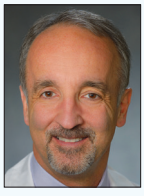
Building a Multidisciplinary Carotid Care Model

Considerations for a collaborative, team-based approach to carotid disease in the modern era, including patient pathways, shared decision-making, and strategies to support optimal outcomes.

With William A. Gray, MD, MSCAI, FACC; Preethi Ramchand, MD; and Vincent M. DiGiovanni, DO



William A. Gray, MD, MSCAI, FACC
System Chief, Cardiovascular Division, Main Line Health; Professor of Medicine, Sidney Kimmel School of Medicine, Thomas Jefferson University
Phillip D. Robinson Endowed Chair in Cardiovascular Medicine
Co-Director, Lankenau Heart
Wynnewood, Pennsylvania

Preethi Ramchand, MD
Division of Endovascular Neurosurgery
Thomas Jefferson University–Main Line Health
Bryn Mawr, Pennsylvania

Vincent M. DiGiovanni, DO
Vascular Surgery, Main Line HealthCare Vascular Specialists
Wynnewood, Pennsylvania

To start, what makes a multidisciplinary care model essential in the modern management of carotid artery disease?

As with most disease states that cross disciplines, we may, by virtue of our training and prior experiences, carry biases that we are unaware of. These manifest in how we counsel patients, our choice of technical and pharmacologic approaches, and the published data we consume. Heart teams—involving cardiac surgeons, interventional cardiologists, imaging specialists, and research personnel, among others—that are dedicated to the optimal care of the structural heart patient have proven to be a rich environment for exchange of ideas and approaches, mutual education regarding tools and techniques, image choices and interpretation, and patient selection. This has almost certainly led to better patient outcomes as well as broader perspectives among the physicians involved.

Carotid disease is a systemic cardiovascular condition with neurologic consequences that, in the modern era, is most effectively managed with coordinated expertise among a number of specialties, including cardiology, vascular surgery, neurology, and neurosurgery, to deliver safe, individualized, and effective care. The multiple approaches to the management of atherosclerotic carotid bifurcation disease have, for all practical purposes, reached parity in many of the patients we treat; however, there are still important distinctions to be made in certain clinical and anatomic scenarios, and a collaborative carotid team can work through the applicable nuances to arrive at a rank order of recommendations for each unique patient situation.

The opportunity to consider varying patient factors and plaque anatomy in a "no-fault" venue allows us to offer innovative solutions to complex problems that may not have been considered prior and prevents "tunnel vision" treatment methodology, wherein one therapy is most selected due to operator familiarity. Surgical and endovascular therapies for cervical

carotid disease have evolved significantly over the last decade. To minimize risk and achieve optimal patient outcomes, we must consider all available technologies.

How would you define a carotid center of excellence in 2026?

The key elements of a carotid center of excellence would include a multidisciplinary team; multiple available high-quality, accredited imaging modalities; skilled operators; state-of-the art equipment; participation in data collection, quality metrics (such as Vascular Quality Initiative), and regular peer review; and a robust research program.

A vital component to an effective carotid center of excellence team is transparency. By having all disciplines with carotid privileges available for discussion, we hopefully ensure a comprehensive, evidence-based approach to patient selection and procedural management.

Which specialties comprise the multidisciplinary team at Main Line Health (MLH)'s Lankenau location? How has this evolved in recent years?

The Centers for Medicare & Medicaid Services (CMS) National Coverage Determination made transfemoral carotid artery stenting (TF-CAS) available to all appropriate patients without restriction, and the results of the CREST-2 study[1] gave more clarity regarding the management of the asymptomatic patient and demonstrated excellent outcomes with both TF-CAS and carotid endarterectomy (CEA). Combined, these two events seemed to have encouraged a natural evolution toward creating a multidisciplinary team, and we are just in our early experience. All specialties across multiple campuses who are involved with the management of carotid disease are invited to join and participate in our carotid team, including vascular surgery, neurointensive care/neurointervention, and cardiology. If/when we hire a vascular medicine physician in the future, they will be invited as well!

Can you walk us through a carotid patient experience, from diagnosis to treatment? What are the key touch points in brief?

Typically, a patient would be identified as having a carotid stenosis by virtue of a bruit detected on physical exam, which would then prompt testing; a prior neurologic event; or screening in an at-risk population. So, the physician at that first touch point may vary depending on clinical presentation.

Next stop: diagnostic imaging. The first test of choice is carotid Doppler. Depending on those results and treatment considerations, a CTA may follow (for those considered for TF-CAS, CMS mandates a CTA, except in patients with a contraindication).

A referral would then be made to a carotid specialist: vascular surgeon, cardiologist, interventional radiologist, neurointerventionalist, neurosurgeon, interventional neurologist, or vascular medicine physician. Next is an office visit to discuss the four options—CEA, CAS, transcarotid artery revascularization (TCAR), and medical therapy—and it is here where a shared decision ethos needs to be followed. That is, the physician should come to understand the patient's goals and tolerance for risk (ie, immediate [in the form of an operation or procedure] or deferred [in the form of medical therapy]), and the risks/benefits of each procedure based on the patient's age and comorbidities (medical and anatomic) should be detailed. Then, an impartial recommendation should follow. If the recommended option is not in the practitioner's armamentarium, a referral should be made to one who performs it well. So, there may be another office visit. Once the patient has undergone the procedure, there will be follow-up visits, imaging, and visits to the pharmacy.

On a 50/50 call, how do you engage with the patient and inform them of their options without biasing their ability to voice a preference?

Because the majority of patients will be well served by any one of the three treatment options, the 50/50 calls should be only a minority of the patients. When it does occur, this is where a multidisciplinary team can be very useful, possibly in both helping with perspective and inputs, and in giving the patient (and physician) confidence that the ultimate recommendation has been well vetted.

Tough question—Who "owns" the patient? For example, if the interventional cardiologist and vascular surgeon disagree on the optimal therapy and the patient has no preference, how should therapy be decided?

Although multidisciplinary team referrals may become commonplace, the primary responsibility for intervention should remain with the referring proceduralist. However, if a proposed therapy is not in the patient's best interest, there must be a mechanism for further review.

Clear accountability boundaries and a formal protocol for resolving specialist disagreements are essential for effective multidisciplinary management.

(Continued on page 56)

(Continued from page 45)

How does MLH approach training and ensuring optimal skills for all operators offering carotid revascularization through either TF-CAS or TCAR? And, for CEA?

MLH has credentialing criteria for initial privileges when someone comes on staff, and we have quarterly outcome reviews within the cardiovascular section. Happily, we have highly skilled operators with excellent outcomes, but should there be any recurrent issues with an operator, we have resolution pathways that assure patient safety through training, observation, etc.

In a real-world setting, how might day-to-day staffing affect decisions on therapy choice?

Admittedly, individual bias based on specialty or procedural familiarity may be present in a team-based approach. Ideally, this would be mitigated through redundancy, ensuring multiple representatives from each specialty are present to provide a balanced perspective. ■

1. Brott TG, Howard G, Lal BK, et al; CREST-2 Investigators. Medical management and revascularization for asymptomatic carotid stenosis. N Engl J Med. 2026;39:219-231. doi: 10.1056/NEJMoa2508800

Disclosures
Dr. Gray: Consultant to Contego, Medtronic, Boston Scientific, InspireMD, Cordis, Shockwave, Philips, ReValve, Edwards LifeSciences, Perdix, VivaSure, and Conformal.
Dr. Ramchand: None.
Dr. DiGiovanni: Consultant to Endologix and Cagent.