How Much of an Impact Does Your Cath Lab Staff Have on Device Selection?

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It is common knowledge that working in the cath lab is a team sport. The physicians and fellow operators work with and depend on the staff (RNs, LVNs, RTs, RCISs, CVTs, etc.). All of us benefit from the experience of the team, both collectively and individually. The experience and collaboration contribute to safe operations and good outcomes. In our lab, while we are teaching fellows how to do cath, we often confer with our scrub/cardiovascular technologists on various questions that come up during a case. For example, how should I treat a challenging calcified lesion? Rotablator (Boston Scientific) or intravascular lithotripsy (IVL)? Both? Neither? Given the subtleties of the angiogram, I might ask my colleague (Dr. Seto) as well as our staff which approach they think might be better. Many technologists have vast experience from their work at other hospitals and call time outside our Veterans Affairs (VA) hospital. Their experience can be greater than the physicians' in some circumstances, especially at a small hospital. While the attending physician is the captain of the ship and ultimately responsible for all clinical decisions in the lab, it is reassuring and helpful to receive input from the staff on these tricky situations.

Equipment Selection

How strong is the impact of the staff on physician device selection? This question is hard to answer. From the beginning of interventional cardiology, there have been parallel educational tracks directed not only at physicians, but also at the cath lab staff. These educational conferences, symposia, and joint interventional meetings, mostly sponsored by industry, were conducted with the thought that an informed staff would improve job satisfaction, improve procedural flow with knowledgeable personnel, and help the physician make good decisions, potentially helping select the best device for the task at hand (maybe their company's device).

Several years ago, a few colleagues and I worked on a series of 'Cath Lab Basics' conferences for the lab staff sponsored at varying points by the Society for Cardiovascular Angiography and Interventions (SCAI), HMP (publisher of *Cath Lab Digest*), or our affiliate, the University of California Irvine. These workshop conferences ended over 10 years ago. I felt that these dedicated conferences provided a unique source of teaching for the cath lab nurses/technologists, and directly promoted the goals of the SCAI, American College of Cardiology, Cardiovascular Credentialing International (CCI), and professional nursing societies for continuing education to make our labs better, increase the quality of the work experience, and help operators and their teams make good decisions. In recent years, these types of meetings have fallen by the wayside. It seems harder today to get industry excited enough to sponsor such courses.

A couple questions were raised when I discussed this issue with my colleague Dr. Arnold Seto, chief of interventional cardiology at the VA Long Beach. I asked him, how much input do you take from the cath lab staff on your choice of equipment? How do you think the industry views the importance of an educated cath lab staff on device/pharma selection? Do you think industry sees our lab staff the way we do in terms of collaborative input?

Arnold Seto, VA Long Beach, Calif.: The cath lab staff can often be the most experienced people in the room. For every year that a technologist and nurse spend in the cath lab, they will accumulate somewhere between 5-10 times as much case experience as the physician does in the same period. Just as importantly, they will have watched how other operators at the facility would approach a case, and witnessed whether a particular strategy was successful or not.

As in other forms of leadership, the smart physician operator benefits from listening to the collective wisdom of his or her team. Several times my staff have rightfully talked me out of Rotablating a small vessel lesion or helped me with a chronic total occlusion (CTO) case. This is not automatic, however, as staff are more accustomed to saying nothing when they work with their private practice operators. By asking them what they think about a particular case, I communicate that I respect their opinion, and want them to speak up. In a worst-case scenario, if an operator yells at a staff member who speaks up, then that staff won't speak up in time when the catheter shows damping, the blood pressure starts dropping, or the patient starts to code.

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In terms of device selection, the staff do have input into what devices we stock in the lab and when they are used. We have multiple thrombus aspiration catheters and support devices, and our staff will volunteer which one they think would be appropriate for a patient or will offer to set up a device. Understandably, a staff member who asks the operator whether they would like him/her to set up a balloon pump naturally gets a better response than someone who directly tells the operator, "You should put in a balloon pump."

Industry, since they are no longer sponsoring dedicated conferences, probably underestimates the importance of training the cath lab staff. Industry representatives are performing in-services of their equipment, of course, and with the increasing financial pressures on the device industry, that function may be the most we can expect from them.

Bonnie Weiner, Worchester, Massachusetts: This is not a simple issue. I think we would all agree that a collaborative relationship with staff is important. I also think we can't ignore the increases in turnover so that the experience of the staff and their confidence in speaking up has decreased over time. We also must recognize that in some states (like Massachusetts), roles are highly siloed so that no one may have the overall view of what is going on during a case and therefore may not be able to make suggestions.

We should make sure the staff knows that their input is valuable and encouraged. We also need to make sure that we educate them before, during, and after cases, as well as from an overall standpoint. No matter their role, they should be aware of all aspects of the case and speak up not only when asked, but when they see something that is outside of the norm or unexpected.

Mort Kern, Long Beach, Calif.: There have been many occasions when I asked my tech whether to proceed/stop/regroup/call Dr. Seto/call my mother (JK). Having confidence in the experience of the techs will go a

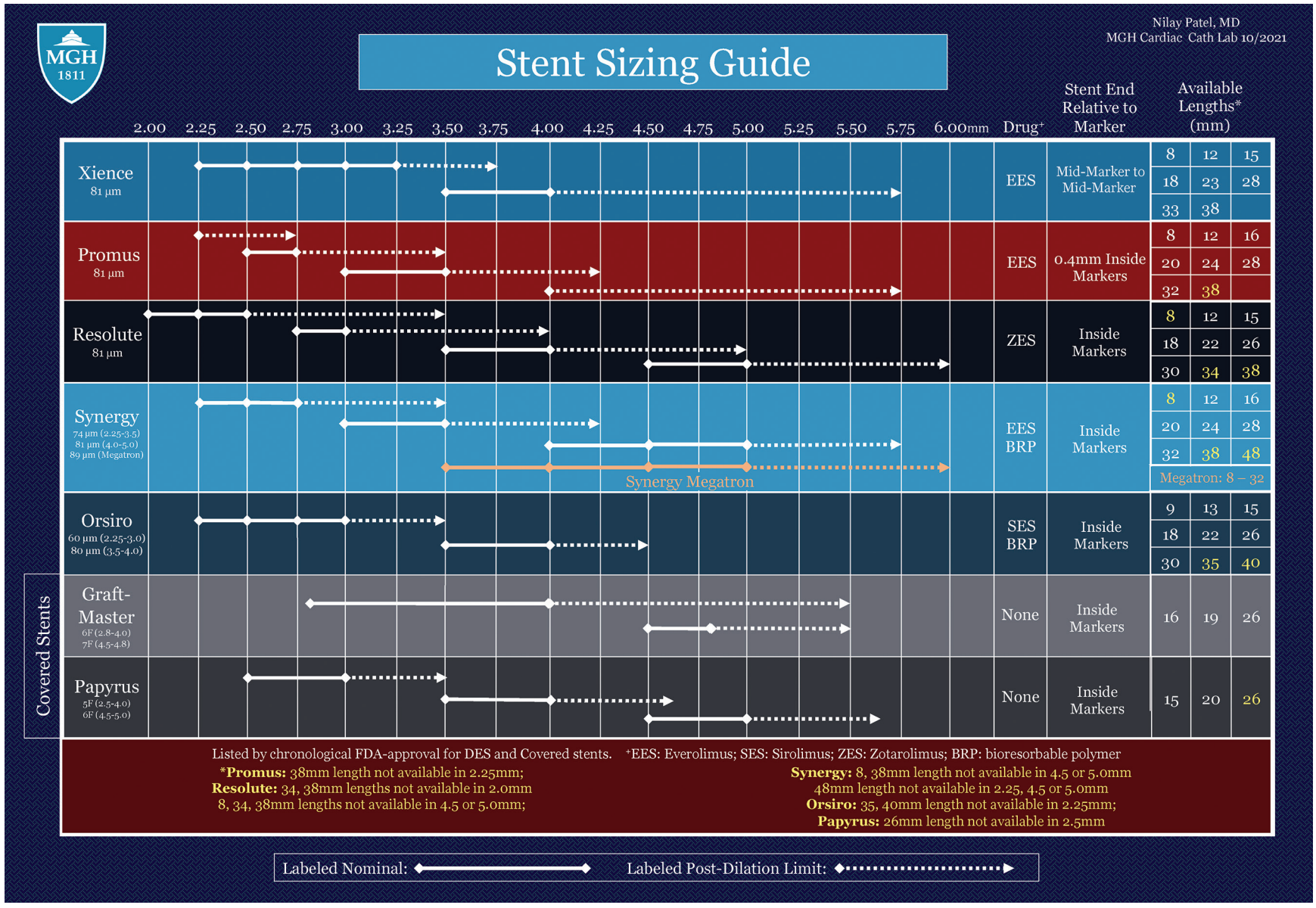

Figure 1. ***Image reproduced with permission from Dr. Nilay Patel, Boston, Massachusetts.***

long way to reassure one's own decisions and be comfortable with some difficult choices.

I think device selection is less important than receiving good advice from an experienced tech/RN. Does it really matter which brand of stent you are using? In this era, it is probably not as critical as whether left ventricular (LV) support, thrombectomy, or intravascular ultrasound (IVUS) or optical coherence tomography (OCT) is used, or when to stop after your last high-pressure balloon inflation in that calcified vessel. Of course, physician judgement, in the end, is the guiding force, but it never hurts to have input when it is needed. Regarding the industry's view of the cath lab staff's impact on device selection, there are several physician-specific, clinical, and procedure-specific factors involved in device selection, the least of which is which company buys lunch.

Jim Blankenship, Scottsdale, Arizona: I think this is an interesting question. Several comments, but first an anecdote. A few years ago, I asked my cath lab team, "When I ask for a 2.5 x 18 drug-eluting stent (DES), how do you decide which of the 3 brands we carry to pull off the shelf?" The unfiltered answer from one of our techs was, "The one with the prettiest packaging."

As to how much influence cath lab staff have on the equipment we use, I see several scenarios:

1. Planned scenarios, such as which type of transcatheter aortic valve to use. Obviously, staff have no choice.
2. When specific equipment is needed and the lab only stocks one brand, so if you ask for an aspiration or an IVL catheter, there is no choice involved about brand.
3. When operator preference is definite, such as rotational versus orbital atherectomy. For a tortuous calcified lesion, I will ask for a specific (unnamed) brand, since I think it crosses more easily than others. Price is another determinant affecting my decisions, but staff usually have no idea about the cost of items.
4. At the other extreme, when any brand will do, I will specify caliber and length, and let the techs decide.
5. Finally, occasionally in a tough spot, I ask the techs for ideas, and they will suggest a piece of equipment (eg, a specialty wire), usually after seeing it used successfully by another operator. Sometimes these suggestions are very useful.

David Cox, Charlotte, North Carolina: Jim, I m a bit surprised by this and maybe I'm just being stupid. But as far as I know...if you ask for a 2.5/18 mm, the only device that comes in 18 mm is made by Abbott. Ditto for asking for a 22 v 24 v 26 or 32 v 33 mm device — often company specific. What am I missing here? If you ask for an 18..., aren't you going to get a Xience (Abbott)? Synergy (Boston Scientific) doesn't come in 18 mm.

I think industry-sponsored 'educational' sessions for cath lab staff are on thin ice. I am a strong believer in cath lab staff education and open to discussion, but you have the CON. You call the ball. Every cath lab used to have a senior staff member or two who would give a very worthwhile suggestion in the middle of a difficult case. Those people, in my experience, have faded into the ether and no longer exist.

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Peter Ver Lee, Bangor, Maine: Most of my staff ask me specifically what I want. They know my preference for guide and workhorse wire. For CTOs, they come to me asking for my "laundry list" for equipment. We have contracts that favor one vendor for balloons and another contract for stents. Most of us use these contracted balloons and stents. The one item that may change during a case is the guidewire. And the more experienced techs will often suggest to the interventional cardiologists which wire to try if a workhorse isn't working. It's reassuring to me when they do this. It shows me they are paying attention.

Kirk Garratt, Newark, Delaware: I don't remember ever asking a tech or RN to make a device choice for me, but we've all worked with folks (mostly techs in my experience) who saved the day with some great idea that we didn't think of. I feel those people got their wisdom by being engaged in what was happening in the lab every day, not from lunch-and-learns with manufacturers. Seems like there are fewer tech/RN sages around now, but they're not extinct, and we can help develop them. Most lab nurses and techs like learning, and they love to learn from interventionalists. Most go crazy if you sit for 10 minutes and go through a tough case. We should own that, not the companies.

David Rizik, Scottsdale, Arizona: To the question as to how much input the lab staff has: the answer is "ZERO." If you are performing interventional procedures, and you are not the smartest, most informed person in the room as to the equipment choices, I see that as a significant problem. Conversely, if you were on the table and the interventional cardiologist was asking a nurse/tech for equipment counsel, might you be a little concerned?

Douglas Drachman, Boston, Massachusetts: Great discussion! I strongly believe in the wisdom of our cardiovascular team members. While we as attendings, by definition, work in our own rooms every day, the nurses and technologists work with us — as well as with our colleagues — on a regular basis. In a sense, their "cross pollination" may allow them to see and learn from the varied approaches within our lab, and share the varied perspectives and approaches that have been successful in a given scenario. We are always learning, including from our colleagues; and team-based insights help to foster this collaborative perspective.

In response to David [Cox]'s comment, and appropriate to equipment selection that may transcend the brand/manufacturer, we use a very handy Stent Sizing Guide (Figure 1) that our talented colleague at Massachusetts General Hospital, Dr. Nilay Patel, developed and has updated within the past few years. The chart indicates all available sizes of stents, including diameter, length, and post-dilatation size limit. We have it posted in every room in our lab. We (and our technologists) refer to it frequently to consider appropriate stent selection based on these parameters, although of course there are many additional factors that influence how we make decisions about which devices to use in each situation.

Neal Kleiman, Houston, Texas: We generally take our cath lab staff's input very seriously. Each of us has personal preferences, but we have some very astute and experienced cath lab staff who have seen a broad spectrum of equipment used by different operators and frequently can come up with fresh ideas when we are struggling or grinding our teeth. Truthfully, I don't think that industry takes their role seriously enough (although the x-ray vendors are very good about educating them), but I'm kind of glad that's the case, because I think that for the most part the representatives' influence on them is surprisingly minimal.

Mitchell W. Krucoff, Raleigh, North Carolina: Respectfully, David [Rizik], I strongly disagree. As the principal operator, it is your job to make the final decision one way or the other – à la military style chain of command, it is the cath lab staffing structure. But Kirk Garratt's comment is also in this chain, and I agree completely: I consider the scrubbed staff, fellow, circulating and control room staff all to be the epitome of what I call at the table "four hands and one mind." In a complex case, any one on the team may have a great idea — for a device solution, for patient comfort, for a reminder that it might be time to re-check the activated clotting time (ACT)...anything relevant to the conduct and/or outcome of the case.

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Understanding that I am open to suggestions and in fact expect the staff to stay engaged with what is going on and to contribute their thoughts along the way is more interesting for all, more educational for all, and contributes in many ways to patient experience and outcomes, from their compassion to the most technical challenges.

Cath Lab Staff as the Patient's Safety Net

We do not often think about the critical role of the staff as the patient's safety net for the procedure. Before the cath, the staff performs a patient assessment of the patient's medical history, symptoms, lab data, and diagnostic test results to support the planned procedure. This assessment is crucial in deciding whether a patient with a creatinine of 1.8 mg/dL or a potassium value of 5.7 mEq/L means we should proceed with or defer the procedure. After the procedure, the cath lab staff may provide reminders to the physicians and patient for certain medications, activity levels, and reinforce the discussion of lifestyle changes needed to optimize the patient's outcomes. The cath lab assessments both before and after the procedure are examples of important steps by the lab of forming a safety net for the patient.

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— Mort Kern

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Selecting Best Vascular Access

In our program, we review the patient's indications, exam, labs, and graphics with the team before the procedure. At times, when the patient comes to the lab, we learn that our planned access was stymied by the placement of an IV in the arm we were planning to use. The staff would then call us about what access might be ab acceptable alternative approach. Our fellows learn key points from our team and that working with the nurses/techs improves the procedure and reduces chances of complications.

In-Lab Decision Making

One of the most important roles of the cath lab team is monitoring the patient's condition, the more eyes (ie, knowledgeable observers), the better for patient safety. Many times, the operators are concentrating on the wire position, balloon inflation, or stent placement, during which the staff may inform us that the blood pressure is low, the heart rate is high, there are significant PVCs requiring confirmation/resolution in real-time to forestall any impending catastrophe that may arise. This collaboration and continuous information exchange is part of the routine in every case, and of particular importance for the critically ill patient. The team's timeliness of action is directed at ensuring effective treatments while maximizing patient safety. Everyone in the cath lab is responsible for ensuring patient safety during procedures. Staff input regarding decisions about using appropriate medications, managing contrast media volumes, and responding to any adverse events makes the difference between squeaking by and succeeding with a wide margin of safety.

The Bottom Line

The staff's views impact the quality of the procedure and its outcome, actions that should not be underestimated. Their voices are integral to the entire patient care experience. Their expertise, collaboration, and ability to make and share informed decisions contributes to better patient outcomes and the overall success of cardiac interventions. I hope our professional society and educational arms of our industry partners will help us reinstate the cath lab conferences for our nurses and techs. The cath lab staff's opinions matter. ■