

## **A. Venous Thromboembolic Disease Prophylaxis Following Total Joint Arthroplasty – Rationale and Supporting Evidence**

In 2003, 418,000 primary total knee replacements and 220,000 primary total hip replacements were performed.<sup>1</sup> The average ages of patients undergoing these procedures were 67.1 years and 65.4 years, respectively.<sup>1</sup> For patients undergoing total hip or knee arthroplasty, one of the potential complications is the development of a venous thromboembolism. The prevalence of deep vein thrombosis in total hip and knee arthroplasties is 40-60% when patients receive no prophylaxis, either mechanical or pharmacological.<sup>2</sup> With routine pharmacological thromboprophylaxis, the occurrence of symptomatic venous thromboembolism decreases to 2.4% in total hip patients and 1.7% in total knee patients for the three-month period following surgery.<sup>3</sup>

While it is known that prophylaxis decreases the risk of venous thromboembolic disease, the ideal type of prophylaxis and duration of therapy have yet to be defined. A recent review in the *Journal of Bone and Joint Surgery (Am)* finds the duration of prophylaxis following total hip and knee arthroplasty is somewhat controversial.<sup>2</sup> The same review also discusses the need to balance the efficacy of the prophylaxis with the risk of bleeding for chemoprophylactic patients. A 2002 article, also from the *Journal of Bone and Joint Surgery (Am)*, points out the controversy surrounding the choice of postoperative chemoprophylactic agents against venous thromboembolic disease following total hip and total knee arthroplasty. While warfarin is common and has been used extensively, other types of thromboprophylaxis, such as low-molecular weight heparin, have been shown safe and effective for preventing deep-vein thrombosis following total joint arthroplasty.<sup>4</sup> Further evidence analysis is needed to identify the optimal thromboprophylactic regimens for patients following total hip and total knee replacement.

## **B. Venous Thromboembolic Disease Prophylaxis Following Total Joint Arthroplasty – Questions to be Addressed**

1. What are the indications for an extended course of venous thromboembolism prophylaxis in patients undergoing total knee or total hip arthroplasty?
2. What are the most effective methods for preventing venous thromboembolism in patients undergoing total knee or total hip arthroplasty?
3. What is the effectiveness of an extended postoperative course of pharmacological prophylaxis versus screening programs for the prevention of venous thromboembolic disease?
4. What is the effective therapeutic range for warfarin for the prevention of postoperative venous thromboembolic disease in patients that have undergone total hip or total knee replacement?

5. What are the relative risks and benefits of pharmacological prophylaxis versus mechanical prophylaxis versus screening programs for the prevention of postoperative venous thromboembolic disease in patient that have undergone total hip or total knee replacement?

**C. Plans for rapid translation of the evidence reports and technology assessments into clinical guidelines, performance measures, educational programs or other strategies for strengthening the quality of health care services, or plans to inform development of reimbursement or coverage policies.**

Driven to improve the quality of care and reduce disparities, many organizations, including the AAOS, have turned to the development of clinical practice guidelines. In October 2004, the AAOS formally adopted the position that evidence-based practice guidelines should be developed and used in the care of orthopaedic patients. Accordingly, the AAOS has developed the following plan for aggressively developing and supporting evidence-based orthopaedic guidelines and performance measures over the next three to five years. The core reasons behind this initiative are threefold:

- 1) Current disparities in the quality of medical care in the United States, as documented by the Institute of Medicine's book *Crossing the Quality Chasm* and other reports;
- 2) The current shift towards a pay-for-performance model for medical reimbursement; and
- 3) The demands and expectations of the AAOS member physicians who recognize the importance of this initiative.

**Impact of Evidence-Based Guidelines on Orthopaedic Practice**

The foundation for the best clinical practice of medicine evolves from the published, peer-reviewed evidence. Yet the sheer volume of this information presents a significant barrier to the practicing surgeon. A recently published article indicated that 26,945 research papers were published between 1991 and 2000 in the top 7 peer-reviewed medical journals alone. Obviously, no one individual can keep pace with all that is being published. Evidence-based practice guidelines serve to assist the practicing orthopaedic surgeon in their quest to improve patient care by consolidating the relevant evidence, and indicating the strength of the recommendations for treatment options. AAOS would use any systematic evidence review conducted by the AHRQ's Evidence-Based Practice Centers to support and augment our ongoing efforts to develop useful evidence-based guidelines and performance measures for orthopaedics. The AAOS' capacity for conducting systematic evidence reviews of its own is somewhat limited; the AHRQ's provision of systematic reviews beyond our own

capabilities will allow AAOS to develop more evidence-based guidelines and performance measures on a more rapid timeline than the organization could do alone. Following is a brief summary of the AAOS' current work plan for developing and supporting evidence-based practice guidelines and performance measures, in which AHRQ's services could serve as a means for program expansion and increased efficiency.

### **Guideline and Performance Measure Development via the AAOS Evidence Analysis Workgroups**

Guideline and performance measure development at the AAOS is conducted via subspecialty-focused evidence analysis workgroups of 5-8 volunteer physicians each (supported by relevant staff), who provide a combination of expert opinion and knowledge of evidence-based analysis via the CME training programs AAOS provides for its members.

The AAOS Evidence-Based Practice Committee (a committee of 10 volunteer orthopaedists with expertise in evidence-based medicine) provides oversight to the various anatomical evidence analysis workgroups. AAOS plans to support evidence analysis workgroups on 12-18 topics over the next 3-5 years, including:

- Shoulder and elbow pain
- Hand and wrist pain
- Low back pain
- Hip pain
- Knee pain
- Knee injury
- Ankle injury

Each workgroup will conduct evidence analyses to support the guidelines/performance measures that are produced.

### **How AHRQ Can Help**

AHRQ's provision of additional systematic evidence reviews on the topics of DVT prophylaxis in patients following total hip and knee arthroplasty and treatment options for osteoarthritis of the knee will allow the AAOS to develop evidence-based guideline/performance measure sets far more rapidly (i.e., in 6 months to 1 year). Due to the high burdens of disease and cost for these conditions, the AHRQ's assistance is necessary to assist the AAOS in serving the needs of orthopaedists and their patients. The exigency for rapid turnarounds in guideline development is an issue AAOS and other medical specialty societies must address, as efforts by industry, insurance companies and the Centers for Medicare and Medicaid Services (CMS) to develop performance measures continues to grow.

Patients, practitioners, and healthcare in general will benefit from a cooperative approach to the development of measures, yielding meaningful outcomes. In order for physicians and their professional organizations to participate, programs that assist with the production of evidence reviews, are imperative.

**D. Plans for use and/or dissemination of these derivative products, e.g., to organization memberships, if appropriate.**

The AAOS has been heavily involved in guidelines production in the past through the efforts of its physician committees, as well as a cadre of physicians who have been trained by the AAOS in evidence analysis. Previously, these groups have developed treatment guidelines that were later published on the AAOS web site and in the National Guidelines Clearing House (NGHC) for use by our members, insurance companies, government entities, and the public. The AAOS will continue to maximize these and other emerging outlets for dissemination of guidelines and performance measure products, including the National Quality Forum's endorsement and dissemination process for evidence-based performance measures. The AAOS is developing plans to use its evidence-based guideline/performance measure products to create utilization review guidelines for sale to private health insurers, which will facilitate the wider dissemination of evidence-based orthopaedic practice while providing a means for the AAOS to defray some of the costs of developing guidelines.

**E. Process by which the nominating organization will measure the use of these products and impact of such use.**

The AAOS will monitor and measure the use and impact of its evidence-based analysis guidelines and performance measures, as follows:

- 1) The **National Guidelines Clearinghouse** and the **National Quality Measures Clearinghouse** provide annual viewing and download statistics to the publishers of all the guidelines/performance measures registered with their sites. The AAOS monitors these statistics closely as one means of measuring the usage impact of its guidelines products.
- 2) The **National Quality Forum (NQF)**'s performance measure endorsement process provides a means for vetting evidence-based performance measures by a large, national group of healthcare providers, payors, researchers, and consumers. NQF's endorsement of a performance measure usually results in its widespread adoption and implementation by both public and private payors, and subsequently, healthcare providers.
- 3) In addition to the above national programs in which the AAOS participates, the AAOS conducts regular surveys of its members on various aspects of their orthopaedic practice. The AAOS therefore has the capacity to survey its members on the usage impact the AAOS' published guidelines and performance measures have on our members' orthopaedic practices.

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<sup>1</sup> National Hospital Discharge Survey, 2003. Data obtained from: U.S. Department of Health and Human Services; Centers for Disease Control and Prevention; National Center for Health Statistics.

<sup>2</sup> Lieberman JR, Hsu WK. Prevention of venous thromboembolic disease after total hip and knee arthroplasty. *J Bone Joint Surg Am* 2005; 87:2097-2112.

<sup>3</sup> Geerts WH, Pineo GF, Heit JA, Bergqvist D, Lassen MR, Colwell CW, Ray JG. Prevention of venous thromboembolism: the seventh ACCP conference on antithrombotic and thrombolytic therapy. *Chest* 2004; 126: 338-400.

<sup>4</sup> Sculco TP, Colwell CW, Pellegrini VD, Westrich GH, Bottner F. Prophylaxis against venous thromboembolic disease in patients having a total hip or knee arthroplasty. *J Bone Joint Surg Am.* 2002; 84: 466-477.