

EDITOR'S PAGE



A Year to Learn it All

It Is the Basics



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*I periodically receive letters from fellows.
This one expresses advice from a fellow doing
advanced training in interventional cardiology.
I feel it is worth sharing.*

—Spencer B. King III, MD

A year to learn it all. Come July 1, it is the quintessence of more than 50 years of catheterization knowledge that interventional fellows-in-training (iFIT) are expected to assimilate, and to do so fairly rapidly (1). Looking at it from afar, the spectrum seems comprehensive and daunting. It starts with access and its myriad of idiosyncrasies: radial versus ulnar versus femoral; landmark-based versus fluoroscopy assistance versus ultrasound guidance; micropuncture versus large-bore needle, etc. Then come catheter choices and manipulation techniques for engaging the coronaries: Judkins versus Amplatz; French size; and curve design, to mention a few. Wire selection follows: highly functioning iFIT are expected to familiarize themselves with the respective “workhorse” wires of the various operators as well as learning the various “niche” wires (extreme vessel angulation or tortuosity, chronic total occlusion, saphenous vein grafts and distal embolization protection devices, etc.). Understandably, each wire (or category of) has its own wiring technique to be mastered. Troubleshooting techniques (guidelines, wiggle wire, and so on) for difficult situations (catheter backing out, lack of support, balloon or stent not crossing, and so on) come next. Balloon and stent selection, as well as sizing and deployment gestalt, are major items on the list as well.

The expectations are not limited to the aforementioned competencies. Today's iFIT is asked to

develop an in-depth understanding and familiarity with intracoronary assessment such as fractional flow reserve testing and intravascular imaging modalities. With the advent of novel oral antiplatelet options and novel oral anticoagulants, pharmacology has added on a layer of complexity. Where mechanical circulatory support used to be limited to intra-aortic balloon pump placement, today's iFIT has to master the art of right- and left-sided percutaneous devices, ventricular assist devices, and extracorporeal membrane oxygenation platforms. Along with post-procedure preferences, from closure device use to hemostasis protocols, it is imperative for today's iFIT to learn and achieve a minimum proficiency in peripheral interventions, at least arterial ones, and to achieve a minimum of exposure to structural interventions, from “simple” procedures such as patent foramen ovale and atrial septal defects closure to transcatheter valve therapies. Depending on their general cardiology programs, iFIT have had a variable level of hands on experience, exposure, and volume of procedures. Those who stayed at the same institution for their interventional training have the advantage of familiarity with system-based processes and procedures. They are also known to the faculty, which makes it easier for the latter to trust them with a “hands on” role and grant them added autonomy. Nevertheless, the task at hand still appears challenging, especially while keeping a continuity clinic experience and a semblance of a social and personal life.

The biggest mistake is to look at this conundrum from this perspective. It is true that the field of interventional cardiology has expanded since the time of Dr. Sones and now encompasses the vast spectrum that was just described (2). However, in many ways, all are extensions of a few core tenets of interventional cardiology we will call “the basics” for the sake of clarity. For example, when it comes to access, it is an understanding that the modified

Seldinger technique will be applied, with a goal to puncture the artery once and be successful from the first attempt. Indeed, failed access or complications of puncture attempts can lead to postponing the intervention or jeopardizing its success. Taking into account the importance of relative distance from the bony landmarks in the wrist or the inguinal ligament in the groin, the rest become variations of a main concept that will become familiar with repetition. The same applies for catheters and their manipulation. It starts with a clear awareness of the 3-dimensional structure of the heart and its vessels, the relation of the camera's position and the depicted display, and a grasp of Newtonian physics with the simple rule that for every action there is a reaction. Once this is established, the outcome of pulling or pushing a catheter or rotating it clockwise or counterclockwise makes sense and becomes more intuitive. Wiring does not depart from this paradigm. It is an understanding of the balance between stiffness and malleability, ease of manipulation and support, and most importantly, the principle of "action-reaction" in series between the wire, the balloon or stent, and the guide catheter. With this framework in mind, it is then much easier to understand the subtleties of the various tools and what each brings to the table for various situations. Understandably, a great deal of these concepts is translated into the peripheral and structural fields.

The goal ultimately is for the iFIT to adopt their workhorse tools of choice, namely 3 or 4 catheters, 2 or 3 wires, and their technique of choice for both radial and femoral access. This is best achieved by maximizing exposure, a mission that will test the iFIT's fabric. Regardless of the iFIT's program's volume and structure, a smart course of action is to start with what got the trainees in their position in the first place: work hard; round conscientiously on their patients; come well prepared to all cases with previous films reviewed (when available); get familiar with the cath lab; and focus on performing as well as possible every second of every hour of every day. Working with as many operators as possible, as challenging as it can be with regard to developing a routine with any given one, provides the chance to learn from different training backgrounds and varied techniques. The truth is that nothing will be achieved without the proper attitude, but at the end of the day, when the task at hand seems overwhelming, the smart thing to do is to strip it down to its basic principle, and next thing you know, it is not that insurmountable any more. In a nutshell, it's the basics.

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