<td>6/6/2017</td>
<td>00:50:00</td>
<td></td>
<td>4</td>
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<tr>
<td>MGH</td>
<td>7/29/2017</td>
<td>8/9/2017</td>
<td></td>
<td></td>
<td>SURG</td>
<td></td>
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<td>8/14/2017</td>
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<td>13</td>
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</tbody>
</table>
VTE Advisor – Clinical Decision Support

- Proper assessment of VTE risk level in hospitalized patients is vital to providing timely preventive treatment. When used consistently, clinical decision support tools can improve timely patient assessment and VTE prophylaxis.

- VTE Advisor (Advisor) is a Cerner decision support tool that is available to providers to assist in the VTE risk level assessment, as well as offer prophylaxis recommendations.
VTE Prophylaxis Advisor

Risk Factors

Select Recommendations

*Renal Function
No Renal Dosing

*Receipt of Unfractionated Heparin
Unknown

Current Regimen
heparin 5,000 unit(s) = 1 mL, IV, Once; heparin 2,500 unit(s) = 0.5 mL, IV, as directed, PRN: Other: ...

*Recommended Pharmacologic Therapy
No contraindications found

Developer and Funding Source: Cerner Corporation, August 2015
VTE Prophylaxis Orders

Issue:
- Anticoagulant discontinued *without* another anticoagulant or SCD order in place

Change:
- Actionable Alert

ANTICOAGULANT DISCONTINUED

An anticoagulant has been discontinued
There are no other orders for VTE prophylaxis.
Please place an order for one of the following anticoagulants
Please select from the following:

Add Order for:
- Compression Device
- Intermittent Pneumatic
- Bilateral Thigh High, SCD's
- Ambulate
- 6 Only
- oxapararin 40 mg/0.4 mL injectable solution
- 40 mg, Subcut, 1xDaily
- heparins 5,000 unit(s)
- Subcut, Im, q1hr, T,TN+720
- aspirin 2.5 mg, PO, Tab, 2xDaily
- aspirin 5 mg, PO, Tab, 2xDaily
- rivaroxaban 10 mg oral tablet
- 10 mg = 1 tab(s), PO, 1xDaily, for post-op hip surgery DVT prophylaxis X 35 days(s)
- rivaroxaban 20 mg oral tablet
- 20 mg = 1 tab(s), PO, 1xDaily, DVT treatment X 11, # 30 tab(s)
- aspirin 325 mg, PO, EC tab, q12hr, Clinical Instructions: for DVT Prophylaxis
VTE Advisor “Stop the Clot”

VTE Advisor Data
Post 2/2/2017 Tool Enhancements

Provider Patient Volumes
VTE Cases, Total Patient Volume, and Total Completed VTE Advisor

VTE Cases vs Advisor Usage
Did Not Use Advisor  |  Completed Advisor  |  Grand Total
---|---|---
No VTE
N: 79,287  |  N: 2,531  |  N: 81,818
96.91%  |  3.09%  |  100.00%
Overridden: 0%  |  Overridden: 20%  |  Overridden: 1%
Developed VTE
N: 133  |  N: 0  |  N: 141
94.33%  |  5.67%  |  100.00%
Overridden: 1%  |  Overridden: 25%  |  Overridden: 2%
Grand Total
N: 79,420  |  N: 2,559  |  N: 81,959
96.90%  |  3.10%  |  100.00%
Overridden: 0%  |  Overridden: 20%  |  Overridden: 1%
VTE Advisor “Stop the Clot”

SJH - 1104016987 - Developed VTE
Did Not Use Advisor - Provider Did Not Use Advisor

VTE Confirmed: 2017-03-26 04:20:00

- Garcia, Lesly
  3/20/2017 7:29:00 AM

- Casinger, Anthony
  3/20/2017 9:28:00 AM

- Jurutj, Daniel
  3/25/2017 2:01:57 AM

- Modell, Dylan
  3/25/2017 4:40:11 AM

VTE Event Date: 3/26/2017 4:20:00 AM

Figure 4 - VTE encounter timeline
Preventing Blood Clots in the Hospital

While in the hospital, you have an increased risk for blood clots to form in your legs. The normal flow of blood in your body can slow down after surgery or when you’re less active, and blood clots can form. Blood clots can harm your blood vessels and be life-threatening. You’re at risk for two main conditions:

1. Deep vein thrombosis (DVT): A blood clot that forms in a deep vein, usually in an arm or leg, limiting blood flow to that area

2. Pulmonary embolism (PE): A blood clot that breaks off and travels to the lungs

To help prevent these conditions, your health care team will create a plan that’s right for you. Your doctor may order sequential compression devices (SCDs) and/or blood thinning medications.

Sequential Compression Devices (SCDs)

What are sequential compression devices?
Sequential compression devices can lower the risk of blood clots forming. The SCD is a machine with tubing attached to “sleeves” that are worn on both legs. The sleeves fill with air from a pump and gently squeeze your leg muscles, switching from one leg to another. The squeezing of the sleeves simulates walking, which is the body’s normal way of moving blood through the body.

How will the SCDs feel?
The sleeves fit snugly around your legs. When the pump is turned on, you’ll feel a gentle squeezing of one leg for several seconds. The squeezing will stop for a few seconds, and then the other leg will be squeezed. The squeezing will go back and forth from leg to leg. If the wrap feels too loose or too tight, or if you feel any pain, numbness or tingling, notify your health care team.

Who should use SCDs?
- Hip and knee replacement surgery patients
- Patients with lymphedema (swelling of the legs and arms)
- Obese patients
- Patients confined to bed for a long period of time
- Patients unable to take blood thinners

Blood-Thinning Medications
Blood thinning medications work to decrease your blood’s ability to clot. While the medications don’t break up existing clots, they can prevent clots from getting bigger or reduce your risk of forming new clots.

Your Role in Preventing Blood Clots
Take all the doses of the medication ordered for you.
Take the medication even if you’re able to get up and walk.
VTE Reduction Financial Savings

2016
257 VTEs

2017
246 VTEs

11 fewer

2018 (annualized)
180 VTEs

66 fewer

Estimated additional cost per VTE:
$17,367*

= $1,337,259
SAVINGS

133 through September 27th **

*Agency for Healthcare Research and Quality
Building BayCare’s Competitive Advantage - Answering the ‘Harder’ Questions

1. Does our nurse overtime policy affect our ICU quality measures? Patient satisfaction?
2. Identify cancer patients whose Epidermal growth factor receptor (EGFR) expression levels are 2 fold above the threshold for normal expression?
3. Correlation between our improved cardiac quality measures and reimbursements
4. How will a lower birth rate in our geography impact the local acute care providers, the L&D dept, surgery, Peds?
5. What is the impact to our credit rating based upon a “predicted” payer mix change to more Medicaid from commercial payers?

Develop insights That Combine Clinical, Administrative, Research and Financial Data
Data/Analytics – Roadmap

- **Data Prep**
  - What happened? (Descriptive)
  - Why did it happen? (Diagnostic)
  - What is likely to happen? (Predictive)
  - Show me what I should do? (Prescriptive)

- **Decision Support**

- **Decision Automation**

- **Action**

- **Outcomes**

**Analysis**

**Manual Input**
Quality demands greater insight...

Sense &Respond

Predict &Act

- Optimization
  - What is the best that could happen?
- Predictive Modeling
  - What will happen?
- Generic Analytics
  - Why did it happen?
- Ad Hoc Reports
- Standard Reports
- Clean Data

EDW Maturity

Strategic Advantage

- Raw Data
  - What happened?
Take Away

• Know your data
• Validate your data
• Analyze your data

TO

• Tell the story
• Make decisions
• Identify process improvements

Without data you’re just another person with an opinion.
- Edwards Deming
Questions & Some Answers