Indian Health Service

IHS National Pharmacy and Therapeutics Committee
Outpatient Venous Thromboembolism Prophylaxis
September 2011

Background:

In September 2011, the IHS National Pharmacy and Therapeutics (NPTC) reviewed the agents used for the outpatient prevention of venous thromboembolism (VTE). This meeting included a clinical review of the available products along with a pharmacoeconomic analysis with IHS utilization data. Prior to this review, the IHS National Core Formulary (NCF) included warfarin as an anticoagulant.[1] Based upon its review, the NPTC **added** a low-molecular weight heparin (LMWH; any) to the IHS NCF and recommended the development of a "1-pager" to accompany this formulary decision. This document will discuss available VTE prophylaxis options and provide some information on The Joint Commission National Patient Safety Goal 3.05.01 (NPSG).

Discussion:

Multiple agents may be used to prevent VTE. For many years, unfractionated heparin was the agent of choice for VTE prophylaxis. However, its use is limited by the dosing frequency (2-3 times daily), incidence of heparin induced thrombocytopenia (HIT) and variable bioavailability.[2] Additionally, safety issues related to the multiple concentrations and potential for errors have been topics of discussion with unfractionated heparin in recent years.[3] LMWH's (dalteparin and enoxaparin) are frequently used for VTE prophylaxis with each product having specific indications for prophylaxis (knee/hip replacement, abdominal surgery, medically ill). They also are used for prophylaxis of ischemic complications in ST segment elevation myocardial infarction (STEMI), unstable angina and non-Q wave MI and for treatment of VTE and pulmonary embolism (PE).[4,5] Fondaparinux is a factor Xa inhibitor used for VTE prophylaxis in knee/hip replacement, abdominal surgery and for treatment of VTE or PE.[6] Fondaparinux has some therapeutic advantages over other agents in prophylaxis prior to orthopedic procedures (hip fracture surgery), but in most prophylaxis indications, LMWH's carry a similar recommendation.[2] One advantage with the LMWH's over fondaparinux is the added indications for prophylaxis of ischemic complications.

When discussing the various methods of anticoagulation and VTE prophylaxis, it is important to consider the requirements set forth by the Joint Commission NPSG 3.05.01.[7] This goal seeks to reduce patient harm with the use of anticoagulants. Some items included in this NPSG are:

- Use of unit dose, prefilled syringes or premixed infusion bags
- Use of protocols for anticoagulants
- Use of programmable pumps for heparin
- Use of a written policy for anticoagulants
- Education for prescribers, staff, patients and families about anticoagulants
- Evaluation, action and measurement of anticoagulant safety measures.

Findings:

Each of the therapeutic options discussed are considered valid therapeutic options within their indications. Fondaparinux has some therapeutic advantages in specific indications based upon clinical guidelines and available literature. The NPTC review identified the most benefit from a NCF basis with the LMWH products due to their added coronary indications over fondaparinux.

Therefore, the NPTC **added** a low-molecular weight heparin (any) to the IHS National Core Formulary (NCF).

If you have any questions regarding this document, please contact the NPTC at nptc1@ihs.gov.

References:

1. IHS National Core Formulary; http://www.ihs.gov/nptc/index.cfm; accessed September 8, 2011.
2. Geerts WH, Bergqvist D, Pineo GF, et al. Prevention of venous thromboembolism: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines (8th Edition). *Chest.* Jun 2008;133(6 Suppl):381S-453S.
3. Institute for Safe Medication Practices website; http://www.ismp.org/newsletters/acutecare/articles/20100408.asp; accessed October 11, 2011.
4. Lovenox (enoxaparin sodium injection) package insert; http://www.accessdata.fda.gov/drugsatfda_docs/label/2007/022138,020164s075lbl.pdf; accessed October 11, 2011.
5. Fragmin (dalteparin sodium injection) package insert; http://www.accessdata.fda.gov/drugsatfda_docs/label/2010/020287s050lbl.pdf; accessed October 11, 2011.
6. Arixtra (fondaparinux sodium) solution; package insert; http://www.accessdata.fda.gov/drugsatfda_docs/label/2010/021345s023lbl.pdf; accessed October 11, 2011.
7. The Joint Commission website; http://www.jointcommission.org/assets/1/6/NPSG_EPs_Scoring_HAP_20110706.pdf; accessed October 11, 2011.