How is venous training best incorporated into the programs of specialties currently treating the disease?

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If venous disease is defined as encompassing all acute and chronic disorders that affect the peripheral and central circulation (excluding the heart and brain), then almost every medical specialty "treats" venous disease. Whether it is in the area of prophylaxis and treatment of venous thromboembolism (VTE) or spanning the gamut of chronic venous disease (CVD), patients at risk or with disease present to a wide variety of primary and specialty physicians and surgeons. Therefore, answering this important question begs a two-tiered approach that ensures adequate education and basic training for the large contingent of clinical physicians and advanced training for a few select specialties.

Practically all medical specialties that care for patients with acute and chronic illness are in great need of education in venous disease awareness and basic training in acute venous disease prophylaxis and treatment. VTE continues to be a major public health problem with an annual incidence of 1.17 per 1,000 lives. This translates into approximately 350,000 Americans afflicted with acute venous disease and from this, an estimated mortality of 100,000 per year. Additionally, it is estimated that upwards of 25 million people suffer from some form of CVD, ranging from varicose veins to stasis ulcers. Early recognition and referral to the appropriate advanced specialty remains paramount for all clinical physicians.

Given the burden of venous disease and its high mortality and morbidity, medical schools need to incorporate ample time to this area during all 4 years. Currently, and in striking contrast to the burden of this disease, most, if not all, medical schools dedicate very little to this topic. To aid in developing these curriculums, ample evidence-based guidelines are available. Most notably, this includes the American College of Chest Physicians guidelines[1] for antithrombotic therapy for VTE. Additionally, for physicians and surgeons caring for acute and chronic illness of all types, their graduate medical education should also regularly incorporate increased education on venous disease awareness as well as prevention and basic treatment of VTE on a biannual basis.

To ensure that physicians are receiving such training, residency review committees should closely track curriculums and venous disease patient case numbers. Respective specialty boards should include this topic for testing the knowledge base for basic venous disease. One could also envision that such "basic" training paradigms could be shared among specialties. Whether it is the specialty of family medicine or that of urology, an in-depth collaborative educational effort across all clinical specialties will ensure better care and ultimately save lives.

There are three specialties that should provide advanced care in venous disease, and as such, their residency training programs should cover a wider area of disease that is appropriate for their respective programs. These include hematology, vascular medicine, and vascular surgery. There are other specialties, such as

cardiology, interventional radiology, phlebology, wound care, and dermatology, that provide focused venous care for advanced problems. Suffice it to say, however, for the majority of clinicians in these respective specialties, a full range of advanced venous disease treatment is not provided. How these specialties fit into the care of advanced venous disease remains controversial given the wide array of training necessary, how this training is obtained, and how assurances are made by testing that knowledge is uniformly acquired and safely practiced.

Likewise, considerable variability currently exists in the advanced training within the residencies of hematology, vascular medicine, and vascular surgery. First and foremost, local, regional, and national leadership, as well as program director groups of these specialties, must put venous disease front and center. For hematology, this involves a much greater emphasis in training for the medical treatment of thrombosis and thrombophilia. For vascular medicine specialists, this involves not only a strong training emphasis on thrombosis and thrombophilia, but also an advanced knowledge base on the evaluation and treatment of CVD with an added emphasis on advanced wound care.

Vascular surgery has always prided itself as representing the specialty that can potentially provide "complete" advanced evaluation and management of all areas of venous disease. The evolution of the specialty has led to the norm of mastery in vascular medicine, endovascular procedures, open vascular operations, life-long patient follow-up, vascular imaging, vascular disease education, and research. Additionally, the specialty of vascular surgery has demonstrated a history of commitment to caring for patients with all types of venous disease. While virtually all vascular surgeons have a solid foundation in caring for patients with venous disorders, there remains some variability in how vascular surgeons offer what might be considered by some venous experts as "complete care."

Similar to the needed training adoptions in hematology and vascular medicine, local, regional, and national leadership, as well as the Association for Program Directors in Vascular Surgery, need to clearly articulate a vision that creates equal balance to training for the evaluation and treatment of arterial disease. The American Board of Vascular Surgery and Residency Review Committee for vascular surgery training programs should ensure that the area of venous disease is receiving the added emphasis needed to train vascular surgeons for advanced care. By moving in this direction, advanced care can be provided as it is expeditiously and appropriately referred from the clinical physicians who have completed "basic" training in venous disease.

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First, we need to identify the specialties that we need to think about. Currently, vein disease is being treated by a myriad of practitioners who have entered the vein arena from many diverse areas. In thinking about this, I divide them into two types: procedure and non–procedure specialties. I think we need to do this because the inherent needs of each are quite different. Procedure-oriented specialties include vascular surgeons, interventional radiologists, interventional cardiologists, general surgeons, and surgical subspecialists. Non–procedure specialties encompass internal medicine and medical subspecialists, dermatologists, cardiologists, etc. If we cross reference procedure and non–procedure types with those that already treat the blood vessels versus those that don't, we can prioritize the order in which we target specific training programs (Table 1). By doing this, vascular surgeons, interventional radiologists, and interventional cardiologists would give us our best return on investment. These specialties are perhaps the first ones that we should direct our efforts toward. This in no way diminishes the importance of the others, but we need to start somewhere. If we look at it this way, we can apply what we learn from our initial efforts to all the others.

The second step is to identify who will be doing the venous disease training. You can't teach anyone anything without a teacher. Seems obvious. Each training program would need to identify a vein disease mentor either from its existing faculty, cultivate a mentor, or bring someone onto the faculty. How this is accomplished would be unique to each training specialty and each training program. This needs to be done no matter how; it is the crucial step. We learn and become interested in something from our teachers.

Once these two requisites are in place, everything else should follow fairly easily. We all realize that surgery and medicine are still very much mentor-oriented. If vein disease is being managed in a training program, then trainees will receive the exposure and experience needed. The inservice and board examinations of these specialties should reflect this. Trainees will need to study and learn for the exams. This is a big impetus. Once each specialty buys into the need for trainees to demonstrate competency in vein disease management,

TABLE 1. PRIORITIZATION OF SUBSPECIALTY TRAINING		
	Procedure-Based Specialties	**Non–Procedure-Based Specialties**
Already treat blood vessels	Vascular surgery Interventional radiology Interventional cardiology	Cardiology Vascular medicine
Do not treat blood vessels	General surgery Anesthesiology OB/GYN	Internal medicine Family practice Dermatology

training programs will enhance their trainees experience in venous disease.

Finally, societies that have a vested interest in vein disease can help and augment a training program's process and content. The ones that have this experience include the American Venous Forum, the Society for Vascular Surgery, the American College of Physicians, the Society of Interventional Radiology, along with interventional cardiology societies. We do not need to limit input to these, but they come to mind first.

In summary, (1) I would first focus on the training programs that are procedure oriented and already treat blood vessels, (2) each training program needs at least one venous mentor (preferably more than one), (3) the boards of these specialties need to incorporate more venous disease in the exams, and (4) relevant societies should assist with their expertise. No plan is perfect, but these are the logical first steps.

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There is little doubt that residency and fellowship training in superficial venous disease is deficient. Vascular surgery, the curriculum of which covers all of vascular disease, has always focused its training on arterial disease. This fact is highlighted in a recent article published on the training experience of vascular surgery fellows.[2] In this study, the mean number of varicose vein procedures performed during fellowship was only seven. Other fellowship programs, such as interventional radiology, have traditionally focused on deep venous interventions and have, until recently, essentially ignored superficial venous disease. An informal survey of interventional radiology programs in New York State confirms this assessment. Of the 13 programs, which constitute 14% of all Accreditation Council for Graduate Medical Education (ACGME)-accredited programs in the United States, only five (38%) have an office where SVI patients are seen and treated. Of these five programs, only three have fellows who spend approximately 20% of their time in these offices. Of these three, only two programs allow their fellows to perform sclerotherapy on patients.

Despite these rather sobering statistics, fellowship exposure to superficial venous insufficiency treatment is improving, as 5 years ago only two of the 13 programs had a suitable vein treatment facility. This change, albeit small, indicates that some progress is being made in incorporating superficial venous treatments into fellowship programs. Other training programs, such as dermatology, cardiology, anesthesiology, and emergency medicine, provide even less exposure to the full complement of venous disease treatments. When phlebology training is viewed in its totality, it is clear that no single specialty provides training that covers the full spectrum of venous disease.

Because no specialty can claim clear ownership of this disease process, it is no surprise that physicians who have chosen to dedicate their careers to the treatment of venous disease hail from so many different specialties.

To remedy the ubiquitous training deficiencies, changes will need to occur in all specialty programs that have venous disease as part of their curriculum. The first step is to expand their existing curriculum and add a comprehensive venous disease-specific component. Having a detailed catalogue of the topics that need to be covered is the only mechanism by which program directors can assess deficiencies and make needed improvements. Recently, a comprehensive core curriculum was created by the American Board of Venous and Lymphatic Medicine. This document was created by experts from many specialties and can serve as an excellent authoritative guide.

Nearly a decade ago, changes in reimbursement motivated clinicians to move superficial venous disease treatment from the hospital to the office setting. As a consequence, nearly all treatment for this disorder is currently office-based. If such an office is not part of a specific training program, it is unlikely that trainees will receive any exposure to this disease process. Having an office facility is essential, and program directors must make certain that such an environment is part of their clinical practice or establish an association with a practice that has one.

To incorporate venous disease into existing training programs, the aforementioned elements are important. However, these changes alone will not always work if the inherent program deficiencies are too great to overcome. In such cases, physicians wishing to treat venous disease

should consider participating in a dedicated phlebology fellowship. Unfortunately, only one such fellowship currently exists, which is at the New York University Vein Center. More of these fellowships will need to be developed to ensure quality training for physicians wishing to treat patients with venous disease. Currently, the American College of Phlebology Foundation is seeking to provide startup funding for such fellowships with the hope of establishing many more.

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In many vascular training programs, the operative management of venous disease was previously relegated to the junior resident, while senior residents and fellows opted for the major arterial procedures that were deemed the "great case." With the advent of office-based and minimally invasive therapies for chronic venous insufficiency and venous thrombotic disorders, this bias appears to be changing. More trainees are astutely recognizing that competence in the treatment of venous disorders is a requirement for an increasing number of job opportunities. In addition, the ability to treat venous disease patients provides a satisfying added dimension to a vascular surgical practice that is usually dominated by arterial pathology. However, ascertaining competence in the treatment of venous disease will require some changes at the level of the governing bodies that organize and mandate training requirements, as well as the individual training institution.

The ACGME has no defined case category for the treatment of venous disease. Instead, major abdominal venous procedures are lumped together with a diverse group of "complex" procedures that include aortic, mesenteric, and peripheral arterial obstructive surgery. Endovenous interventions for stenotic or thrombotic disorders are combined with arterial interventions, and endovenous ablation of the saphenous vein is not even listed under the endovascular therapeutic category. One major step to standardize training in venous disease would be to create a separate, defined category for venous disease and to update the approved procedure list to reflect current surgical practices.

Training in the management of venous disease is not very well standardized at many vascular surgical residencies. If this weren't the case, the "Fellows Course in Venous Disease," sponsored by the American Venous Forum, wouldn't be so popular. In addition, outpatient vein clinics are not universal, and the utilization of advanced endovenous interventions for acute and chronic iliac vein occlusion would be more uniform. There is no universal recipe to improve the integration of venous disease training at the institutional level. However, such efforts should include a multidisciplinary approach by integrating specialists in benign hematology, pulmonary and critical care medicine, and vascular and interventional surgery and radiology. ■

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