



Effective Health Care

Xarelto vs. Lovenox for Prevention of Venous Thromboembolism Following Total Joint Arthroplasty Nomination Summary Document

Results of Topic Selection Process & Next Steps

- The topic, *Xarelto vs. Lovenox for Prevention of Venous Thromboembolism Following Total Joint Arthroplasty*, will go forward for refinement as an update to or expansion of the existing comparative effectiveness review, *Venous Thromboembolism Prophylaxis Orthopedic Surgery*. The scope of this topic, including populations, interventions, comparators, and outcomes, will be further developed in the refinement stage.
 - Sobieraj D, Coleman C, Tongbram V, Lee S, et al. Venous Thromboembolism Prophylaxis in Orthopedic Surgery. Comparative Effectiveness Review No. 49 (Prepared by the University of Connecticut/Hartford Hospital Evidence-based Practice Center under Contract No. 290-2007-10067-I). AHRQ Publication No. 12-EHC020-EF. Rockville, MD: Agency for Healthcare Research and Quality. March 2012.
- When key questions have been drafted, they will be posted on the AHRQ Web site for public comment. To sign up for notification when this and other Effective Health Care (EHC) Program topics are posted for public comment, please go to <http://effectivehealthcare.ahrq.gov/index.cfm/join-the-email-list1/>.

Topic Description

Nominator(s): Organization

Nomination Summary: Due to the annual volume of total joint arthroplasty (TJA) patients treated by the nominator's organization, the nominator is interested in comparing the benefits of rivaroxaban (Xarelto) versus enoxaparin (Lovenox) from a quality improvement perspective in terms of decreased infection, bleeding, re-operation and readmission rates as well as from a cost perspective. If the evidence indicates that rivaroxaban is a safer, superior and more cost effective treatment compared to enoxaparin, the nominator's organization intends to move from prescribing enoxaparin to prescribing rivaroxaban for preventing venous thromboembolism (VTE).

Staff-Generated PICO

Population(s): Postoperative TJA patients

Intervention(s): Rivaroxaban (Xarelto) for the prevention of venous thromboembolism (VTE)

Comparator(s): Enoxaparin (Lovenox)

Outcome(s): Prevention of deep vein thrombosis (DVT), pulmonary embolism (PE), VTE, reduction of severity of bleeding and bleeding frequency, required physician supervision for medication monitoring, patient satisfaction, medication adherence, and

cost

Key Questions from Nominator: For patients following TJA, what are the comparative risks and benefits of postoperative prophylaxis of rivaroxaban (Xarelto) versus enoxaparin (Lovenox)?

Considerations

- Venous thromboembolism (VTE) includes both deep vein thrombosis (DVT) and pulmonary embolism (PE). VTE results from a combination of hereditary and acquired risk factors. Major joint surgery (e.g., total hip or knee replacement, hip fracture surgery) is a risk factor for VTE. An estimated 300,000 VTE-related deaths occur in the US each year.
- Interventions to prevent VTE among individuals at increased risk include: oral antiplatelet agents, low molecular weight heparins (LMWHs), injectable unfractionated heparin (UFH), injectable or oral factor Xa inhibitors, injectable or oral direct thrombin inhibitors (DTIs), oral vitamin K antagonists (VKAs), and mechanical interventions that prevent clot formation.
- Rivaroxaban (Xarelto) is an oral Xa inhibitor; Xa inhibitors are a class of anticoagulant drugs, which act directly upon Factor X in the coagulation cascade, without using anti-thrombin as a mediator. Enoxaparin sodium (Lovenox), and it works by binding to and accelerating the activity of antithrombin III. By activating antithrombin III, enoxaparin preferentially potentiates the inhibition of coagulation factors Xa and IIa. Enoxaparin is an LMWH.
- This topic was found to be best suited to move forward as an update to or expansion of the existing AHRQ Comparative Effectiveness Review (CER) published in 2012 titled, *Venous Thromboembolism Prophylaxis in Orthopedic Surgery*. Specifically, this nomination relates to Key Question 5:
 - In patients undergoing major joint surgery (total hip or knee replacement, hip fracture surgery), what is the comparative efficacy between classes of agents on outcomes: symptomatic and radiologically confirmed VTE, PE (fatal and nonfatal), mortality, DVT (asymptomatic or symptomatic, proximal or distal), major bleeding and minor bleeding? Classes include injectable LMWHs and injectable or oral factor Xa inhibitors.
- Rivaroxaban was approved by the FDA for DVT prevention in individuals undergoing knee or hip replacement surgery after publication of the AHRQ CER, and was not included in the report.
- An addendum to the AHRQ CER described the four Regulation of Coagulation in Orthopedic Surgery to Prevent Deep Venous Thrombosis and Pulmonary Embolism (RECORD) trials, which compared various regimens of rivaroxaban and enoxaparin, in total hip or knee replacement surgery. The addendum indicated that these trials could address KQ #5. The addendum describes the four trials, and does not make any conclusions.
- An AHRQ product has the potential for impact because of high interest from potential stakeholder groups in this topic.