Implications for Remote Access to the Procedure Room: Challenging the Status Quo

What if technology could broaden access to medical expertise and accelerate education and industry collaborations?

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As we are all aware, the COVID-19 pandemic has had a profound effect on all aspects of life and work throughout the world. One of the most talked about "new normal" paradigm shifts is that of remote work, which has been enabled by advancements in telecommunication capabilities. This sudden and broad migration to digital communication is unlikely to be transient, instead representing a unique and potentially disruptive permanent paradigm requiring new methods of communication and connection.

The health care industry historically has been slower than others to adapt to new digital technologies, and in-person interactions are perhaps relied on more heavily than in other industries. Therefore, adopting a remote-based communications strategy may be more challenging for health care than for other industries.

However, as physicians and health care providers, it is our duty and a core value to navigate challenges and ensure the best care for our patients. During the pandemic, it has been especially important to find means to maintain access to our patients with critical limb ischemia, many of whom have progressing wounds and an imminent threat of limb loss. This has resulted in the incorporation of new communication and collaboration technologies to ensure patients are appropriately followed and have access to care when they need it.[1]

Providing appropriate care also depends on interactions and close collaboration with other physicians and with the medical device industry to ensure a continued commitment to improving medical therapies, strategies, and technologies. This is a topic that is personally near and dear to me, as I have spent much of my nearly 30-year career not only treating patients but also educating doctors, working with industry, and contributing to the adoption of new platforms that advance patient care.

To meet the educational challenges of the current COVID-19 environment, I decided earlier this year to add the Avail Procedural Telemedicine™ System (Avail Medsystems) to my workflow to provide remote, real-time, case-based interactions with physician trainees, research staff, and device industry partners. Avail is an end-to-end hardware and software technology platform that streams high-definition video and surgical imaging as well as two-way audio from a procedure room to a remote app accessed on an iPad or laptop computer (Figure 1). What may seem like a small addition to my routine has resulted in a broad paradigm shift, creating an opportunity to expand the interactivity and value of procedural medicine beyond the transactional nature of the typically singular physician-patient relationship. This has provided new efficiencies in collaboration, with a goal to "move the bar" on digital education and accelerate advancements in health care for the benefit of providers and ultimately patients.

Figure 1. The Avail Procedural Telemedicine™ System.

THE RIGHT TECHNOLOGY AT THE RIGHT TIME

As with other technologies added to my routine, the Avail System had to make sense in terms of price, performance, and partnership. Because it is offered with a subscription-based fee model rather than requiring an upfront capital expenditure, the economics of using the Avail System are user-friendly. With an entirely self-contained platform, there is no need for new construction—the console is easily mobile and can be moved and paired to different rooms and various imaging sources regardless of brand. As for partnership, Avail provides technical and training support after onboarding as we grow our case education and teaching opportunities and research portfolio.

However, the performance of the Avail System has been the driving force behind my belief that technology such as this can make profound changes in the evolving digital health care landscape. The Avail System is an excellent broadcasting tool that creates an immersive environment for the operating physician as well as the remote user (Figure 2). With it, I can take any case and broadcast or "live stream" it to physicians or industry partners around the world. The remote party is not just watching the case, they're able to collaborate in a highly interactive environment. The remote user has complete control of the system cameras to highlight the "hands-on" aspects of procedures, as well as multiple digital inputs that capture fluoroscopic and ultrasound video signal. This ability to focus on procedural detail through high-definition cameras that can zoom in on the physician's hands and device use may allow a better end-user experience than actually being in the room. The Avail System also allows two-way interaction between the operating and the remote physician or industry representative viewing the case, not only through audio but also through annotations that can be drawn on the remote iPad and transmitted onto the Avail console monitor in the operating room.

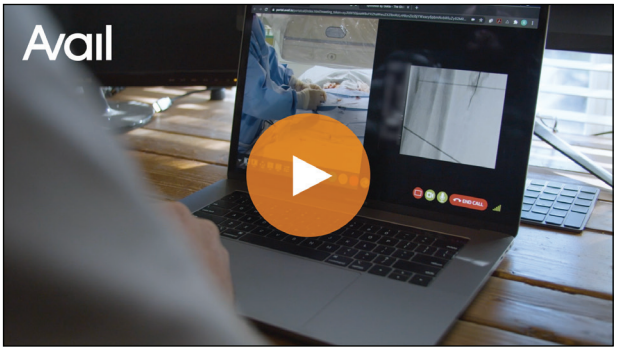

Figure 2. Take a video tour of Avail: info.avail.io/tour

REMOTE ACCESS IS BUILDING THE NEXT GENERATION OF HEALTH CARE

At its most basic level, the act of performing a clinical procedure is very much like a retail interaction with a customer: the patient is a customer receiving a service from a provider. This one retail interaction, although rewarding for the physician and the patient, is limited in breadth and scope. Throughout my career, I've also focused on the idea of a "wholesale" model with the thought that we should be able to take a singular moment or interaction with a patient and expand this into structures that have a more lasting impact on physicians to advance health care forward.

The Avail System allows us to broaden the bandwidth of a single procedure via remote audio and video technology and moves us toward that wholesale model, allowing colleagues and industry to share experiences, product expertise, and surgical or technical skills to facilitate education that will reach beyond the one-to-one patient interaction.

COLLABORATION WITH INDUSTRY

Health care is predicated on medical device innovation, and physicians rely on collaborative relationships with industry for a multitude of reasons. One of the questions I've considered most over the last 9 months is how the device industry is going to navigate through the COVID-19 pandemic and what their needs will be moving forward so they can continue to work closely with physicians. The pandemic has certainly put a spotlight on traditional forms of collaboration involving physicians and medical device experts, particularly around concerns for patients' safety with numerous people in the procedure room, especially in ambulatory surgery centers and office-based laboratories that already face space limitations. However, the pandemic has also accelerated the need for improved collaboration methods, as well as more economically sustainable solutions that can meet the needs of the evolving health care environment. In-person collaboration is costly and very time-consuming, not to mention exhausting and often quite challenging. Imagine the potential for industry representatives to plug in to a procedure remotely without having to be physically present. This means they are able to reduce unnecessary downtime, use their time more efficiently, and broaden support for their customers and products, yet they lose nothing in terms of the quality of the interaction. The Avail System allows remote participants to be part of the procedure without being physically present.

Indeed, with the logistical and cost obstacles removed, that collaboration can be more fruitful. For example, it becomes easier to connect with a representative to give feedback on a new technology and answer usage questions, collaborate during clinical trials, provide postmarket surveillance, work with device engineers to assess clinical

performance, and provide feedback on the real-world use and performance of new technologies. Ultimately, these interactions contribute to the cycle of care by allowing us to help provide the best tools for our patient care.

A DIFFERENT WAY TO EDUCATE

The pandemic has already demonstrated the utility of technology for facilitating virtual conferences, medical meetings, and symposia. The Avail System has facilitated live case broadcasts during several virtual meetings that I've participated in this year. Going forward, when in-person medical meetings resume, will we go back to sending expensive multiperson camera crews into the procedure room to broadcast live cases to the podium when an alternative solution such as Avail can stream a live case seamlessly at the touch of a button? Will we see some people opt-out of the in-person meeting altogether and use the virtual option from home to join the meeting? Although the in-person meeting model is certainly a good way to network and transfer knowledge, it also has its limitations and is now potentially being challenged.

Furthermore, virtual technology and case-based education transcends traditional meeting settings, allowing exposure to trainees who in the past may not have had the opportunity to attend meetings. Avail allows residents, fellows, students, and experienced operators to safely and instantly access the procedure room for ongoing education, and not just at our center but around the world, with the potential to engage with a wider pool of instructors (Figure 3).

Exchanges through the Avail System are fully interactive, with the ability for the remote user to annotate to illustrate learning points and objectives. But, the value-add is really in the ability to broaden the potential reach of the individual physician. It is now possible to visit a colleague demonstrating a novel technique halfway across the world without having to travel. We are entering a new era where trainees are not going to be limited by the knowledge base of their attending faculty. In the end, such a model implies a greater ability and facility to improve patient care, as patients benefit when operators have greater access to cutting-edge techniques. Ultimately, these systems can be used to create a virtual library of case-based learning—imagine the potential for a young physician to select and view expert performance of a specific case before they perform it themselves. More importantly, making education flexible, accessible, video-oriented, and content-focused has been shown to be a more effective way to reach and teach a new generation of learners—today's young and emerging health care providers.[2]

Simply put, we need new ways to connect with each other that maintain an emphasis on collaboration and education. In this respect, the convenience of the Avail System—even in the smallest of procedure rooms—expands the connectivity between people who are dedicated to health care at every level.

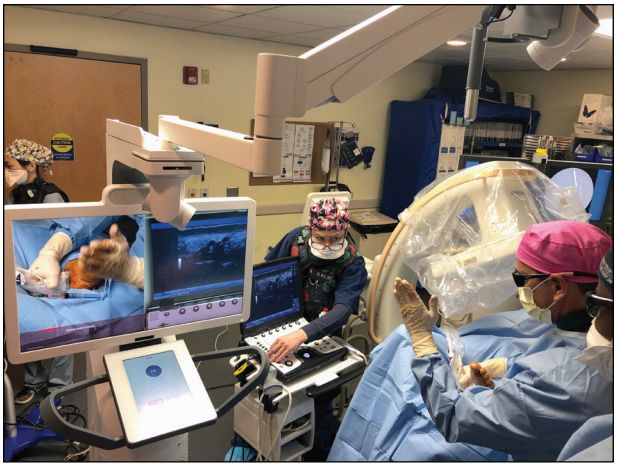

Figure 3. Collaboration via the Avail Console.

CONCLUSION

To a large extent, the advancement of medical care has always relied on the close collaboration of physicians with one another and with industry. The COVID-19 pandemic, and more so a changing world, is challenging how we achieve the access necessary to achieve that goal. The role of technology in our daily lives has grown exponentially over the past decade-plus, in many ways allowing us to be more efficient and productive. Similar inroads are being made in medicine. In this respect, the Avail System delivers a unique way to achieve more vibrant and meaningful peer-to-peer and peer-with-industry partnerships at a faster speed and without the need to travel. More than just a camera in the procedure room, the Avail System represents an opportunity to reimagine your daily workflow as dynamic, multipurpose, educational, and collaborative opportunities. ■

1. Das T, Macpherson N. Ensuring quality in telemedicine for PAD. Endovasc Today. 2020;19:69-72. https://evtoday.com/articles/2020-aug/ensuring-quality-in-telemedicine-for-pad
2. SHIFT eLearning. Training millennials: 7 things you should do right now. Published March 28, 2019. Accessed December 22, 2020. https://www.shiftelearning.com/blog/training-millennials-elearning

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