Venous thromboembolism (VTE) has been associated with more than 500,000 hospitalizations annually in the United States and contributes to at least 100,000 deaths each year. Along with its morbidity and mortality, VTE is a significant economic burden in this country. The healthcare costs of treating a patient with an incident VTE encompass costs associated with the acute event itself and the costs of VTE sequelae. These may include recurrent VTE, postthrombotic syndrome, chronic thromboembolic pulmonary hypertension, and complications associated with therapy, such as bleeding.

Annual costs of VTE in the United States are substantial and have previously been estimated to be as high as $69.3 billion. A study by Mahan et al in 2012 was performed to assess annual US healthcare costs for VTE. The researchers developed a decision tree and cost model to estimate care costs for total pulmonary embolism (PE), including separate analysis of costs for total hospital-acquired PE and total hospital-acquired “preventable” PE. The previous cost analyses for deep vein thrombosis (DVT) were updated and modified and then combined with the PE cost model to delineate the same cost categories for VTE, along with direct and indirect VTE costs. Results demonstrated that the annual cost for total VTE (in 2011 US dollars) ranged from $13.5 billion to $69.3 billion, with preventable VTE costs ranging from $4.5 billion to $39.3 billion. In the base-case analysis, the annual cost for total VTE (in 2011 US dollars) ranged from $13.5 billion to $27.2 billion. For hospital-acquired VTE, these costs were found to be between $9.0 billion and $18.2 billion, with hospital-acquired preventable costs ranging from $4.5 billion to $14.2 billion. The main initial sensitivity analysis based on higher incidence rates and costs showed an annual cost for total VTE of between $32.1 billion and $69.3 billion, with a hospital-acquired cost range of $23.7 billion to $51.5 billion and hospital-acquired preventable VTE costs ranging from $11.9 billion to $39.3 billion. The majority of costs for VTE in this study were costs for PE. Overall, the authors concluded that a strong focus on effective VTE preventive strategies, such as electronic alerts, pharmacist interventions, or other programs to reduce VTE in clinical practice could significantly reduce both...
morbidity/mortality and healthcare costs within this country’s health care system.  

Dasta et al attempted to quantify the actual progression of daily hospitalization costs for patients with VTE. Using a retrospective claims analysis, the results of the study showed that the daily costs for patients hospitalized with PE and DVT were highest during the first 3 days with costs of $2981 and $2321, $2034 and $1875, and $1564 and $1558, respectively, on days 1, 2, and 3 of admission. The mean daily costs for patients with DVT were estimated at $1594 compared with $1735 for patients with PE. Patients admitted to the intensive care unit for management had higher costs than the overall patient population. Daily hospitalization costs tended toward stabilization by the third day. The results of this analysis suggested that any change in treatment that affects length of stay for patients with VTE may impact overall healthcare costs for this population.

Grosse et al performed a study to summarize estimates of per-patient and aggregate medical costs or expenditures in the US healthcare system related to incidence of VTE. Data focused on US studies and included estimates of first-year treatment costs for patients with incidental VTE along with studies that mentioned cost or economics regarding VTE. In this analysis, per-patient estimates of incremental costs were calculated as the difference between patients with and without a healthcare event after controlling for differences in a patient’s underlying health status. This analysis delineated estimates of the incremental per-patient costs of both acute VTE and VTE-related complications. These complications included recurrent VTE, postthrombotic syndrome, chronic thromboembolic pulmonary hypertension, and adverse events related to anticoagulation therapy. Results calculated in 2014 US dollars demonstrated that acute VTE treatment was associated with incremental direct medical costs of $12,000 to $15,000 for patients with VTE who are first-year survivors (controlling for risk factors). VTE-related complications were estimated to increase costs to between $18,000 and $23,000 per incident case of VTE.

Overall, the researchers estimated that annual incident VTE events may cost between $7 billion and $10 billion for approximately 375,000 to 425,000 newly diagnosed cases of incident VTE that are treated. It should be noted that overall US costs estimated by Grosse et al were significantly lower than those estimated by Mahan et al and that an actual overall cost model was not built by Grosse et al to arrive at these estimates. As with previous studies, such cost data may be beneficial to evaluate both potential cost savings and overall economic benefit from preventive medical strategies for VTE.

The Economic Implications of DOACs Versus Alternative Therapies for VTE

Traditional therapy starting with parenteral anticoagulation overlapping with a vitamin K antagonist (VKA) is effective, but its use is limited due to frequent coagulation monitoring to minimize bleeding risk. However, both real-world and hypothetical statistical analyses have shown that direct acting oral anticoagulants (DOACs) are actually cost-effective when viewed in terms of their overall safety and quality-adjusted life-years despite having higher drug-acquisition costs than traditional treatments. This may also be driven by the DOACs' better bleeding profiles compared with VKA treatment.

As an example, a study by Amin et al assessed US medical cost avoidances when DOACs were used instead of warfarin for VTE therapy. Reductions in actual rates of recurrent VTE and major bleeding were obtained by applying rate reductions from the various clinical trials of the current approved DOACs versus those for warfarin trials to real-world event rates from a previous study. Incremental annual medical costs for patients with VTE and major bleeding were obtained from the literature or claims databases, and the differences in total medical costs for patients treated with traditional therapy versus DOACs were estimated. The overall results demonstrated that medical costs were lower when DOACs were used instead of warfarin for treatment of patients with acute VTE. Breaking down the individual DOACs and their annual total medical costs per patient-year compared with warfarin, treatment with apixaban resulted in an estimated cost avoidance of $4440 per patient-year compared with a reduction of $2971 for rivaroxaban, $1957 for edoxaban, and $572 for dabigatran. The researchers concluded that the estimated medical cost reductions associated with the use of DOACs versus warfarin could assist in determining the overall value of DOACs for actual use in real-time clinical practice in this country.

Another study led by Amin et al assessed avoidance in medical costs. They evaluated DOAC efficacy and safety for apixaban, dabigatran, and rivaroxaban for extended VTE treatment in patients where clinical equipoise existed on continuation of therapy (specifically the AMPLIFY-EXT, RE-SONATE, and EINSTEIN-EXT trials, respectively). Event rates for these trials, along with incremental annual medical costs for patients with VTE-related events, were obtained from the literature or claims databases. Differences in total medical costs associated with treatment using DOACs versus placebo were estimated. Results showed that all 3 DOAC trial findings demonstrated lower rates of recurrent VTE compared with placebo. Medical costs avoided were $4249 and $4244 for apixaban 2.5 mg and 5.0 mg, respectively, and with a cost avoidance of $2948 for rivaroxaban and $2794 for dabigatran.

Overall results indicated that important medical costs are avoided when these DOACs are used for extended treatment of VTE. These data may be useful for determining the actual value of DOAC use in this therapy setting in the United States. As shown from these studies, although drug acquisition costs may be higher for DOACs, they are associated with lower overall costs and are cost-effective compared with not extending anticoagulation therapy.

Pharmacogenetics/genomics should also be taken into consideration with anticoagulant use. Recent guidelines for warfarin have
been updated and are expected to lower the risk of adverse drug reactions. A genotype dosing table, such as the FDA warfarin drug label, may be used for general risk assessment on a standard dose of warfarin. These pharmacogenomic considerations may add to the cost of warfarin management, but in general, it appears that they are less of a consideration with DOACs.16-18

DOACs and Patient Management: Adherence to Therapy

Adherence to therapy is a crucial issue for treatment and overall management of VTE. Strict adherence to individualized treatment protocols maximizes the chances for optimal management and outcomes. However, the lack of need for laboratory monitoring of DOAC levels, while convenient, can be problematic because plasma or laboratory levels are not typically used to gauge adherence as seen with VKAs. In addition, patients using DOACs do not usually require as many follow-up visits compared with those being treated with VKAs, and this reduced clinician oversight may negatively impact adherence and persistence with therapy.19

One study by Castellucci et al assessed adherence to anticoagulation among patients using apixaban, dabigatran, and rivaroxaban through patient self-reporting via a cross-sectional study using the 4-time Morisky Medication Adherence Scale (MMAS).20 They surveyed 500 patients about their adherence to anticoagulant treatment using 4 questions21,22:

- Do you ever forget to take your medicine?
- Are you careless at times about taking your medicine?
- Sometimes, if you feel worse when you take the medicine, do you stop taking it?
- When you feel better, do you sometimes stop taking your medicine?

Among these patients, 74% were taking a VKA and 26% were on DOACs, and 72% of patients surveyed were being treated for VTE (the remainder for atrial fibrillation [AF]). Self-reported anticoagulant adherence among those taking VKAs was 56.2% compared with 57.1% for those taking DOACs. Notable predictors for adherence were age, female gender, use of additional oral medications, and retired employment status. Overall, results showed that self-reported anticoagulant adherence was similar between the 2 classes of treatment agents. The researchers emphasized that until laboratory assays become available to actually determine DOAC adherence as with VKAs, clinicians should emphasize the importance of anticoagulation adherence at every patient visit.20

A more recent study by Patel et al assessed differences in adherence among patients taking DOACs versus warfarin for VTE or AF.21 This analysis used the electronic medical records of the Anticoagulation Clinic database from Mayo Clinic in Scottsdale, Arizona. A 20-question survey that included the more extensive MMAS-8 survey was used. The MMAS-8 score was used to evaluate adherence.22 Questions evaluated type and duration of anticoagulant therapy, treatment indication, what methods they used to improve adherence, missed dosages, risks and complications, and patient demographic characteristics23:

- Do you sometimes forget to take your pills?
- People sometimes miss their medications for reasons other than forgetting. Thinking over the past 2 weeks, were there any days when you did not take your medicine?
- Have you ever cut back or stopped taking your medicine without telling your doctor because you felt worse when you took it?
- When you travel or leave home, do you sometimes forget to bring along your medicine?
- Did you take all of your medicine yesterday?
- When you feel like your symptoms are under control, do you sometimes stop taking your medicine?
- Taking medicine every day is a real inconvenience for some people. Do you ever feel hassled about sticking to your treatment plan?
- How often do you have difficulty remembering to take your medicine?
  › Never/rarely
  › Once in a while
  › Sometimes
  › Usually
  › All of the time

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>DOAC (n = 66)</th>
<th>Warfarin (n = 44)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMAS-8 Score, mean (SD)</td>
<td>7.38 (0.90)</td>
<td>7.43 (0.80)</td>
<td>.80</td>
</tr>
</tbody>
</table>
| DOAC indicates direct oral anticoagulant; MMAS-8, Morisky Medication Adherence Scale-8 item; SD, standard deviation. Table adapted with permission from Patel SI, et al. J Am Osteopath Assoc. 2017;117(1):7-15. All rights reserved.

For the purposes of this study, a score of less than 6 was considered low adherence, a score of 6 to 7 was medium adherence, and a score of 8 was high adherence. Results demonstrated that 90.9% of patients in the DOAC cohort reported medium to high adherence, with 95.5% of patients who received warfarin reporting the same. The difference in adherence scores between the 2 groups was not significant (Table 1).21

Primary endpoint aside, the study identified some key characteristics surrounding patients and their use of anticoagulants.
Methods used to remember to take the drugs included use of an alarm or timer, written reminders, a pill-sorting box, or someone else keeping track of the medication for them. However, 95% of patients taking warfarin stated they knew what to do if they missed a dose compared with 88% of those using DOACs. The researchers also speculated that differences in adherence rates compared with previous data might be accounted for by differences in health literacy and income levels and the duration of anticoagulant usage.

Even though DOACs do not require routine laboratory monitoring and do not often require frequent dosage adjustments, patients receiving these agents still need follow-up to ensure proper use and adherence to therapy. Pharmacists should check appropriateness of the chosen therapy (ie, indication), and prescribed dosage and duration should be confirmed along with a full medication review to assess for any potential drug-drug interactions or effects on renal function. Patients should be instructed using a review of indications for therapy, risks of the anticoagulant, suggested methods to improve adherence, drug administration and what to do in the event of a missed dose, drug storage, and information about identification and management of adverse events. All education should be supplemented with written materials for the patient to use after being counseled by the pharmacist. Pharmacists and pharmacy technicians can assist with patient management by identifying patients who show signs of potentially suboptimal adherence/persistence based on prescription refill history. They can identify patients who may need more extensive counseling and education. Patients or caregivers should repeat back important educational points to ensure good patient understanding.

In addition to maintaining close follow-up during routine medical practice visits, a DOAC follow-up monitoring plan has been suggested that can be used at each clinical practice visit at 1 and 3 weeks post DOAC initiation and then again at 3 and 6 months and every 6 months afterward. Called the “ABCDEFs,” questions include:

- Adherence assessment and counseling
- Bleeding risk assessment
- Creatinine clearance estimation
- Drug interaction screening
- Examination
- Final assessment and follow-up

Persistence is also an issue for VTE therapy, but limited evidence exists surrounding this parameter. A recent study by Vora et al, using data from 12 observational studies, found that suboptimal persistence was found in only 17% of patients in the first 3 months following anticoagulant prescription, although persistence declined over 6 to 12 months. Such observational data related specifically to DOACs remain scarce, and further research is required for more definitive conclusions.

DOACs and Patient Management: Practical Guidance for Individualized Care

With the advent of the “DOAC decade” in 2010, patients now have multiple options for treatment of VTE beyond traditional VKA therapy. However, questions and concerns remain surrounding appropriate and best use of DOACs. One key issue is identifying patients who are, and are not, good candidates for DOAC therapy. While the drugs have been studied extensively in clinical trials, many patient subgroups were either excluded or underrepresented in these studies. In 2016, a guidance document on practical management of DOACs in the treatment of VTE was provided by Burnett et al, and it included specific patient selection criteria for DOAC use:

- Patient preference for and willingness to take DOACs
- No contraindications to DOAC therapy
- Adequate organ function
- No significant drug-drug interactions
- No significant disease state interactions
- Highly likely to be adherent with DOAC therapy and follow-up
- Confirmed ability to obtain DOAC on a longitudinal basis from financial, insurance coverage, and retail availability standpoints

Additionally, these guidelines provided a series of patient adherence assessments to use when choosing anticoagulant agents (Table 2). Regarding transitions of care between inpatient and outpatient management of VTE, the guidance document recommended that hospitals implement systematic DOAC management and documentation processes that address appropriate patient selection, dose initiation, perioperative management, switches between anticoagulants, and care transitions between settings. Whenever possible, implementation of specialized inpatient and outpatient anticoagulation services (eg, anticoagulation clinics) is strongly encouraged. The guidance also strongly recommends that clinicians use a DOAC discharge checklist to ensure all key aspects of patient care and DOAC therapy are addressed (Table 3). Suggested patient education and safety tips were also provided to optimize DOAC use (Table 4).

Patient education is key to successful VTE therapy using DOACs. Popoola et al assessed a more patient-centered approach to education using a 3-phase Web-based survey of 421 members of several national stakeholder organizations along with a local patient and family advisory board. Results of the study identified particular preferences for educational formats and from whom patients would prefer to receive VTE education (Figure 1). In addition, participants outlined distinct topic areas for education surrounding VTE (Figure 2).

Overall, patients prefer to be educated by their physician, supplemented by a variety of educational formats and methods surrounding VTE prevention. For the best outcomes, efforts at improving VTE management should not just target healthcare...
TABLE 2. Patient Adherence Assessment When Choosing Anticoagulants

<table>
<thead>
<tr>
<th>Taking medications</th>
<th>Laboratory monitoring</th>
<th>Healthcare responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often does the patient miss or forget to take doses of their medication(s)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• If a warfarin patient frequently misses doses, switching to a shorter half-life DOAC may more rapidly predispose the patient to risk of thrombosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Often, a subtherapeutic INR is a reliable indicator to the clinician and patient that warfarin doses have been missed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Without the requirement for laboratory monitoring of the DOACs, there is no such alert to indicate opportunities to improve adherence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Is a once-daily or a twice-daily medication dosing frequency preferred?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• If patient is adherent with other twice-daily medications, any of the DOACs may be appropriate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Conversely, if patient prefers once-daily medications, rivaroxaban or edoxaban may be preferred</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is laboratory access difficult?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Patients with transportation challenges, difficult venous access, inflexible work or school schedules, or other reasons for difficulty complying with INR monitoring may significantly benefit from DOAC therapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Clinicians should remind DOAC patients that renal function and a complete blood count should be monitored at least annually or more frequently as the clinical situation dictates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the patient reliable to notify healthcare providers about changes to health and pertinent medical issues?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• It is important for the patient to make all healthcare providers aware that he or she is taking an anticoagulant medication, as this information will aid in:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>† design of peri-procedural anticoagulation plans</td>
<td></td>
<td></td>
</tr>
<tr>
<td>† addressing medication interactions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>† consideration of other health status changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Patients who may be unreliable to report pertinent issues to the clinician may be better suited to warfarin so that at least some of these may be uncovered during INR follow-up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• DOAC patients and their clinicians may elect to interact via clinic visit, phone, or electronic media at a regular interval</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DOAC indicates direct oral anticoagulant; INR, international normalized ratio.

TABLE 3. DOAC Discharge Checklist

- Patient is an appropriate DOAC candidate
- Assess patient’s eligibility for outpatient treatment
- Consistent access to DOAC (affordability, retail availability)
- If transitioning to rehabilitation or skilled nursing facility, ensure DOAC on formulary
- DOAC identified and understood as an oral anticoagulant by patient, caregivers, and providers
- Provision of thorough DOAC education to patient and/or caregiver in their preferred language and at an appropriate literacy level
- Safety net phone number provided to patient/caregiver (Who to call with questions)
- Referral or handoff to appropriate provider (anticoagulation clinic, PCP, etc)
- Time of last drug administration in current setting and time of next scheduled dose in new setting
- Prescribed strategy for appropriate dose change after initial therapy (either switch to DOAC or DOAC dose de-escalation)
- Consolidated documentation and communication to next care setting of key information such as
  † Indication for anticoagulation
  † Intended duration of therapy
  † DOAC dose and scheduled time of administration
  † Contact information for anticoagulation provider
- Follow-up arranged for periodic (every 3-12 months) assessment of the following
  † Renal function
  † Liver function
  † Upcoming invasive procedures
  † New drug interactions
  † New contraindications

DOAC indicates direct oral anticoagulant; PCP, primary care physician.

workers, but should target all stakeholders involved in the process, including patients and their families/caregivers.

Although pharmacists are a small labor pool compared with nurses and physicians, available data highlight an opportunity for pharmacists to play a larger role in anticoagulation education. A recent review by Barnes et al described “reimagined” anticoagulation clinics, suggesting that patients taking DOACs be followed within the anticoagulation clinics already established, and highlighting the role that specialist pharmacists and nurses contribute in this area. Barnes et al evaluated a Veterans Administration study (Shore et al), the results of which demonstrated the highest adherence with a pharmacist-driven dabigatran monitoring program. They noted how the University of Michigan Anticoagulation Clinic implemented new changes and suggested the use of pharmacists for drug and dose selection, monitored for changes in renal function and medication adherence, and identified the lowest-risk patients for whom anticoagulant therapy is not indicated to help ensure high-quality, optimally safe anticoagulation care.

At a minimum, patients should be educated on all aspects of their anticoagulant, including dosage, frequency, new or stopped drugs, planned duration, the effects of food, notification of the medical...

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TABLE 4. Patient Education and Safety Tips Recommendations

<table>
<thead>
<tr>
<th>Suggested Patient Action</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask questions and express your values and preferences in regard to your anticoagulant therapy</td>
<td>• Consider all of the possible advantages and disadvantages of DOAC therapy and choose an anticoagulation regimen that you are most likely to be adherent with</td>
</tr>
</tbody>
</table>
| Make sure you are familiar with and understand the DOAC education provided to you by healthcare staff | • If there is something you do not understand or that concerns you, let the healthcare staff know as soon as possible  
• Have the healthcare provider give you a safety net phone number to call in case you have questions at a later time |
| Obtain and wear a Medic Alert bracelet or carry a wallet card stating you are on an anticoagulant | • This will notify medical personnel that you are on an anticoagulant in case you are unable to verbally tell them |
| Follow drug-specific administration and storage recommendations provided to you          | • For example, take with food, store in original container                                     |
| Establish a set time for taking your DOAC and communicate this to medical providers, especially in an emergency situation |                                                                            |
| Schedule follow-up phone calls with your anticoagulation provider at predetermined times to discuss any issues or difficulties in taking or refilling your DOAC |                                                                            |
| Make sure you are familiar with both the generic and brand names of your DOAC and always check your refill for accuracy before leaving the pharmacy |                                                                            |
| Make sure your anticoagulation provider or another provider is regularly checking your kidney and liver function to make sure it is still okay for you to take a DOAC | • If you develop kidney or liver problems, let your anticoagulation provider know as soon as possible |
| Go to or participate in all scheduled follow-up visits with your anticoagulation provider so they can ask you questions that might be important for safe and effective use of your DOAC | • What medications have you stopped/started?  
• What kidney/liver problems have you had?  
• What side effects have you had from your DOAC?  
• What problems have you had getting your DOAC refilled?  
• What extra or missed doses of your DOAC have you had?  
• What upcoming surgical or dental procedures do you have? |

DOAC indicates direct oral anticoagulant.

FIGURE 1. Preferences for Receiving VTE Education

FIGURE 2. Topic Areas Preferred for VTE Education

VTE indicates venous thromboembolism.
and pharmacy team before procedures, and a plan of action for a missed dose and signs and symptoms of bleeding. If the patient is unable to be educated about these issues, a responsible caregiver must take on this role. In addition, it would be helpful to utilize care managers and retail pharmacies, sometimes available within hospitals, to check for healthcare coverage and co-pay amounts and make sure the patient has the anticoagulant in hand before discharge to increase adherence. For the DOACs, there are also co-pay cards and 30-day sample cards to ease the financial burden as much as possible.28,29

Shared Decision Making in VTE Management

Popoola et al noted that the hallmark of patient-centered care is to enable patients to make informed decisions about their management. Preferences must be solicited and used, when informing and educating patients about VTE management, to optimize therapy and outcomes.29 However, in traditional clinical practice, it is often left solely up to the clinician to choose a therapy for a patient. However, clinicians now often must face the fact that a patient may not want to follow and adhere to the choice the clinician recommends. In any type of treatment, no single right option exists for every patient. Patient expectations coupled with the ultimate goals of therapy can vary among individual patients because of unique factors impacting that single person.11

Shared decision making (SDM) is a technique that brings the patient and clinician together to collaborate on treatment and other management decisions. The main steps in effective SDM include33:

- Determining the situations in which SDM is critical
- Acknowledging the decision to the patient
- Describing options, including risks, benefits, and uncertainty associated with options
- Eliciting patient preferences and values
- Agreeing on a plan for the next steps in the decision-making process

SDM centers on clinician/patient collaboration using a pathway that starts with the available options, continues with a discussion, and finally leads to a decision (Figure 3).32 While some clinicians may feel that incorporating SDM into clinical practice adds an undue burden to what often must be accomplished during a time-limited visit, working in collaboration with patients on decision making can often serve as a catalyst for improved discourse and optimized management overall.32

Conclusion

The arrival of the DOACs has expanded the landscape for the treatment of VTE over the past decade. DOACs provide more convenient and safe treatment options for VTE management than traditional therapies. That said, many factors can act as barriers to DOAC implementation in clinical practice, not just the complexity of DOAC dosing regimens and the potential for drug interactions.21 Use of DOACs for VTE demands expertise from the prescribing clinician as well as effective patient engagement and education, including collaborative efforts to allow patient-centered treatment and clinician/patient collaboration in treatment choices and follow-up. The role of the pharmacist is important, such as checking for therapy appropriateness, dosages, duration of therapy, assessing any drug-drug interactions, and assisting in obtaining co-pay assistance cards.24,25 Studies have noted improved therapy adherence with a pharmacist-driven drug monitoring

Figure 3. Model of Shared Decision Making32

Key to the figure

Deliberation

- A process where patients become aware of their choice, understand their options, and have the time and support to consider “what matters most to them,” may require more than 1 clinical contact not necessarily face-to-face and may include the use of decision support and discussions with others.

Choice Talk

- Conveys awareness that a choice exists, initiated by either a patient or a clinician.
- This may occur before the clinical encounter.

Option Talk

- Patients are informed about treatment options in more detail.

Decision Talk

- Patients are supported to explore “what matters most to them,” having become informed.

Decision Support

- Decision support as designed in 2 formats: 1) brief enough to be used by clinician and patient together and 2) more extensive, designed to be used by patients either before or after clinical encounters (paper, DVD, Web).

Initial Preferences

- Awareness of options leads to the development of initial preferences, based on existing knowledge. The goal is to arrive at informed preferences.

Informed Preferences

- Personal preferences based on “what matters most to patients,” predicated on an understanding of the most relevant benefits and harms.
program. Optimizing educational and collaborative efforts among clinicians, patients, and their families/caregivers helps to ensure optimal outcomes for patients treated with DOACs to better manage their VTE.

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**Authorship information:** Concept and design, drafting of the manuscript, and critical revision of the manuscript for important intellectual content.

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