• Institute of Safe Medication Practices (ISMP)
  – Identified anticoagulants as "High–Alert Medications"

• Institute for Healthcare Improvement (IHI)
  – Safe use of anticoagulants is part of the 5 Million Lives Campaign

• The Joint Commission
  – Developed the National Patient Safety Goal (NPSG 03.05.01) to assure safe use of anticoagulants with the following rationale:

  “Anticoagulation is a high–risk treatment, which commonly leads to adverse drug events due to the complexity of dosing these medications, monitoring their effects, and ensuring patient compliance with outpatient therapy. The use of standardized practices that include patient involvement can reduce the risk of adverse drug events associated with the use of heparin (unfractionated), low molecular weight heparin (LMWH), and warfarin and other anticoagulants.”
Types of Anticoagulants

• Oral anticoagulants:
  – Vitamin K antagonist
    • Coumadin® or Jantoven® (warfarin)
  – Direct Oral Anticoagulants (DOACs)
    • Eliquis® (apixaban)
    • Pradaxa® (dabigatran)
    • Xarelto® (rivaroxaban)
    • Savaysa® (edoxaban)

• Injectable anticoagulants:
  – Unfractionated heparin (UFH)
  – Low-molecular weight heparins
    • Lovenox® (enoxaparin)
    • Fragmin® (dalteparin)
    • Innohep® (tinzaparin)
  – Factor Xa inhibitor
    • Arixtra® (fondaparinux)
  – Direct thrombin inhibitors
    • Argatroban
    • Angiomax® (bivalirudin)
Important Patient Education Talking Points

- **Medication Instructions:**
  - Name, dose and frequency
  - Indication/Use:
    - Prevention/treatment of DVT or PE
    - Stroke prevention associated with mechanical heart valves or AFib
    - Secondary prevention of cardiovascular events after MI
  - Precautions—signs/symptoms for seeking medical care
  - Self—administration technique (LMWH)
    - Injection into SQ fat of abdomen

- **Considerations with diet and/or illnesses with warfarin:**
  - Heart Failure exacerbation, liver disease, thyroid disorders, Nausea/Vomiting/Diarrhea, fever for 2 or more days can affect warfarin
  - Keep green leafy vegetables/foods high in vitamin K consistent

- **Importance of Close Follow–up:**
  - Time/Place of appointment and point of contact
  - Medication access and/or affordability
  - Importance of adherence
  - What to expect
  - Lab testing required

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**DVT** = Deep Venous Thrombosis

**Afib** = Atrial Fibrillation

**MI** = Myocardial Infarction

**HF** = Heart Failure

**PE** = Pulmonary Embolism

**N/V/D** = nausea, vomiting, diarrhea
Numerous Food and Drug Interactions

- Common medication interactions with warfarin include:
  - Alcohol
    - *Excessive alcohol intake while taking warfarin can lead to a fatal hemorrhage*
  - Amiodarone
  - Antibiotics (Bactrim/Septra/SMZ–TMP, erythromycin, doxycycline, dicloxacillin, nafcillin)
  - Antifungal medications (fluconazole)
  - Anti-seizure medications: carbamazepine, phenytoin
  - Aspirin (ASA) and NSAIDs
  - Colestipol/cholestyramine
  - Estrogens/contraceptives
  - Many herbal and dietary supplements
  - Flagyl (metronidazole)

- Certain medications interact with Direct Oral Anticoagulants, requiring discontinuation or therapy change
- Please consult pharmacy for drug interaction screening
Transitions in Care with Anticoagulants

• Transitions include:
  – Admission
  – Transfer between units/levels of care
  – Discharge

• Effective transitions include:
  – Consistent and effective communication
  – Appropriate follow-up and monitoring with trained healthcare professional
    • Appointment should be established BEFORE discharge
      – Follow-up INR appointment is mandatory for warfarin patients
    • Monitoring service available for all anticoagulants, not just warfarin