# Developing a pAVF Program: Translating the Updated SIR Guidance Into Practice

A discussion highlighting the importance of setting expectations around maturation, multidisciplinary communication, dialysis center engagement, and coordinated follow-up to support long-term access functionality.

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In December 2025, representatives from the Society of Interventional Radiology (SIR) published consensus recommendations for the creation and maturation of percutaneous arteriovenous fistula (pAVF).[1] This practice guidance document outlines best practices for developing a successful pAVF program, highlighting patient selection, procedural techniques, adverse event management, follow-up care, and reimbursement considerations.

## Can you tell us about the conversations that spurred the need for this guidance? Why was it the right time to publish a consensus document?

We heard that some interventional radiologists (IRs) who were already creating pAVFs were looking for guidance regarding best practices, while other IRs were interested in initiating a pAVF program. It seemed that a pAVF practice guidance document was needed.

As for timing, there really wasn't a "right" time to develop the pAVF practice guidance document given the shifting landscape of creating pAVFs. When we started, two systems were available: WavelinQ (BD Interventional) and Ellipsys (formerly Medtronic). As we were completing the guidance document, Medtronic announced that the Ellipsys would be discontinued. After

the pAVF practice guidance document was published, it was announced that the Ellipsys would return, marketed by Ellipsys Medical, Inc. Regardless of the number of available devices, the SIR's pAVF practice guidance document covers most aspects that can help IRs develop successful pAVF programs.

**While the document provides comprehensive procedural guidance and troubleshooting, the primary framing is specifically on pAVF as a program. Why was that distinction important to emphasize in the guidance?**

Both the WavelinQ and Ellipsys procedures have a very high rate of successful AVF creation, but many of these fistulas cannot be used for hemodialysis due to inadequate flow or problems with cannulation. Many patients require close follow-up and subsequent procedures to make their pAVF functional for hemodialysis, hence the need for a program that can evaluate and counsel patients beforehand, as well as follow patients after their initial pAVF creation procedure.

**What are the essential characteristics of a successful pAVF program, and what does effective longitudinal care look like in practice?**

After the patient has been evaluated and counseled regarding creation and maintenance of a pAVF and following successful pAVF creation, the physician who created the pAVF must ensure that the fistula is functional for hemodialysis. Often, this requires communication with the dialysis unit and follow-up clinic visits with duplex ultrasound studies of the fistula, which often leads to subsequent procedures. When there is excessive deep venous flow, anastomotic or perforating vein stenosis, or excessive basilic venous flow, the interventionalist should address these problems until the pAVF is suitable for successful cannulation and hemodialysis.

**How is the ideal pAVF patient defined today, and what patient or anatomic characteristics most strongly predict successful maturation versus failure?**

The ideal patient would not be a candidate for a wrist fistula (radiocephalic AVF), which is the preferred initial permanent arteriovenous (AV) access for most patients with end-stage renal disease. When a wrist fistula is not possible, creation of a pAVF requires a good perforating vein that communicates between the deep veins of the upper forearm and patent superficial veins of the upper arm (cephalic and basilic veins). Calcified arteries, atherosclerotic arteries with stenotic or occluded segments, and ipsilateral thoracic central venous obstruction are all relative contraindications. There are some additional anatomic arterial and venous parameters that are needed to create a pAVF, which are discussed in the pAVF practice guidance document.

Prediction of maturation is never certain, although a pAVF has a higher likelihood of developing adequately for cannulation and successful hemodialysis when the initial flow rate through the fistula is good.

**What parts of the pAVF learning curve take the longest to master? What advice would you share with physicians performing their first cases?**

Most interventionalists will not have much problem learning the procedural aspects of pAVF creation. The WavelinQ device requires ultrasound-guided cannulation of small arteries and veins, and proper alignment of the arterial and venous catheters is essential. The Ellipsys device requires meticulous ultrasound-guided advancement of the initial puncture needle down the perforating vein and into the proximal radial artery, avoiding inadvertent needle injury of the perforating vein. Troubleshooting inadequate pAVF flow and cannulation problems require the most time to master. There is a flow chart in the pAVF practice guidance document that addresses most of the problems that cause pAVF immaturity, as well as techniques to address those problems.

**How do you approach educating dialysis staff on pAVF cannulation? What are some best practices for a strong cannulation training program?**

A pAVF that can be easily palpated and has adequate size and flow volume should not require much, if any, cannulation education at the dialysis unit. However, if the pAVF has split outflow into the cephalic and basilic veins, low flow, or is somewhat small or deep, then either the pAVF needs further intervention or there should be some cannulation guidance at the dialysis unit. Who provides education and guidance? This remains a complicated issue, although it is ultimately the interventionalist who created the pAVF who should draw upon resources to ensure successful cannulation.

**Despite strong clinical potential, adoption of pAVF has remained slower than many anticipated. What have been the biggest barriers preventing broader integration into routine dialysis access care?**

Initial enthusiasm creating pAVFs was tempered by the reality that many pAVFs were not ready for cannulation after a few months and required ongoing clinical assessment and secondary procedures, hence the need for a "program" that many interventionalists hadn't

anticipated. This required additional time and resources. There were also issues at the dialysis unit, where many pAVFs could not be easily cannulated, sometimes requiring unconventional approaches, like split cannulation of the cephalic and basilic veins near the antecubital fossa. This required training of cannulators, which was challenging, especially given the high turnover of staff at many dialysis units. At many sites, there was resistance to acceptance of pAVFs by both interventionalists and staff at the dialysis unit. Finally, with the initial FDA clearance of both devices in 2018, reimbursement was uncertain, although this has since been resolved.

**The guidance emphasizes that pAVF creation requires multidisciplinary coordination. What communication strategies are important when building relationships with nephrologists, dialysis centers, and AV access surgeons?**

Referrals for pAVF creation come from nephrologists, so collaboration and effective communication is essential. Referring nephrologists (and patients) should be made aware that it may take more than one procedure to achieve a functional pAVF. Many patients may not be suitable for creation of a pAVF, so referral to an access surgeon helps expedite creation of permanent AV access. Finally, and perhaps most important, there needs to be two-way communication between the physician who created the pAVF and the dialysis unit so that successful cannulation can be assured.

**Looking back at the early years of pAVF implementation, what lessons from the initial adoption phase should the field carry forward as technologies evolve and newer devices enter (or return to) the market? Where do you see pAVF fitting into dialysis access over the next 5 years?**

Some lessons learned:

1. Not all patients are suitable for a pAVF, and surgical AV access creation isn't going away.
2. When suitable, creation of a pAVF is only the first step for many patients. The referring nephrologist and patient should understand that it may take additional work before the pAVF is functional for hemodialysis.
3. Close clinical follow-up is essential to identify and treat an immature pAVF.
4. Most immature pAVFs can be made functional after subsequent interventions.
5. Creation of pAVFs is not dead but evolving; there are a number of successful IR-run pAVF programs that continue to make functional pAVFs.

While the future of pAVF creation is not guaranteed, the return of the Ellipsys will likely stabilize programs that use this device. Perhaps some new sites will start to create pAVFs as well. More good news may be on the horizon. A multicenter investigational device exemption (IDE) trial evaluating a second-generation pAVF device (Velocity; Venova Medical) is ongoing. It uses a small fenestrated implant to create the pAVF and shows promise in creating pAVFs free from deep venous flow and anastomotic stenosis. If the benefits of this device are shown in the IDE trial, pAVF creation may revert to being a procedure with much less emphasis on clinical follow-up and subsequent interventions. This may make pAVF creation even more attractive to patients, nephrologists, and interventionalists. Time will tell. ■

1. Dolmatch BL, Gunn AJ, Arslan B, et al. A Society of Interventional Radiology practice guidance document on percutaneous arteriovenous fistulae for dialysis access. J Vasc Interv Radiol. 2025;36:1945–1957.e2. doi: 10.1016/j.jvir.2025.08.019

*Disclosures*
*Dr. Dolmatch: Consultant to and receives honoraria from Merit Medical Systems, Inc. and Becton, Dickinson and Company; receives royalties from Merit Medical Systems, Inc.; patent issued and assigned to Merit Medical Systems, Inc.; clinical events committee for Boston Scientific Corporation; stock options in Alio Ai and Venova Medical; purchased stock in Merit Medical Systems, Inc.*
*Dr. Gunn: None.*
*Dr. Wilkins: None.*