**Introduction**

Venous thromboembolism (VTE) refers to deep vein thrombosis (DVT) and its most serious complication, pulmonary embolism (PE). VTE is a major issue in healthcare quality, contributing to significant morbidity, mortality, and resource expenditure.1-3

- **DVT** affects 2 million Americans annually.1,4
- **10%** of all U.S. hospital deaths are due to PE.5
- **Myocardial infarction (MI)** occurs in 935,000 Americans annually.6

The National Quality Forum defines preventable grave medical errors and events as “never events,” including wrong site surgery a third (600,000) of individuals with DVT develop PE.7,8

**Objective**

To model the impact of LMWH/FXI market share changes and utilization on the annual budget of a hospital.

**Methods**

We examined a cohort of adults treated with three LMWH/FXI medications: dalteparin sodium (LMWH), enoxaparin sodium injection (LMWH), and fondaparinux (FXI).

**MODEL ASSUMPTIONS:**

**Model Annual Hospital Cost Data:**
- **Annual hospital VTE event costs:** $10,000 (DVT); $20,000 (PE); $9,000 (MI).
- **Drug costs (unit of supply; no. of syringes per pack)** were estimated from 2010 wholesale acquisition costs: $305.76 (40 mg/0.2 mL) for fondaparinux; $300.69 (2.5 mg/0.5 mL) for dalteparin, and $217.400 (0.2 mL) for enoxaparin.

**Model Population and Utilization Data:**
- **Proportion of eligible patients treated with LMWH/FXI medication (LMWH/FXI utilization) was assumed:** 60% at baseline.
- **Baseline LMWH/FXI market share:** 0% dalteparin, 90% enoxaparin, and 10% fondaparinux
- **Perspective:** hospital
- **Hospital size:** 500 beds
- **Mean hospital occupancy rate:** 70%
- **Mean hospital length of stay:** 5.3 days

**ANALYSES:**

- Estimated changes in VTE event rates and costs, given increased LMWH/FXI utilization from 60% to 80% and:
  - **constant market share:** 0% dalteparin, 90% enoxaparin; or
  - **changed market share:** 90% dalteparin, 0% enoxaparin

**Results**

**Impact on Event Rates and Costs:**

Increasing LMWH/FXI utilization from 60% to 80% resulted in:
- **DVT:** 6.3% and $175,300 PE: 7.2% and $89,500 MI: 2.4% and $12,600.

**Impact on pharmacy and total hospital event + pharmacy costs:**

- Increasing LMWH/FXI utilization from 60% to 80% resulted in:
  - **Pharmacy costs:** $341,200 (+33.3%)
  - **Total hospital costs:** $123,800 (+2.6%)

In addition, changing market share to:
- 90% dalteparin, 0% enoxaparin, 10% fondaparinux
- **Reduction in VTE Events with Increased LMWH/FXI Utilization:**
  - Baseline cost: $142,200 (-13.9%)
  - Total cost savings of $75,200 (-16.1%)

**Conclusion**

- **Sensitivity Analyses:**
  - Total hospital costs decreased by $149,257 (3.14%) when LMWH/FXI utilization remained at 60% with 90% dalteparin and 0% enoxaparin.
  - Total hospital costs remained constant when LMWH/FXI utilization increased to 80% with 54% dalteparin and 34% enoxaparin.

**Limitations:**

- We considered a hospital budget perspective (e.g., excluding outpatient costs, quality of life), which may underestimate societal impact.
- Results from individual hospital settings may differ due to different patient populations.

References:
- Gostinbor A J Carolin 2004, 4; Geerts Circulation 1998; 5; White Circulation 2003; 6; AHA Statistical Update 2010; 7; Maynard AHRQ 2008; 8; Analysis of 2007 AHRQ MEPS Full Year Consolidated Household Component Data File; 9; Analysis of 2008 HCUP Nationally Inpatient Sample.