PANEL DISCUSSION

Exploring the Potential for a "Response Team" Concept in Deep Vein Thrombosis

Dr. Suresh Vedantham asks Drs. Pavan Kavali and Kristen Sanfilippo about possible benefits of a DVT response team model, barriers to adoption, patient selection and medical management considerations, and implications for clinical research.

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Dr. Vedantham: Dr. Kavali, you have led your local pulmonary embolism response team (PERT) for many years now. What are the main benefits of this collaborative model to your patients and institution? Could similar benefits be achieved for the management of deep vein thrombosis (DVT)?

Dr. Kavali: The PERT model has provided several key benefits to both patients and institutions, like Barnes-Jewish Hospital at Washington University School of Medicine. With respect to the patients, they receive rapid, coordinated care from a multidisciplinary team of experts in the field, including pulmonology/critical care, interventional radiology, vascular surgery, cardiothoracic surgery/extracorporeal membrane oxygenation, and hematology, among others. With a multidisciplinary team always assessing the patient, decisions on anticoagulation and/or catheter-directed therapies are made faster, reducing delays in care. In addition, each patient in our PERT database can then be seen in follow-up clinic by a series of physicians who are intimately involved in their long-term care, as well to ensure identification and appropriate referral for management of any post-PE syndrome or sequelae.

As for the institution, we have optimized our use of resources by streamlining the care of these patients throughout their hospital course, including identifying appropriate disposition of the patient for intensive care unit (ICU)–level care or step-down unit or general wards. We are focused on optimizing the outcomes of our patients as well through this PERT model, which has been recognized domestically and nationally in showing shorter lengths of stay in the ICU and in the hospital for those undergoing a formal PERT evaluation.

The benefits of a collaborative model like PERT could certainly extend to the management of DVT, especially in high-risk or complicated cases. As with PE, timely diagnosis and intervention are critical for patients with DVT, especially to prevent progression to PE or chronic

complications such as postthrombotic syndrome (PTS). A DVT response team, akin to a PERT, could ensure quicker access to diagnostic imaging (ultrasound) and initiation of anticoagulation therapy. Furthermore, complex DVT cases, such as those involving large iliofemoral clot burden, may benefit from input from interventional radiology, vascular surgery, cardiology, hematology, and other specialties. Collaborative decision-making could optimize the use of catheter-directed thrombolysis or mechanical thrombectomy when necessary. A team-based approach could help patients navigate long-term anticoagulation therapy, lifestyle modifications, and follow-up care, reducing recurrence and improving quality of life.

Although the urgency of DVT treatment is not always as high as with PE, the concept of a response team could still be valuable for ensuring coordinated, expert-driven care. This could particularly benefit hospitals looking to optimize outcomes for venous thromboembolism (VTE) as a whole, encompassing both DVT and PE in an integrated care model.

Dr. Vedantham: Dr. Sanfilippo, how does your experience with your local PERT team and past/present anticoagulation clinics inform your thoughts about a DVT response team?

Dr. Sanfilippo: My experiences from participation in the local PERT team, as well as managing anticoagulant therapy for a large number of patients, provides a basis for considering a DVT response team. As the primary managing provider of anticoagulant therapy for many of these patients, I have noticed an increase in the complexity of deciding type, intensity, and duration of anticoagulant therapy for patients with VTE. Therapy decisions have gone through modifications over the past decade, from only having the oral option of warfarin, to a strong preference toward direct oral anticoagulants in many patients, to now complex decision-making regarding the safest option after weighing patient comorbidities (eg, cancer) and concurrent therapies (eg, drug-drug interactions, antiplatelet therapy). Having a hematologist present (or a trained anticoagulation PharmD) could allow for rapid decision-making on the optimal anticoagulant for an individual patient.

Dr. Vedantham: Dr. Sanfilippo, what medical management needs could be addressed/improved via a DVT response team?

Dr. Sanfilippo: When patients do not encounter a hematologist during the acute phase of their diagnosis, I sometimes find that they may be unaware of several important educational points regarding the best management for their thrombosis, including: (1) risk of not adhering to anticoagulant therapy (especially during the first 3 months), (2) optimal medication dosing and timing during the day, (3) signs and symptoms of recurrent/progressive clotting, and (4) risks of anticoagulant therapy.

The first 3 months of anticoagulant therapy hold significant weight regarding the risk versus benefit of therapy. Most anticoagulant-related bleeding events occur within the first 90 days of therapy. Thus, waiting to involve a hematologist for 3 to 6 months when the patient is finally seen for outpatient follow-up could be too late to provide that crucial education. The same applies for the first 3 months being the highest-risk time for recurrent events.

Dr. Vedantham: Dr. Kavali, what barriers might exist in fielding a DVT response team, and how do they differ from PE? What infrastructure might be helpful in overcoming them?

Dr. Kavali: One of the major barriers could be a perceived lack of urgency of DVT when compared to PE. Whereas a PE can present as a life-threatening condition with shortness of breath, hemodynamic compromise, or sudden cardiac arrest requiring more urgent/emergent interventions, patients with DVT may not necessarily have an urgent indication for intervention except in cases of phlegmasia cerulea dolens (PCD). However, certain cases of DVT can progress to life-threatening PEs if not assessed properly and in a timely fashion.

Although some DVTs require more immediate and urgent intervention, many acute DVTs confined to the legs may not need any intervention other than initiation of anticoagulation. These patients may not even require admission to the hospital, which is not usually the case with most patients presenting with intermediate- or high-risk PE. However, if there is no streamlined algorithm for patient follow-up, a certain percentage of them may go on to develop PTS. By instituting a DVT response team that can follow these patients after their initial encounter, potential long-term sequelae can be avoided and mitigate further return visits to the emergency department or urgent care center. Having a multidisciplinary team of physicians, nurse coordinators, and research/support staff can ensure the necessary follow-up and even further workup on a nonemergent basis for these patients as needed. Some of these follow-up visits can even be performed through a televisit as opposed to in-person to help account for the volume of patients with DVTs as well. Overall, the infrastructure needed would be similar to what supports a PERT, but with a more selective approach that focuses on complex or high-risk patients.

Dr. Vedantham: Dr. Kavali, what groups of patients might benefit from this type of care model?

Dr. Kavali: Rather than applying the DVT response team model to all DVT cases, focusing on high-risk and complex DVT subtypes ensures that the benefits of coordinated, multidisciplinary care are realized without overburdening the system. These patients stand to gain the most from rapid, expert-driven interventions that can prevent life-threatening or long-term complications. Mobilizing the appropriate resources, including anesthesia support and the on-call teams, in a timely manner can best be accomplished through a streamlined algorithm similar to that used for high-risk PERT and trauma patients. Because of the blueprint that has already been established for these other lines of service, translating it into the care of high-risk DVT patients could be done in a similar manner without constraining the resources of the hospital.

A DVT response team could focus on high-risk DVT cases such as PCD, iliocaval or iliofemoral DVT, or DVT in patients with cancer that may require rapid intervention. An additional group of patients in which a DVT response team model may also benefit is the pediatric population. DVT in children is less common but can occur in those with central venous catheters, certain congenital conditions, or after surgery. Managing DVT in pediatric patients requires specific expertise. The DVT response team, including pediatric specialists, could ensure that anticoagulation is appropriately tailored to a child's age, weight, and specific risk factors while minimizing side effects.

Dr. Vedantham: Dr. Kavali, what types of physicians and other stakeholders should be included in a local DVT response team?

Dr. Kavali: Members of the DVT response team would be similar to a PERT. However, the primary stakeholder in the DVT team might be realigned, with hematology playing a central role, as pulmonology does in the PERT. A DVT response team would also include interventional radiologists, interventional cardiologists, and vascular surgeons to perform catheter-directed therapies/interventions and surgical interventions, depending on institutional preferences.

Of note, support/ancillary staff such as nurse coordinators, research, and quality improvement personnel will also play a key role in the long-term management of these patients. With a collaborative, team-based approach, each specialist can contribute their expertise, ensuring that patients with high-risk or complicated DVTs receive prompt, individualized, high-quality care. This structure also allows for continuous quality improvement, ultimately enhancing patient outcomes.

Dr. Vedantham: Dr. Sanfilippo, what concerns might hematologists have about participating in a DVT response team collaboration, and can they be overcome?

Dr. Sanfilippo: As with any additional care pathway, I believe that the largest concern about participating in a DVT response team is the additional burden of clinical duties. VTE is a common comorbidity, affecting up to 10% to 20% of the population as we age. As with a PERT, the DVT response team would benefit from clear criteria for whom the service would be most helpful. I believe that this would be more difficult for DVT as compared with PE, and the strategy would need to be carefully assessed over time.

Dr. Vedantham: Dr. Sanfilippo, what would be the implications for clinical research?

Dr. Sanfilippo: We have found significant implications for clinical research by collecting data on patients who receive a PERT consult. Thus far, our institutional data alone have allowed us to look at the benefits of time to anticoagulant therapy and benefits of differing treatment strategies; we've also collected data on the confidence of providers in managing VTE. The same questions and lessons learned from PE can be applied to patients with DVT. Furthermore, the PERT has provided an excellent notification system for patients who might be eligible to participate in clinical trials to improve the care of patients with PE. Similarly, a formalized DVT response team could allow for improvements in access and identification of patients eligible for clinical trials to improve the care of DVTs. ■

Disclosures

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