UMASS Memorial Health Care

Improving Patient Care Management

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Presented
November 4, 2008
Historical Perspective

- Coordinated Anticoagulation Clinics in United States Since 1950
- UMass Medical Center (UMMC) Established 1970s
- Point of Care (POC) Testing 1980s
  approximately 250 patients
- Patient Self Testing (PST)/Patient Self Management (PSM) 1980s
  14 patients/1 continues with PST/PSM
UMass Memorial Healthcare (UMMHC) Anticoagulation Center (ACC)
UMMHC ACC

- Warfarin /POC Testing
- Peri-Procedure/Operative
- **Patient Self Testing**
- Thrombophilia Screening
- High-Risk Pregnancy
UMMC ACC

- Approx 1650 active patients
  - 65% Point-of-care
  - 23% Lab draw/VNA
  - 12% patient self testers/pending
UMMC ACC

- Quality Measures
  - Time in Therapeutic Range (TTR)
    Benchmark: 66%
  - Thrombotic/Hemorrhagic Events
  - PresGaney-Patient Satisfaction
Greater Rates of TTR

- Health Belief System
- Patient Education
- Communication
- Face-to-Face Encounter
Greater Rates in TTR
Health Belief System

- Motivation
- Perceived Vulnerability
- Perceived Seriousness
- Perceived Costs/Benefits
- Cue to Action
Greater Rates of TTR
Education

- Indication
- Rational
- INR Range
- Pill Strength/Color
- Weekly Dose
- Generic/Brand name

Provider Managing Therapy
Writes Script
Greater Rates of TTR Communication

- Provider/Patient
  - Verbal, Written, Contract, Access
- Patient/Provider
- Provider/Provider
  - Transition inpt/outpt
    1. Referral
    2. Medication Reconciliation
Greater Rates of TTR
Face-to-Face Encounter

- Assessment
- Non-Verbal Communication
- Verbal Prompts
- Real Time Management
Patient Self Testing (PST)

- Used in Europe since 1980’s
- FDA approved
- Third party reimbursement has limited progress in United States
Objectives

- Empower patients to take control
- Promote patient satisfaction
- Improve quality of life
- Provide Safe care
- Provide mechanism for patients to test on a more frequent basis with less disruption in lifestyle
Insurance Timeline

- 2002-Medicare covers mechanical heart valves (MHV)
- 2002-Blue Cross/Blue Shield (BC/BS) MA covers MHV
- 2003-BC/BS anticoagulation to similar levels intensity (INR > 3.0) as MHV
- 2006-Harvard Pilgrim and Tufts cover all indications
- 2008-CMS, BCBS MA add Chronic AF, VTE
CMS Criteria

- 3 months warfarin therapy for MHV, chronic AF or VTE
- Initial face-to-face education and demonstrated use of the device
- Limited to no more than weekly testing
- Face-to-face verification by MD minimum of once/year (E/M visit)
Billing Codes

- G0248-Demonstration/training at initial use
  - $299.00 one time fee

- G0249-Provision of the test materials/equipment
  - $280.00 for 4 test results

- G0250-Physician review, interpretation and patient management
  - $9.00 per 4 tests
Active Approved Devices

- INRatio
  - Hemosense
- Protime Microcoagulation
  - International Technidyne
- Coaguchek
  - Roche Diagnostic
Service Companies

- Quality Assured Services
  www.QualityAssuredServices.com

- Philips Cardiac Services (Raytel)
  www.philips.com
  www.inrselftest.com

- Tapestry Medical
  www.coagnow.com
Private Pay

- Monitor
  $1300.00 to $1600.00

- Supplies
  $13 to $25 a test
Patient Criteria

- Compliance*
- Physically Capable
- Mentally Competent
- Communication

*Possible patients are non-compliant d/t inconvenience of frequent blood tests
Education

- Fingerstick
  1. Proper technique/location
  2. Increase blood flow (warming/gravity)
  3. Application

- Device
  1. On/Off
  2. Setting Date
  3. Correlation Strips
  4. Return Demonstration

- Contract
# UMMHC Anticoagulation Clinic

**Patient Totals By Indication**

9/30/07 thru 9/30/08

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<th></th>
<th>All</th>
<th>AF</th>
<th>DVT PE</th>
<th>MHV</th>
<th>CVA TIA</th>
<th>MI/CHF</th>
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UMMHC Anticoagulation Clinic
Patient Self Testing (PST) Program

- 115 patients
- 85 pending approval
- QAS, Raytel
- Protime, Hemosense and Coaguchek
- Education on site (G0248)
- Provider Interpretation (G0250)
UMMHC Anticoagulation Clinic
TTR Comparison

![Bar Chart]

- **ACC**
- **Home**

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<thead>
<tr>
<th>Range</th>
<th>ACC</th>
<th>Home</th>
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<td>80-100</td>
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UMMHC Anticoagulation Clinic

BRIDGING THERAPY
Objectives

- Provide a guideline for assessing thromboembolic and hemorrhagic risk.

- Utilize an algorithm to determine appropriate bridging strategy.
Definition

- Bridging anticoagulation refers to the administration of therapeutic dose anticoagulation therapy with UF Heparin, LMWH or DTI for the 8 to 12 day period before and after surgery/procedure, during which time warfarin therapy is interrupted.
Options

- Continue Warfarin Therapy
- Withhold Warfarin Therapy
- Temporarily Withhold Warfarin and Provide a Short-Acting (Bridge) Anticoagulant
Experts

- Annual risk of thromboembolism is low, warfarin therapy may be held for 4 to 5 days before the procedure and restarted shortly thereafter. (American College of Chest Physicians)

- May be held for up to one week. (American College of Cardiology, American Heart Association, European Society of Cardiology)
Patient Selection

- No Universal Guidelines
- Moderate to High Risk for Thromboembolic Event
- Optional for Low Risk Patients
Bleeding Risk

- Very High Risk
  - Intracranial Surgery
  - Spinal Surgery
  - CABG
  - Valve Replacement

- High Risk
  - Pacer/Defibrillator
  - Prostate Biopsy/Surgery
  - Bowel Polypectomy
  - Total Knee
  - Total Hip
  - Bladder Tumor
Bleeding Risk

- Low Risk
  - Cataract
  - Skin
  - Endoscopy
  - Hernia
  - Gallbladder
  - Dental
Venous Thromboembolic Risk Scale

- Low Risk
  - DVT/PE >6 months without inherited thrombophilia or other risk factors
  - Factor V Leiden/ProthrombinG 20210A gene mutation without prior event
Venous Thromboembolic Risk Scale

- Intermediate Risk
  - Factor V Leiden/Prothrombin G 20210A gene mutation with prior thromboembolic event > 12 months
  - Protein C/Protein S/Antithrombin deficiency without prior event, but strong family history
Venous Thromboembolic Risk Scale

- **High Risk**
  - DVT/PE <6 months
  - Antiphospholipid antibody syndrome with prior thromboembolic event
  - Factor V Leiden/ProthrombinG 20210A mutation with prior thromboembolic event < 12 months
  - Protein C/Protein S/ Antithrombin deficiency with prior event
Arterial Thromboembolic Risk Scale

- Low Risk
  - Atrial Fibrillation (non-valvular)
  - St. Jude Aortic Mechanical Heart Valve
  - Dilated Cardiomyopathy
Arterial Thromboembolic Risk Scale

- Moderate Risk
  - Atrial Fibrillation with Valvular Disease
  - Dilated Cardiomyopathy and Prior Thromboembolism (> 3 months)
  - Anterior MI < 3 Months With No Other Risk Factors
Arterial Thromboembolic Risk Scale

- High Risk
  - Aortic St. Jude Mechanical Valve with AF or EF < 35%
  - Mitral St. Jude Mechanical Valve
  - Cardioversion < two weeks
  - History of arterial thromboembolic event
  - Antiphospholipid Syndrome plus prior event or additional risk factors
  - Caged Ball Mechanical Heart Valves
CHADs

- Nonvalvular Atrial Fibrillation
  - Score calculated based on number of risk factors for stroke
  - Prior CVA or TIA: 2 points
  - CHF, HTN, Diabetes, age >75: 1 point each
  - Bridging Recommended for score >5
  - Consider Bridging >2
  - Optional for < 2
## CHADS2

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<th>Stroke Risk</th>
<th>% Annual Risk</th>
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<td>6</td>
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Preoperative Anticoagulation Indication for Warfarin - Arterial

Arterial

High Risk

Yes
Stop Warfarin 4d preop
IV Heparin Or SC LMWH (treatment doses) When INR <2**
Check INR 1d Preop

No
Stop Warfarin 4d preop
Check INR 1d Preop

**Stop Heparin 6h preop or LMWH 12 – 24 hr preop
Postoperative Anticoagulation Indication for Warfarin - Arterial

Arterial

Start Warfarin Immediately Postop

Low Risk
- Provide DVT Prophylaxis (Unfractionated heparin or LWMH) for Hospital Admission

Intermediate Risk
- IV Heparin (aPTT 40 - 50 sec)*
  - Or
  - SC LMWH (prophylaxis dose) Q12 -24 hr Until INR > 2.0

High/Very High Risk
- Minor Surgery*
  - IV Heparin (APTT 60 SEC) Until INR > 2.0*
- Major Surgery*
  - IV Heparin (aPTT 40-50)
  - Or
  - SC LMWH (prophylaxis dose) Q12 – 24 hr Until hemostasis and bleeding risk reduced then IV Heparin (treatment dose)

*Initiate 12 – 24 h postop if clinically acceptable per surgical team
*If not very high risk for thromboembolism and low risk for bleeding Can consider LMWH (treatment doses) until INR > 2
Preoperative Anticoagulation Indication for Warfarin - Venous

Venous

High Risk

Yes

Stop Warfarin 4d preop

IV Heparin Or SC LMWH (treatment doses)
When INR <2**

Check INR 1d Preop

No

Stop Warfarin 4d preop

Check INR 1d Preop

**Stop Heparin 6h preop or LMWH 12 – 24 hr preop
Postoperative Anticoagulation Indication for Warfarin Venous

Start Warfarin Immediately Postop

Low/Intermediate Risk
- LMWH (prophylaxis) Until Discharge*

High Risk
- Has IVC Filter (event < 3 mos)

Major Surgery
- IV Heparin aPTT 40 – 50 sec
  - Or
  - SC LMWH (prophylaxis) q12-q24 until Hemostasis secured and bleeding risk reduced, then IV Heparin (aPTT 60 sec) Until INR > 2.0
  - Or
  - Treatment Dose LMWH

Minor Surgery
- LMWH treatment Dose
  - Or
  - IV Heparin+ (aPTT 60 sec) Until INR > 2.0

*Initiate 12 – 24 hr post-op if clinically acceptable (per surgical team)
*If low risk for bleeding consider LMWH (treatment doses)
CONCLUSION

“ It must be recognized that no alternative therapy has undergone the rigorous testing of large randomized controlled trials and that judgment must be made on the basis of available literature, expert opinion, a community standard, cost and patient preference.”

Jack E. Ansell M.D.
THANK YOU