Anticoagulant Therapies in the Prevention and Treatment of Arterial and Venous Thromboembolism: An Educational Needs Assessment

Rachel Karcher, PharmD[1], Stephanie Stowell, MPhil[1], Peter Sheldon, Jr, BA[1], Catherine Mullaney, MHA[1], Katherine Grichnik, MD[2], Sherry Layton, MA[2]
[1]Med-IQ and [2]Duke University School of Medicine

Introduction

- Atrial fibrillation (AF), acute coronary syndromes (ACS), and venous thromboembolism (VTE) are major healthcare problems in the US, each accounting for significant morbidity, mortality, and healthcare costs. ACS results in 1.5 million hospitalizations and 600,000 deaths annually. Approximately 2.3 million people are presently diagnosed with AF, which confers a 4- to 5-fold increase in stroke risk. VTE affects another 1 million patients annually, 600,000 of whom develop pulmonary embolism (PE); one-third of these cases are fatal. These facts persist despite the availability of effective antithrombotic agents and published guidelines.

- To better understand this healthcare problem, Duke University School of Medicine and Med-IQ developed a robust educational needs assessment on the prevention and management of arterial and venous thrombosis among diverse medical specialties and practice environments. Knowledge gained may be used to develop more focused educational initiatives to improve and enhance the care practices of clinicians who treat and manage patients with or at risk of ACS, AF, and VTE.

- Needs assessment goals:
  - Identify current practice patterns and assess knowledge of the prevention and treatment of arterial and venous thromboembolism
  - Identify clinician concerns over currently available anticoagulants and potential barriers to their optimal use
  - Assess knowledge of emerging anticoagulant classes
  - Identify gaps in knowledge and key areas for future educational activities to improve clinician understanding of current and emerging anticoagulants.

Methods

Qualitative and quantitative data were collected through four strategies:

1. **Expert faculty roundtable**
   - Seven experts in cardiology, hematology, and internal medicine convened for 1-day live roundtable to identify potential barriers to the use of and educational needs regarding anticoagulant therapies and the prevention and management of VTE, AF, and ACS
   - Faculty reconvened through teleconferences to review results and develop conclusions
2. **Literature review**
   - Identified published care gaps in the prevention and management of VTE, AF, and ACS as well as the related anticoagulant therapies
3. **National surveys of physicians**
   - Series of five surveys assessing knowledge, practice patterns, and educational needs of cardiologists, oncologists, orthopaedic surgeons, and hospital-based internists (HBIs) on the use of current and emerging anticoagulants in ACS, AF, and VTE
   - Pilot tested by target audience members
   - Multi-step recruitment to maximize response rate (target: 60%)
4. **In-practice research (IPR) site visits**
   - IPR hospital site visits conducted to discern frontline practice behaviors and educational needs
   - Data gathered through focus groups, interviews, and questionnaires of physicians, nurses, pharmacists, and quality improvement (QI) staff

Results – Surveys

- 647 responses received – overall response rate 67%
  - Individual survey response rates:
    - ACS: 58% from cardiologists
    - AF: 57% from cardiologists
    - VTE: 72% combined from cardiologists, HBIs, oncologists, and orthopaedic surgeons
  - Practice sites: 37% private practices, 31% community hospitals, 24% academic institutions, 5% community-based outpatient clinics, and 3% "other"

- Although most physicians reported high confidence in both their understanding of guideline recommendations and their ability to manage antithrombotics in patients with or at risk of ACS, AF, and VTE, specific knowledge of guideline recommendations was low **(Table 1)**
  - ACS: lowest confidence – applying guidelines to special populations
  - AF: lowest confidence – ability to use the $CHADS_2$ risk score in assessing stroke risk and reliability of the score to assess risk
  - VTE: lowest confidence – identifying absolute contraindications to anticoagulants and appropriate candidates for prophylaxis
- Overall use of published clinical practice guidelines was low; < 50% reported using guidelines frequently in their decisions regarding antithrombotics

Table 1. Knowledge Survey Questions

Question	Percent (%)
According to the ACC/AHA guidelines for the treatment of NSTEMI patients, which of the following antithrombotic agents does NOT need dose adjustment for patients with a creatinine clearance of less than 30 mL/min?	ACS (n = 87)
Heparin (correct answer)	52%
Fondaparinux	13%
Eptifibatide	3%
Enoxaparin	5%
All of the above need dose adjustment	28%
All of the following would be reasonable options for use as the SOLE anticoagulant in PCI patients EXCEPT:	ACS (n = 87)
Bivalirudin	17%
Fondaparinux (correct answer)	48%
Enoxaparin	12%
UFH	23%
According to the current ACC/AHA guideline recommendations, in which of the following AF patients is aspirin alone NOT an acceptable option for anticoagulation?	AF (n = 88)
Individuals older than 75 years	10%
Individuals with previous stroke or TIA (correct answer)	44%
Individuals with heart failure	3%
None of the above	39%
Unsure	3%

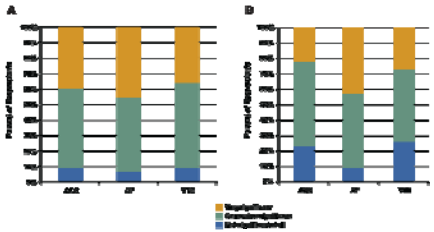

Figure 1. Barriers to the optimal use of anticoagulants. (A) Bleeding risks as a barrier; (B) complicated monitoring of available agents as a barrier

Results – Surveys, Cont

Most common reported barriers to optimal anticoagulant use (Fig 1)
- ACS: bleeding risk; difficulty in reversing agents; lack of effective hospital-based protocols guiding care
- AF: bleeding risk; complicated monitoring of anticoagulant agents
- VTE: Bleeding risk; complicated monitoring, initiating prophylaxis in special populations (eg, renal impaired, obese, elderly); lack of clarity of guideline recommendations

Emerging anticoagulants
- Respondents reported fairly limited knowledge of emerging agents
- Highest desire for education on emerging agents was on efficacy data, bleeding risks, and relative place in therapy

Results – In-Practice Research

- Researchers met with more than 60 healthcare professionals and QI staff between 5 hospitals
- IPR site characteristics:
  - 252-bed community hospital; mid-sized city; West
  - 320-bed academic hospital; suburban setting; Midwest
  - 750-bed academic hospital; mid-sized city; Midwest
  - 198-bed community hospital; rural; East
  - 281-bed community hospital; suburban; East

Table 2. Highlights of IPR Findings

Group	Findings
Physicians	• Low guideline use because guidelines are too cumbersome (all disease states) and confusing due to conflicting recommendations (VTE) • Main reported barrier to anticoagulant use was bleeding risk • Other significant reported barriers included: o Considerations and/or challenges with dosing and safety understanding in special patient populations (eg, obese, renally impaired) o Lack of effective hospital-based protocols o Lack of patient education for those discharged on anticoagulants • Knowledge of emerging anticoagulants was limited but highly desired • Reliance on pharmaceutical representatives for new information
Nurses	• Protocols for anticoagulants are common but were not well integrated into point of care • Reported barriers to anticoagulants included: o Communication issues (eg, lack of clarity surrounding orders, lack of communication between physicians when treating the same patient) o Lack of education to be able to identify when anticoagulant use is suboptimal to empower questioning of orders o Monitoring difficulties o Patient follow-up and monitoring after discharge • Medication errors with anticoagulants were typically due to: o Missed doses and timing of administration o Incorrect blood draws for INR measurements o Communication issues o Patient nonadherence and lack of discharge education • Reliance on pharmaceutical representatives for new information
QI Staff	• Felt tools to guide anticoagulant use were widely available but not used frequently due to lack of awareness, cumbersome design, and lack of clinician agreement • Paper protocols not adequately integrated into care processes contributed to underuse • Protocols and tools need to be well endorsed by administration • Common anticoagulant adverse events were most often associated with dosing issues (including dosing based on renal and hepatic function) • Seeking more educational resources to provide to staff

Conclusions and Recommendations

- Results of this needs assessment provide insights into the current beliefs, attitudes, and practices, as well as the key educational needs of the clinicians who directly influence the care and treatment of patients receiving anticoagulants for arterial and venous thromboembolism

Recommendations for focus of future educational initiatives
- Continued education on guideline recommendations is needed – education should simplify guideline recommendations and reconcile guideline differences when possible

- Focused education on true bleeding risks of anticoagulants, strategies for minimizing and monitoring for adverse effects, and identifying absolute versus relative contraindications

- Anticoagulants in special populations (eg, obese, elderly, and renal impaired patients) – focus on efficacy, safety, dosing, and monitoring parameters in these patient groups

- Strategies to improve continuity of care following hospital discharge

- ACS: selection and combination of antithrombotic agents
- AF: appropriate patient candidates for thromboprophylaxis and use, benefits, and limitations of the CHADS2 scoring system
- VTE: appropriate patient candidates for thromboprophylaxis

- The application of technology and other strategies to optimize the use of anticoagulants – include QI staff and administration in education
  - Importance of well-designed, standardized policies and protocols well integrated into point-of-care practice
  - Practical strategies for improving VTE prophylaxis

- Nurses should be a focus of educational activities that:
  - Help build critical-thinking skills and confidence regarding anticoagulants
  - Improve communication between healthcare professionals to empower support staff to raise concerns
  - Assist with discharge counseling

- Due to limited knowledge, education on emerging anticoagulants was highly desired by physicians – focus education on safety data, efficacy data, and relative place in therapy

Acknowledgments

Expert Faculty Panel

Gowthami Arepally, MD (Chair) – Duke University Medical Center
Kenneth A. Bauer, MD – VA Boston Healthcare System and Beth Israel Deaconess Medical Center
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