HIMSS Davies – VTE Ordering Optimization

02 October 2018

كليفلاند كلينك أبوظبي
Cleveland Clinic Abu Dhabi
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Case Study: VTE Ordering Optimization

Dr Iqbal Binoj, MD
Physician

Tori Mehmood
Clinical Data Abstractor

Vijai Kolar
Application Analyst, EMR IT

David Grannell
Clinical Informaticist, Informatics

Who We Are

MUBADALA

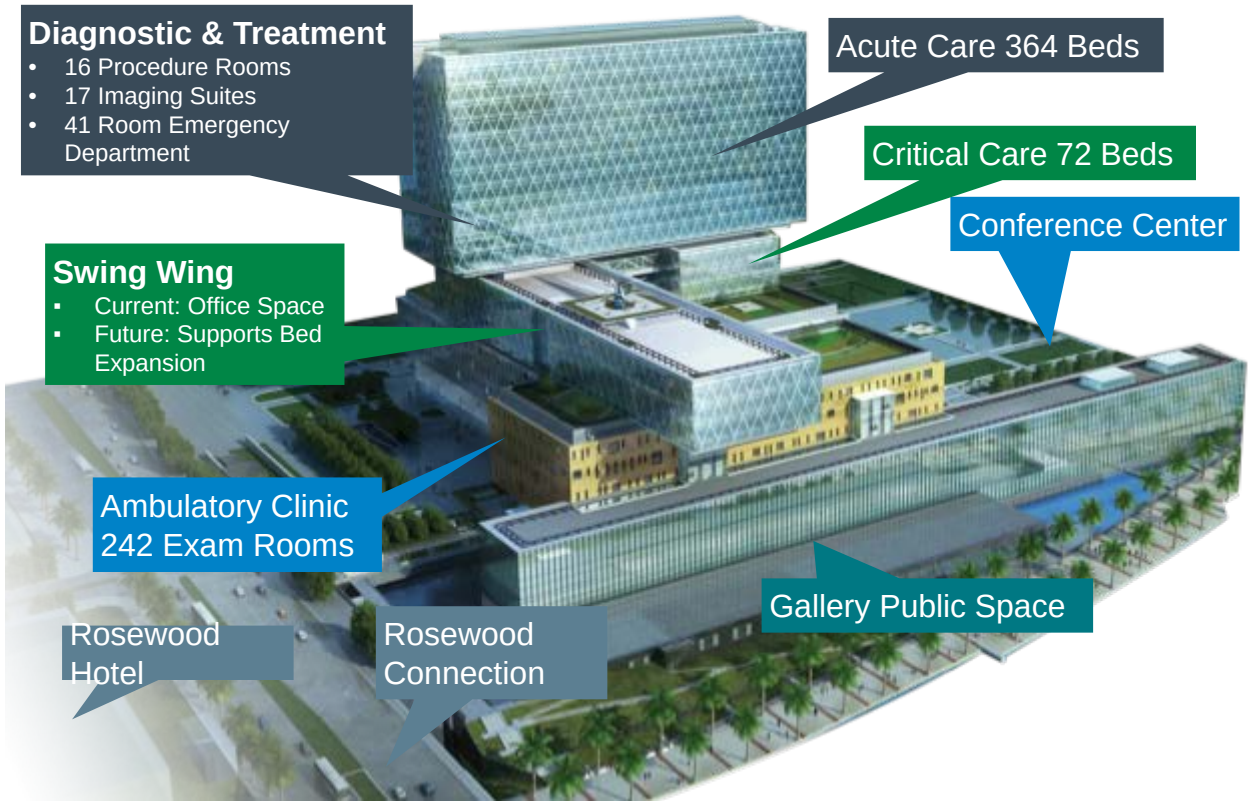
Cleveland Clinic

- Set up the first US Multispecialty Hospital Outside North America
- Cultivating a Sustainable Healthcare System
- Supporting the Development of Emiratis in Healthcare

Our Mission and Vision Statements

Mission	The mission of Cleveland Clinic Abu Dhabi is to provide better care of the sick, investigation into their problems, and further education of those who serve
Vision	Striving to be the world's leader in patient experience, clinical outcomes, research and education in a fiscally responsible manner

A Purpose-Built Medical Campus



- 409,234 m2 total gross area on a 23 acre site
- 364 beds scalable to 496 beds
- 26 Operating Rooms
- 1st LEED Gold certified hospital in the GCC

Complex & Critical Care

- Heart & Vascular Institute
- Digestive Disease Institute
- Respiratory & Critical Care Institute
- Surgical Sub-specialties Institute
- Anesthesiology Institute
- Pathology & Laboratory Medicine Institute
- Neurological Institute
- Eye Institute
- Medical Sub-specialties Institute
- Emergency Medicine Institute
- Imaging Institute
- Quality & Patient Safety Institute

Our Caregiver Diversity

77 Nationalities Represented

35+ Languages Spoken

618 UAE Nationals (18% Emiratization)

3,459 +

Clinical & Non Clinical Caregivers

373
Physicians

1,834
Nurses & Allied Health Professionals

1,252
Non Clinical Caregivers

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Our Unique Offerings

- Patient Experience
- Outcomes & Performance Metrics
- Innovative Model of Care
- State-of-the Art Technology

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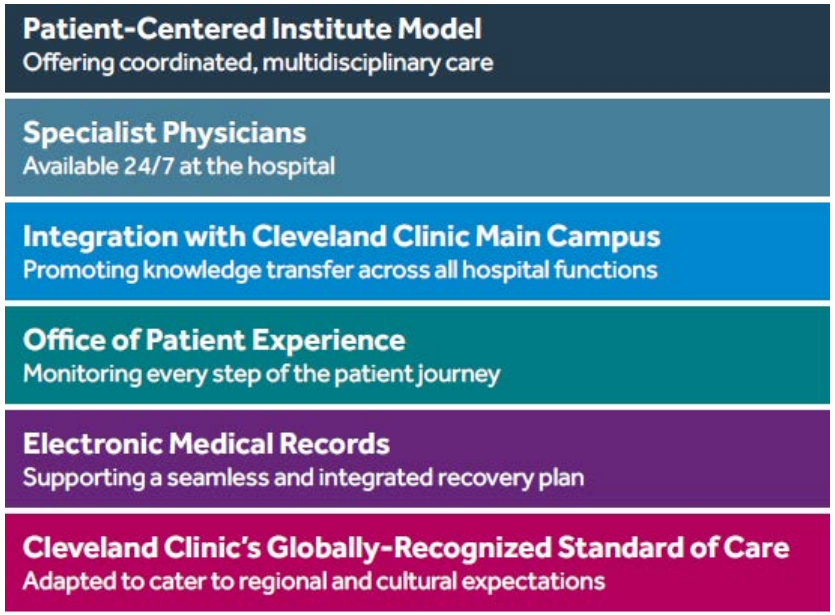
Patients First



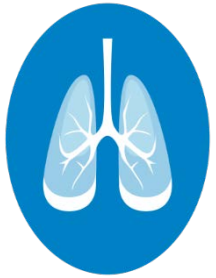
- The Patients First philosophy is the core of CCAD
- Patient Experience levels continuously measured
- DOH 'People's Choice Award' winner.

Clinical Firsts

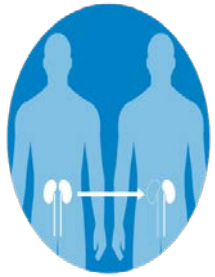
UAE's 1st Heart Transplant

UAE's 1st Liver Transplant

UAE's 1st Lung Transplant

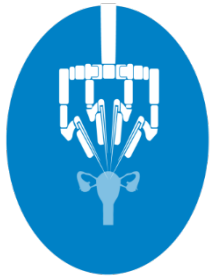


11 Kidney Transplants



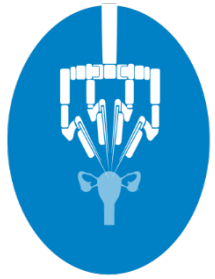
Cardioband Mitral Valve Repair

UAE's 1st Robotic Hysterectomy



1st Endoscopic Sleeve Gastroplasty

UAE's 1st Robotic Myomectomy



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CCAD Accomplishments (1)

- DoH designated Teaching and Research Hospital
- Performing the UAE's first and second double lung transplants, and third liver transplant
  - 11 total kidney transplants; 6 living related and 5 cadaveric
- Leading the way in the Department of Health (DoH) survey:
  - CCAD ranked first for overall patient satisfaction in the outpatient and ED
  - ED received the highest score in the most recent DoH audit and is the only ED in Abu Dhabi with 0 deficiencies
- Offering new services in Al Ain:
  - Al Ain achieved licensure to provide Neurology, Pulmonology, Urology and Sleep Medicine
- Distribution of the 2017 State of Clinic report
- Performing the 300th Bariatric operation

CCAD Accomplishments (2)

- Attaining Arab Board accreditation to begin physician residency programs:
  - Offering physician residency programs in Internal Medicine, General Surgery and Ophthalmology
- Regionally novel remote heart monitoring system installed in the Heart and Vascular Institute:
  - CCAD to become the first hospital in the region to adopt this technology

Local Problem

Problem Statement:

- Inadequate compliance with evidenced-based assessment, ordering and administration of VTE prophylaxis in eligible inpatients

Goals Set:

- Improve VTE Prophylaxis assessment, ordering and administration to internal target of ≥95% compliance
  - Create tool to facilitate VTE risk assessment
  - Update VTE orders to align with current evidence-based guidelines
  - Refine Best Practice Advisories (BPAs) to optimally support clinical decision making
  - Update nursing flowsheet to ensure discrete documentation of patient refusal
  - Create discrete documentation to flow into data abstractor reports.

- Decrease the post-operative PE/DVT outcomes based on Abu Dhabi Department of Health Quality requirements

VTE Guidelines

- The following evidence-based guidelines were used to optimize VTE ordering:

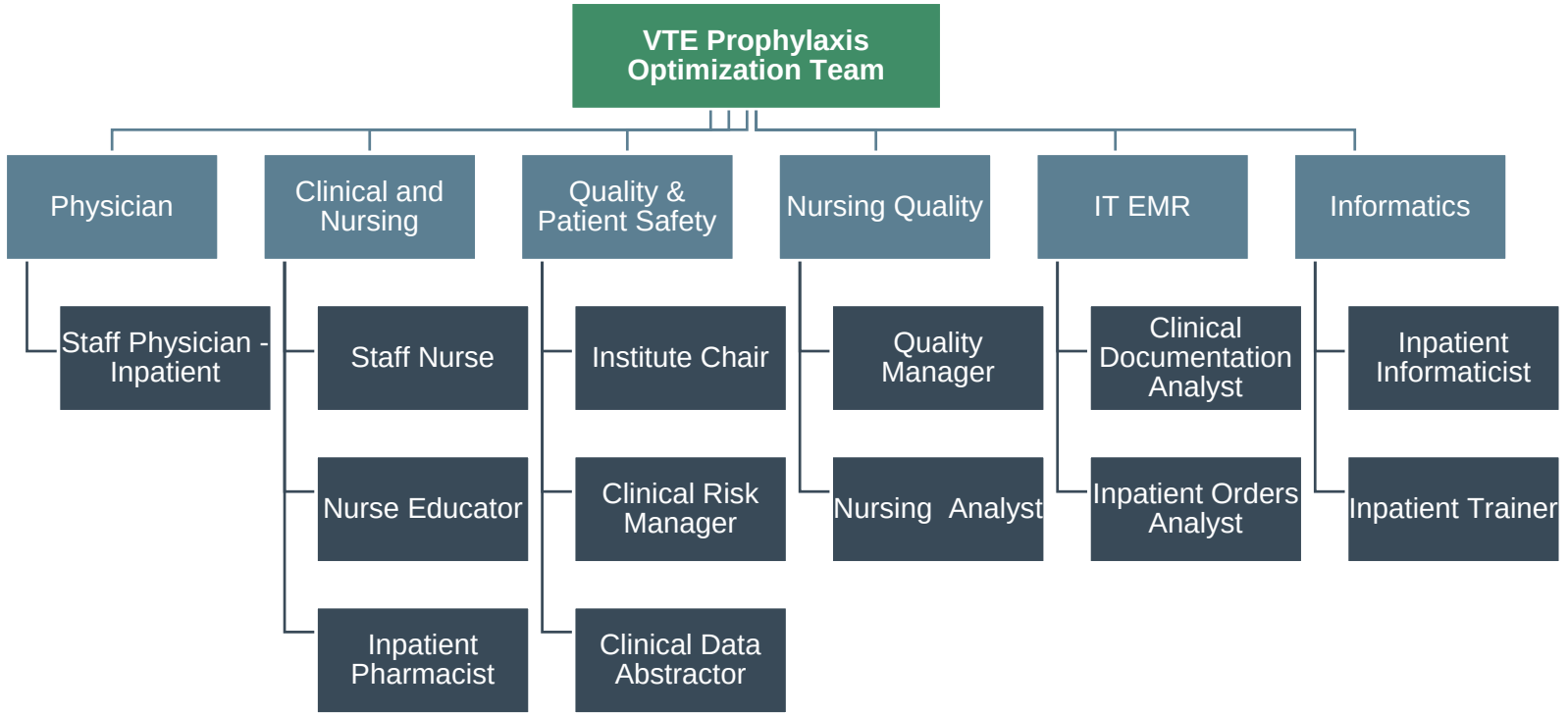
Antithrombotic Guidelines
9th Edition:AT9 , 2012

Preventing HA-VTE
A guide to Effective Quality improvement

NICE National Institute for Health and Care Excellence

NICE guideline [NG89], March 2018

Design and Implementation – Stakeholder Group

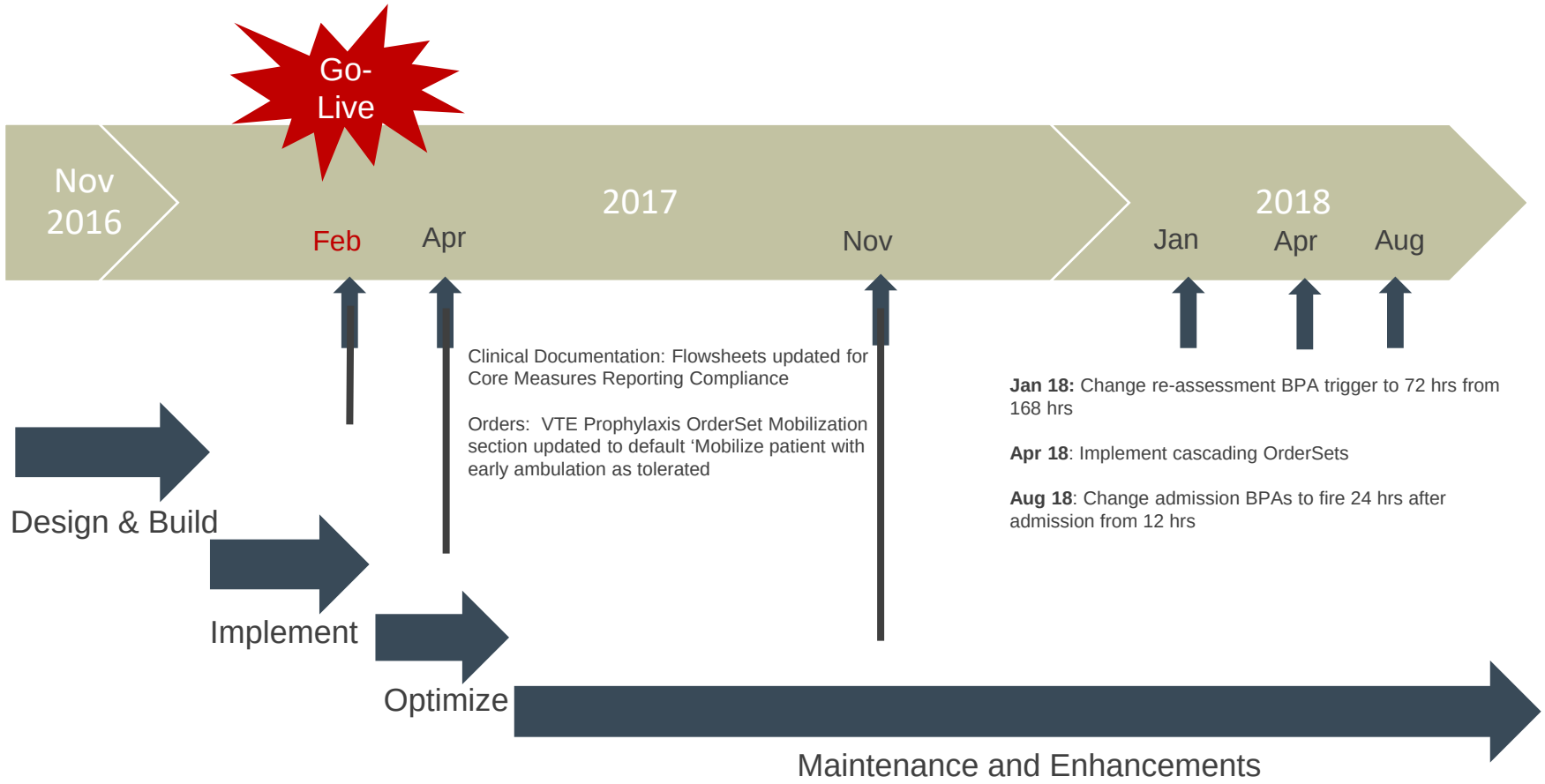


Identification of IT Solution

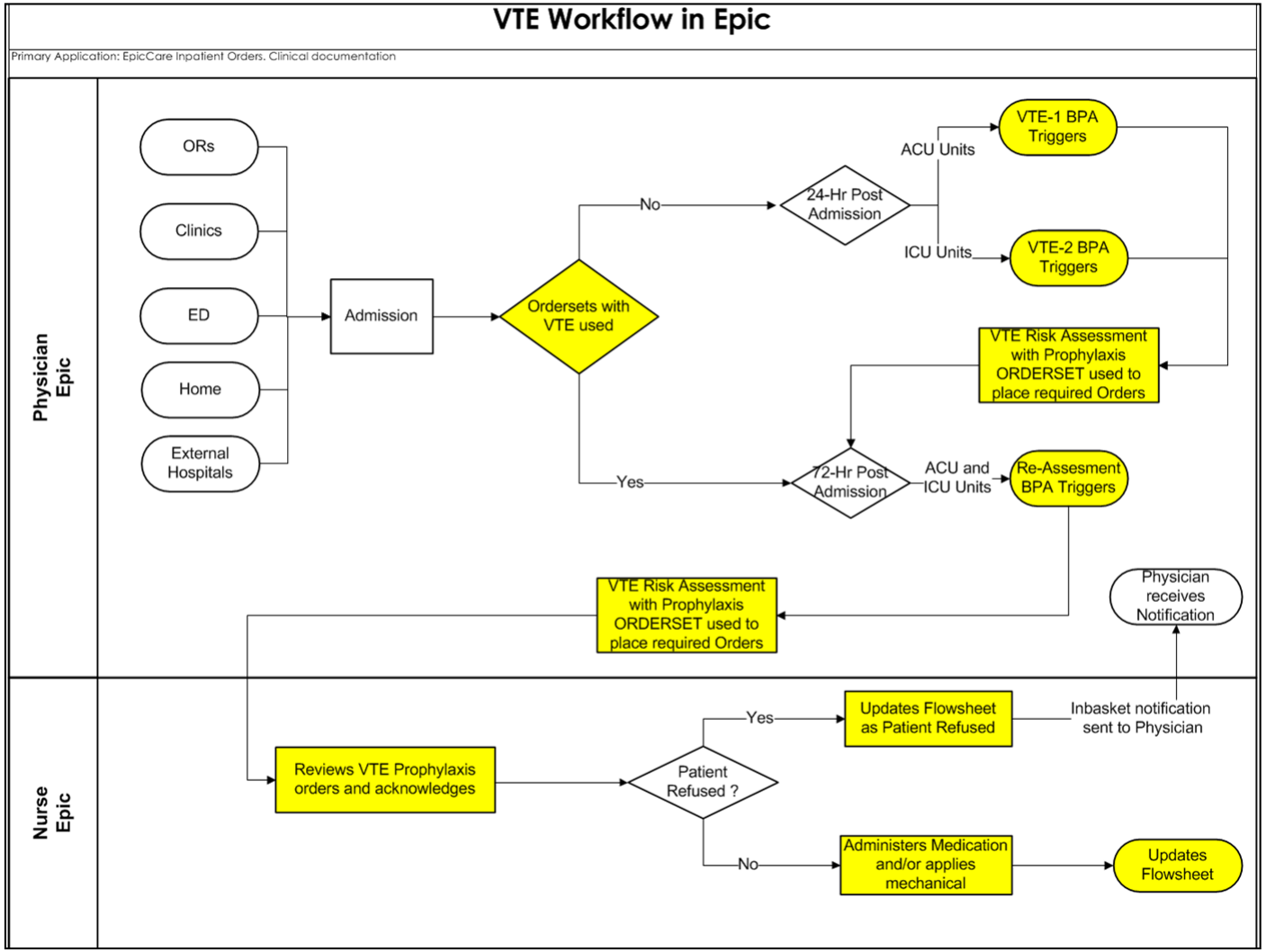
Solutions Identified:

- Risk assessment tools added within the VTE OrderSet to facilitate VTE risk assessment
- VTE orders updated to align with current evidence-based guidelines
- VTE modules added to admission and transfer OrderSets
- VTE assessment and reassessment BPAs refined to optimally support clinical decision making
- Nursing vascular assessment flowsheet modified to include discrete documentation of patient refusal
- Abstractor reports mapped to include discrete documentation from orders, BPAs and nursing documentation flowsheets

Solution Design and Implementation - Timeline



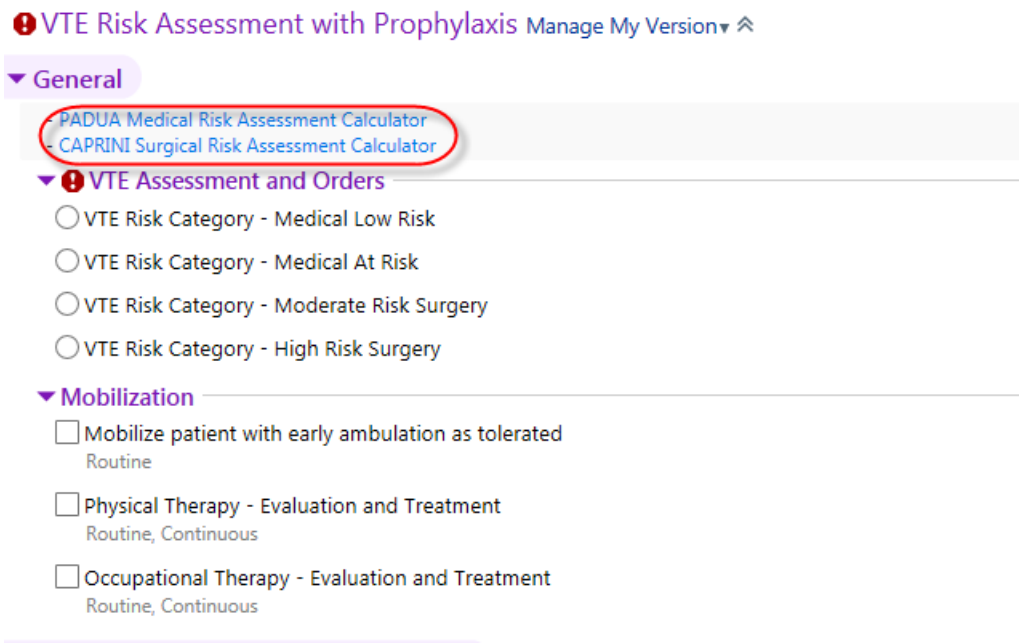
Solution Design – Workflow Enhancements



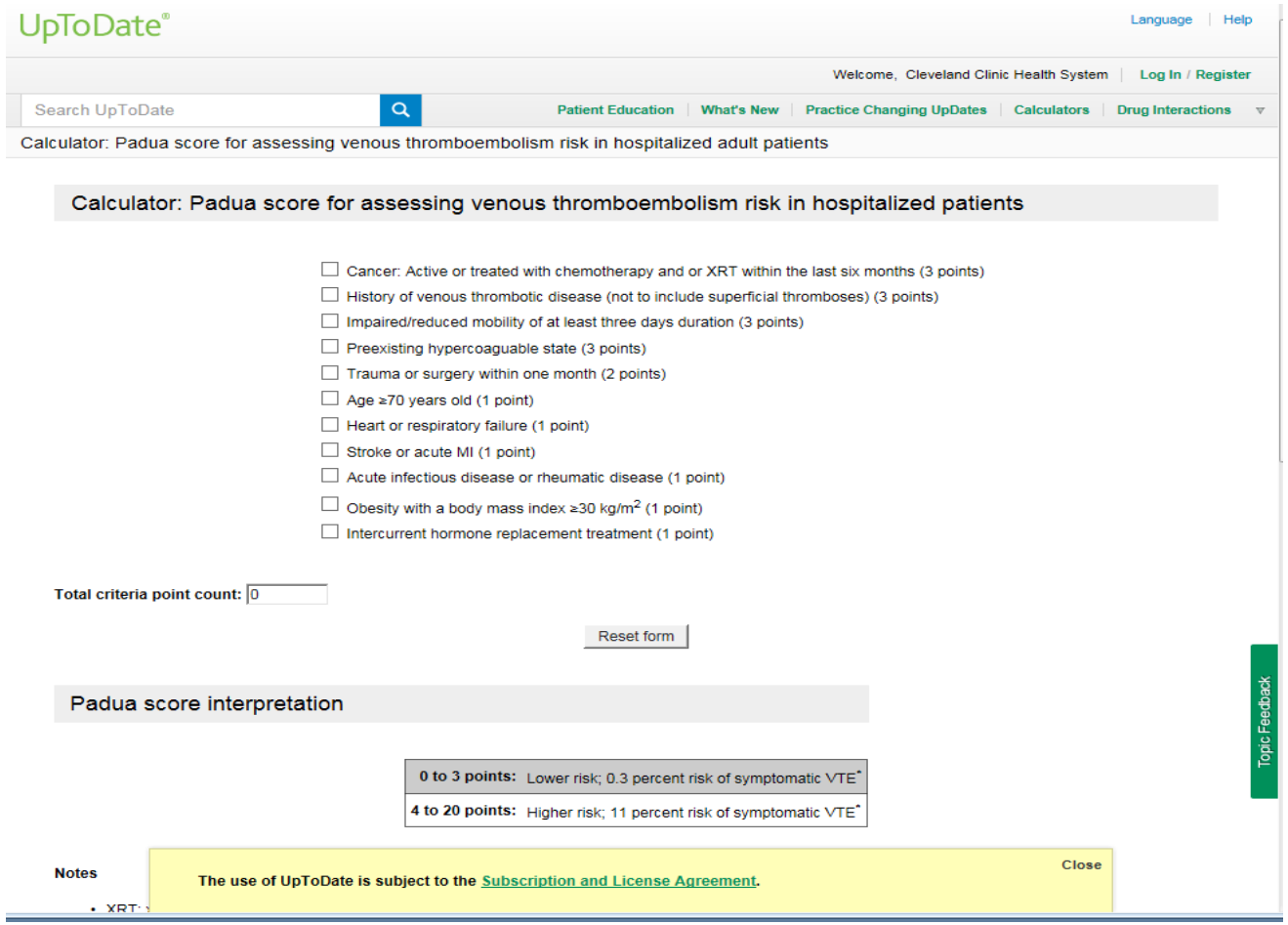
Solution Design – OrderSets for modification

812 ADMIT TO LONG TERM CARE	3040001107 DDI GS IP POST OP	3040009004 MSI THOR IP LUNG TRANSPLANT ADMISSION PRE OP
3040000226 MSI GENERAL ADULT ADMISSION ACU	3040001113 SSI URO IP GENERAL POST-OP	3040009009 MSI IP LIVER TRANSPLANT ADMISSION PRE OP
3040000672 NI NEU IP STROKE ROUNDING	3040001043 NI NEU NEUROSURGERY CRANIAL POST-OP	3040001135 DDI IP ERCP PRE-PROCEDURE
3040001000 MSI ENDO IP DIABETIC KETOACIDOSIS/HYPERGLYCEMIC HYPEROSMOLAR STATE ADMIT	3040001053 HVI EP IP ELECTROPHYSIOLOGY POST DEVICE IMPLANT ADMISSION	3040001136 DDI IP PEG PRE-PROCEDURE
3040001031 S QPSI IP VTE RISK ASSESSMENT WITH PROPHYLAXIS	3040001180 HVI CAR IP CATHETERIZATION POST-OP	3040000669 DDI IP COLORECTAL PRE-OP
3040001044 SSI URO IP GENERAL ADMISSION	3040001181 HVI CAR IP PERCUTANEOUS CORONARY INTERVENTION POST-OP	3040001109 SSI IP GENERAL PRE-OP
3040001046 DDI IP GASTROINTESTINAL BLEED ADMIT/PROTOCOL	3040001209 HVI CAR CATHETERIZATION / PCI / POST	3040005862 HVI CARDIAC, VASCULAR AND THORACIC PRE-OP
3040001059 HVI EPS IP POST-ELECTROPHYSIOLOGIC PROCEDURE ADMISSION	3040001019 SSI GENERAL POST-OP	3040000282 DDI IP BARIATRIC SURGERY PATHWAY
3040001108 SSI IP SURGERY ADMISSION	3040001083 SSI NEPH IP TXP KIDNEY RECIPIENT TRANSPLANT POST-OP	3040009008 HVI CAR IP TXP CARDIAC TRANSPLANT PRE-OP
3040001119 DDI IP PANCREATITIS ADMISSION	3040001118 SSI PLS IP PLASTICS POST-OP	3040001020 DDI GS IP PRE OP
3040001134 DDI POST PEG/JEJUNOSTOMY ENTERAL FEEDING	3040001139 SSI ENT IP HEAD AND NECK GENERAL POST-OP	
3040001168 NI NEU IP GENERAL NEUROLOGY ADMISSION	3040001141 SSI ENT IP LARYNGOLOGY POST-OP	
3040001170 NI NSR IP CRANIAL/SPINAL ADMISSION	3040001143 SSI ENT IP NEUROTOLOGY POST-OP	
3040001171 NI NEU IP EPILEPSY MONITORING UNIT ADMISSION ORDERS WITH VTE	3040001146 SSI ENT IP ORAL MAXILLOFACIAL POST-OP	
3040001200 HVI CAR IP GENERAL CARDIOLOGY ADMISSION	3040009001 NI NEUROSURGERY SPINAL POSTOP	
3040009005 MSI THOR IP LUNG TRANSPLANT READMISSION	3040009003 SSI PULM IP TXP LUNG RECIPIENT TRANSPLANT POST-OP	
3040005850 RCCI IP GENERAL ADULT ADMISSION ICU	3040009006 MSI LIVER IP TRANSPLANT POST OP	
3040001100 NI NEU IP NEURO NON-THROMBOLYSIS ISCHEMIC STROKE ADMISSION	3040009007 HVI CARD IP TXP CARDIAC RECIPIENT TRANSPLANT POST-OP	
3040001099 NI NEU IP POST-THROMBOLYSIS/INTERVENTION ISCHEMIC STROKE ADMISSION	3040000668 DDI IP COLORECTAL POST-OP	
3040001198 NI NEU IP SUBARACHNOID HEMORRHAGE – SAH (HEMORRHAGIC STROKE ADMISSION)	3040001150 CCAD IP POST CARDIAC SURGERY ADMISSION	
3040001199 NI NEU IP INTRACEREBRAL HEMORRHAGE – ICH (HEMORRHAGIC STROKE ADMISSION)	3040015850 RCCI IP GENERAL ADULT ADMISSION ICU REVAMPED	
3040009010 MSI IP LIVER TRANSPLANT READMISSION		

Solution Design – VTE Risk Reassessment with Links to PADUA and CAPRINI



Solution Design – VTE Risk Reassessment with Links to PADUA and CAPRINI



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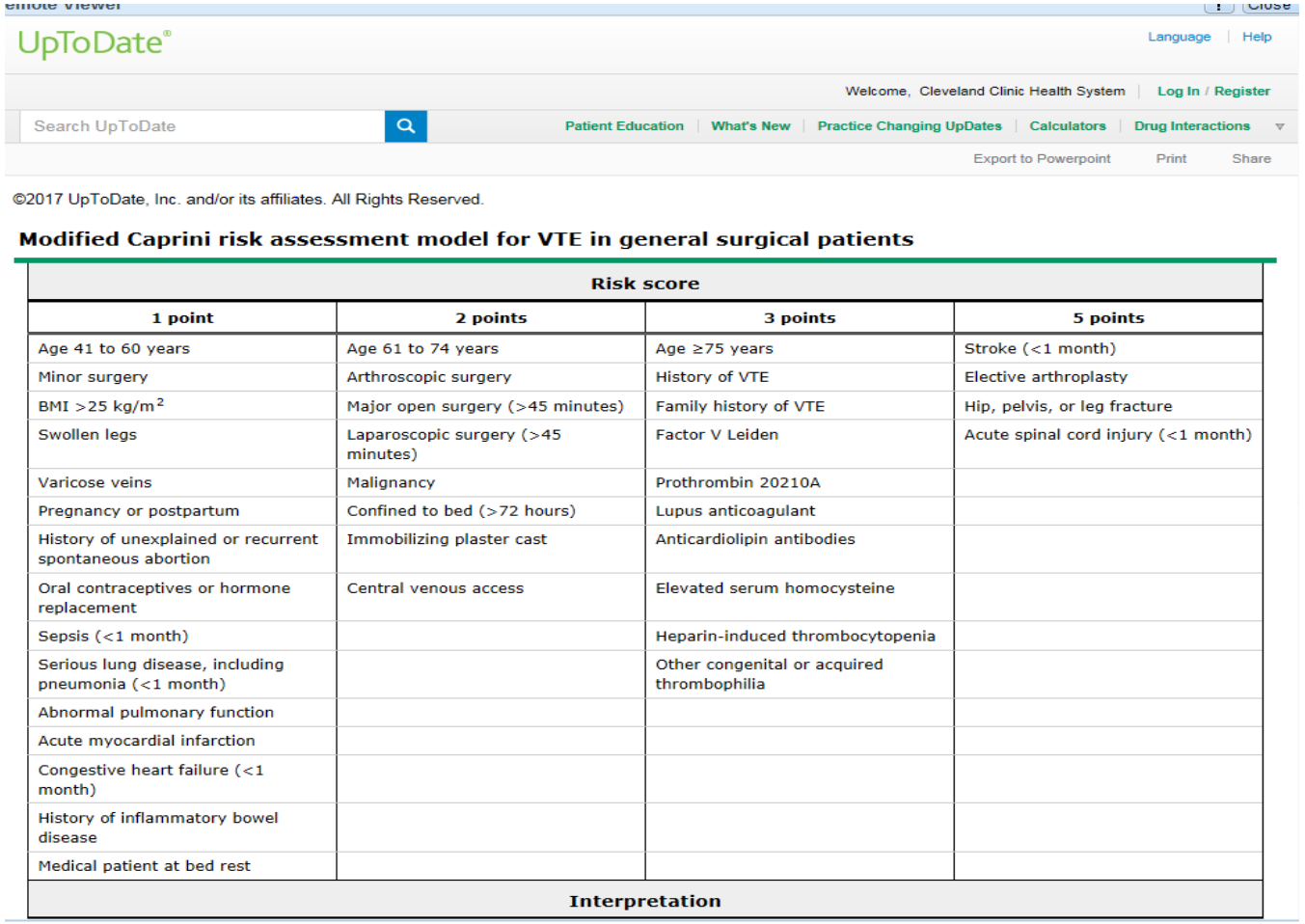
Solution Design – VTE Risk Reassessment with Links to PADUA and CAPRINI



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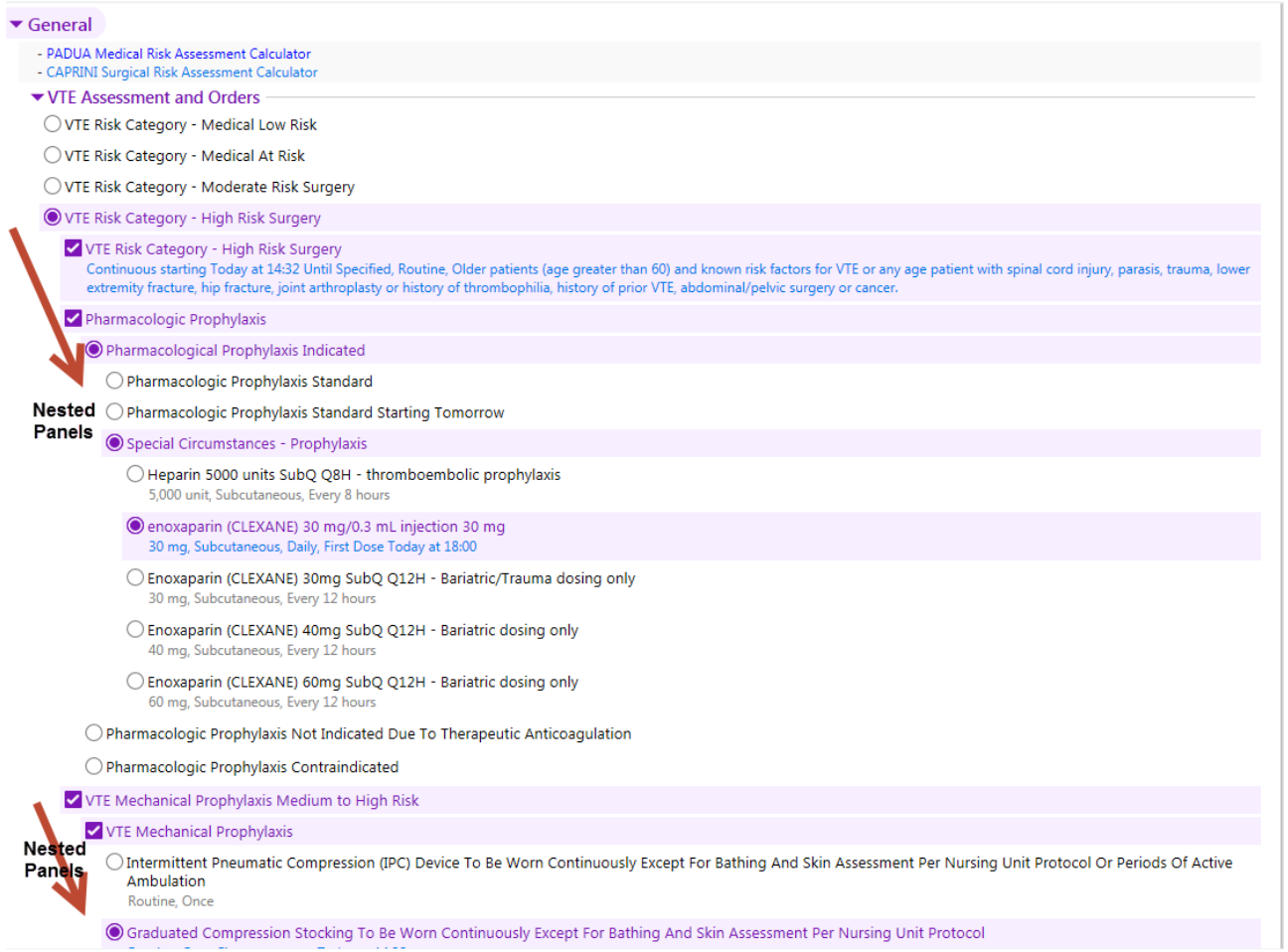
Modified Caprini risk assessment model for VTE in general surgical patients

Risk score			
1 point	**2 points**	**3 points**	**5 points**
Age 41 to 60 years	Age 61 to 74 years	Age ≥75 years	Stroke (<1 month)
Minor surgery	Arthroscopic surgery	History of VTE	Elective arthroplasty
BMI >25 kg/m^2	Major open surgery (>45 minutes)	Family history of VTE	Hip, pelvis, or leg fracture
Swollen legs	Laparoscopic surgery (>45 minutes)	Factor V Leiden	Acute spinal cord injury (<1 month)
Varicose veins	Malignancy	Prothrombin 20210A	
Pregnancy or postpartum	Confined to bed (>72 hours)	Lupus anticoagulant	
History of unexplained or recurrent spontaneous abortion	Immobilizing plaster cast	Anticardiolipin antibodies	
Oral contraceptives or hormone replacement	Central venous access	Elevated serum homocysteine	
Sepsis (<1 month)		Heparin-induced thrombocytopenia	
Serious lung disease, including pneumonia (<1 month)		Other congenital or acquired thrombophilia	
Abnormal pulmonary function			
Acute myocardial infarction			
Congestive heart failure (<1 month)			
History of inflammatory bowel disease			
Medical patient at bed rest			
Interpretation			

Solution Design – VTE Risk Reassessment with Prophylaxis Cascading OrderSet



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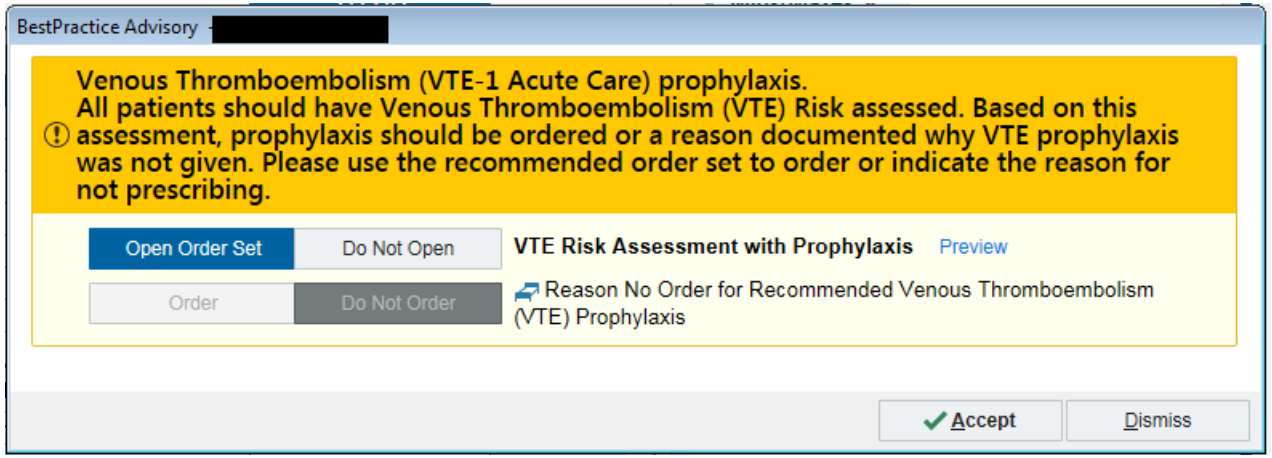
Solution Design – VTE BPA requirements

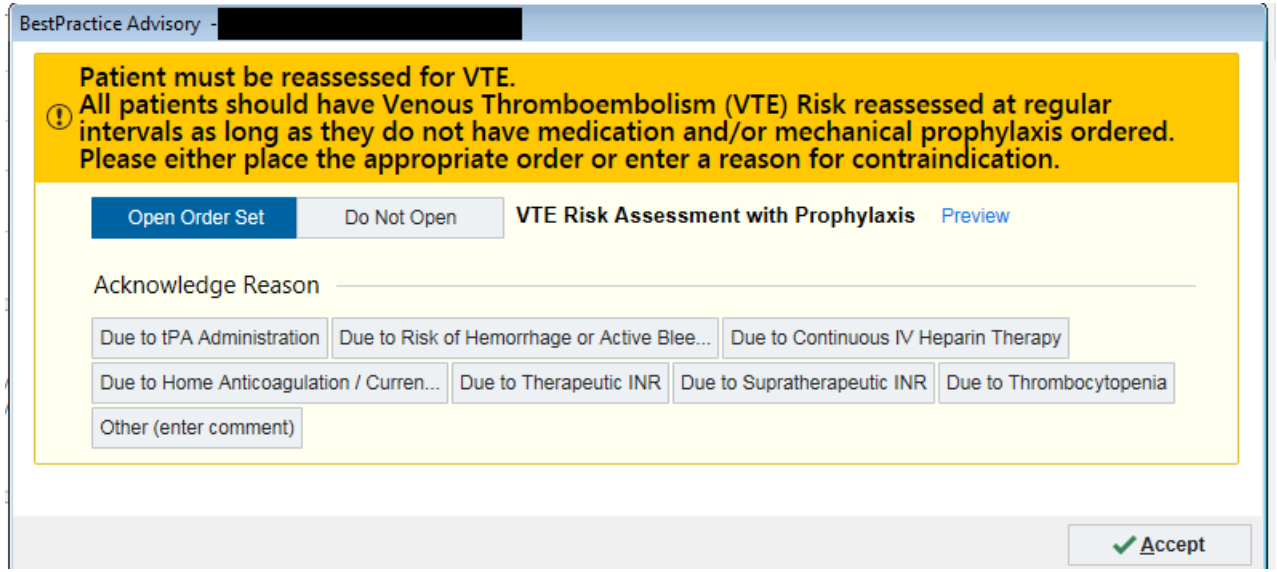


VTE-1 will fire under the following criteria:

- Patient must be 18 years of age +
- Patient is on acute care floor – currently admitted
- Patient does NOT have a Dx of Ischemic stroke
- Patient does not have a contraindication indicated
- Patient does not have an active med prophylaxis order nor has patient received an administration of said order
- Patient does not have documentation in flowsheets of application of mechanical prophylaxis
- Patient does not have an active order for mechanical prophylaxis
- Patient has been admitted for at least 24 hours

VTE-1 does not fire in the ED.
Only fires for physicians and residents

Solution Design – VTE Reassessment BPA requirements

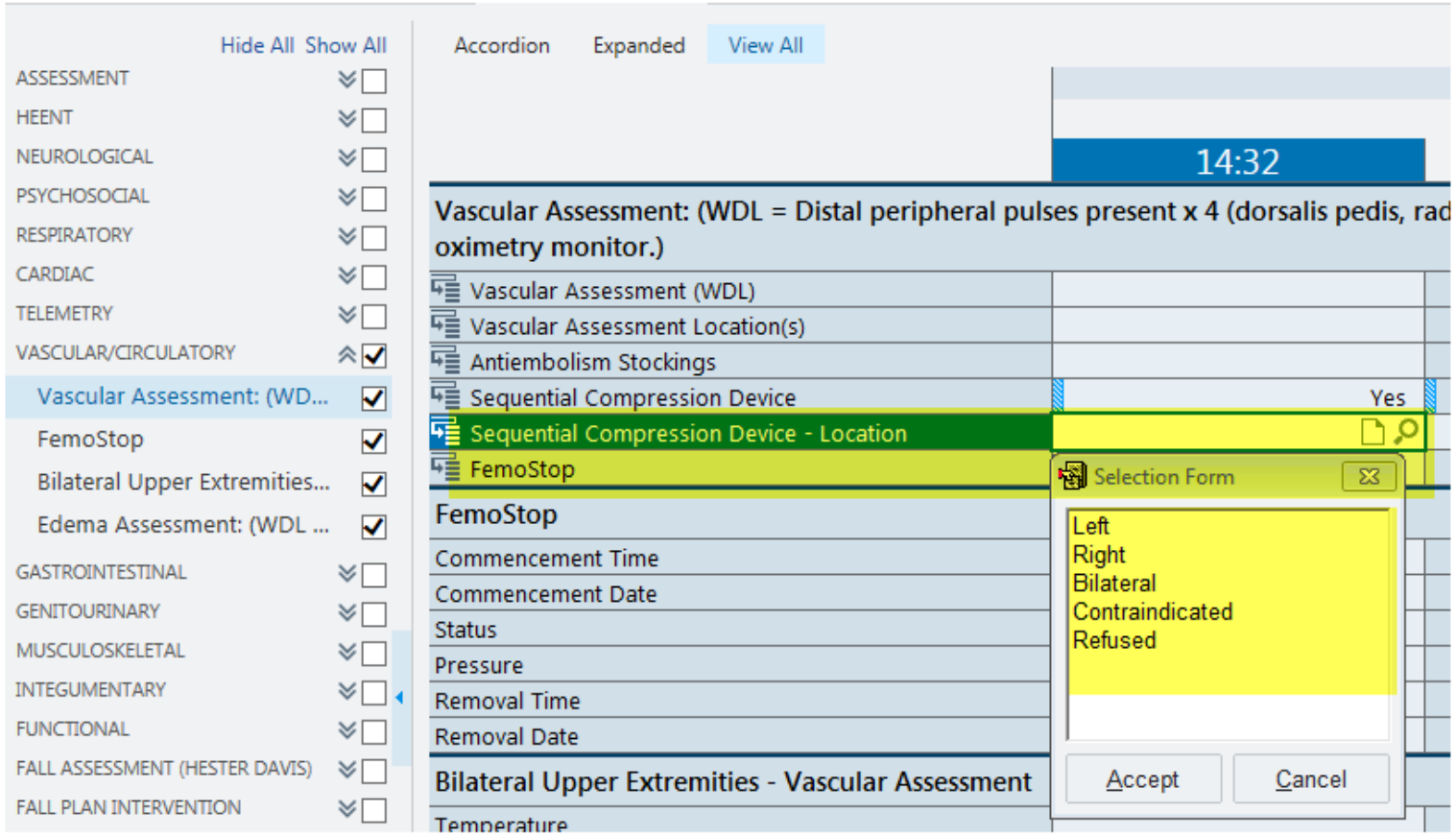


Reminder VTE will fire every 72 hours for the following criteria:

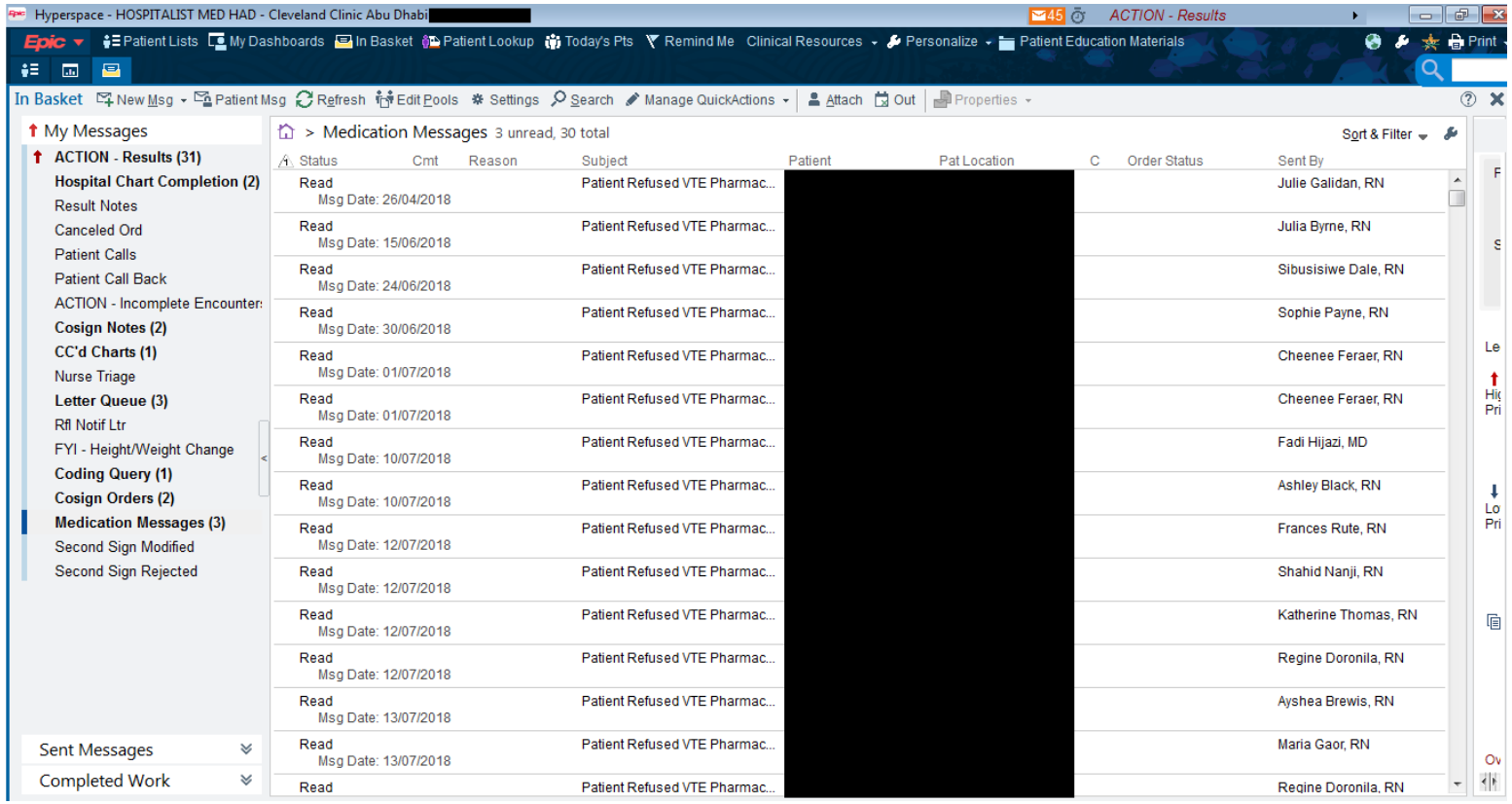
- Patient must be 18 years of age +
- Patient does not have documentation in flowsheets of application of mechanical prophylaxis
- Patient does not have an active med prophylaxis order
- Patient has either (COR35 older than 7 days OR COR52 older than 24 hours OR COR 49 older than 7 days OR COR45 older than 7 days)
- Patient does not have an active order for mechanical prophylaxis

VTE reminder does not fire in the ED.
Only fires for physicians and residents

Solution Design – Flowsheet Documentation



Solution Design – InBasket Message to Physicians



VTE Workflow

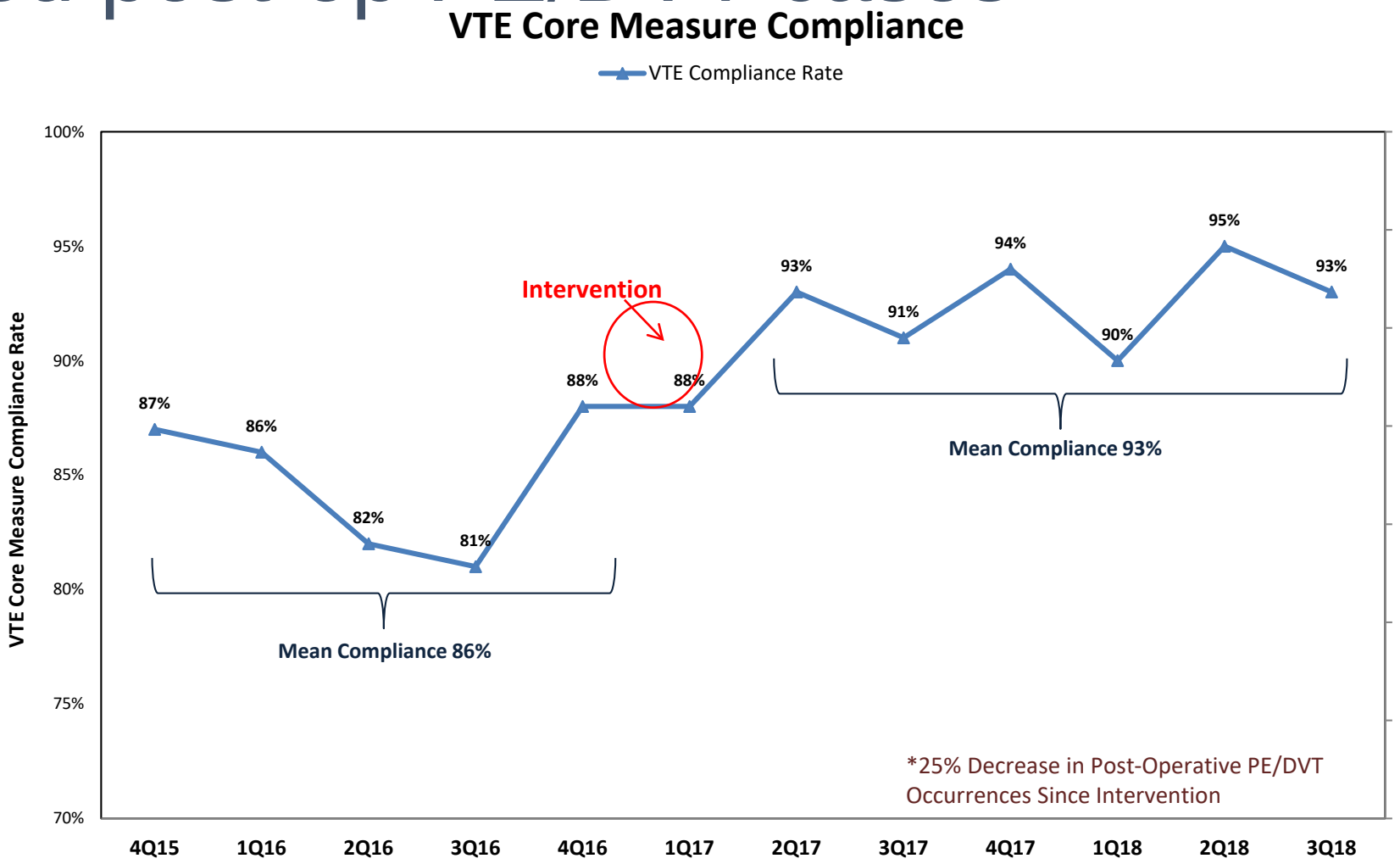
Admission OrderSets

VTE Risk Assessment OrderSet

Best Practice Advisory

Flowsheets

Value Derived – Increased VTE Compliance & Reduced post-op PE/DVT cases



Value Derived

- Ordering efficiency improved for Physicians
- Reduced gaps in communication between Physicians, Nursing and Pharmacy in relation to VTE ordering
- Revised BPA algorithms have led to less intrusion on Physician daily workflow when it comes to Risk reassessments for longer length of stay patients, without compromising patient safety
- Nursing documentation workflow improved
- Anecdotal feedback of Physician satisfaction due to less ordering time/documentation

Action Plan for Continuous Improvement

- Optimizing Nursing documentation
- Expand PE/DVT outcomes measure reporting for all inpatients
- Broaden education to key stakeholders (Nursing, Physicians and Pharmacy)
- Develop education material for patients refusing Prophylaxis
- Continue analysis of care delivery

Summary Recap

Problem Statement: Inadequate compliance with evidenced-based assessment, ordering and administration of VTE prophylaxis in eligible inpatients

Solution Design and Implementation: VTE workflow was streamlined and automated for Admissions and Transfer, through VTE OrderSet modifications, BPAs and Flowsheet documentation

Result:

- Improved VTE Compliance and working towards consistently meeting the internal target of **95%**
- Improved Clinician workflow for VTE Ordering and Documentation
- Contributed to reducing post-op PE/DVT occurrences

VTE Ordering Optimization
Case Speaker Profiles

Dr Iqbal Binoj, MD

***Title*:** *Physician*

***Role*:** *Responsible for providing Acute Medical care for inpatients as a Hospital Medicine Physician while also being the Lead Physician Champion for VTE Prophylaxis measures, compliance and optimization efforts. He is an Epic super user for VTE Prophylaxis workflow solution adoption among the physician community*

Tori Mehmood

Title: *Clinical Data Abstractor*

Role: *Responsible for review of patient records and abstracting, aggregating, and analyzing process and outcomes measures for outside reporting agencies and internal stakeholders*

Vijai Kolar

Title: *Application Analyst, EMR IT*

Role: *Responsible for providing system build solutions (workflow analysis, build and test) and troubleshoot support related to the Epic modules 'Inpatient Orders' and 'Inpatient ClinDoc' in collaboration with multi-disciplinary teams*

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