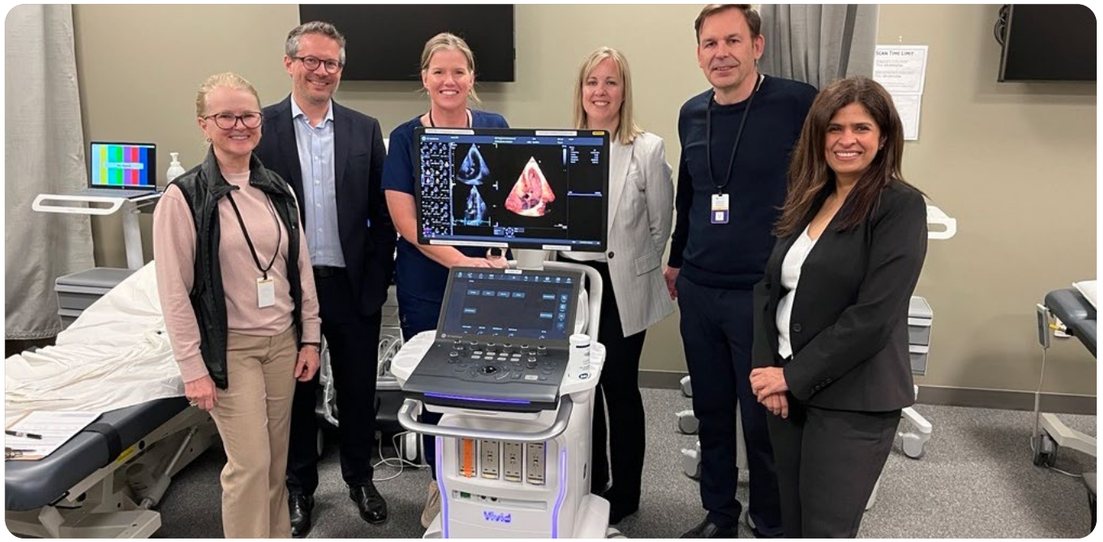
GE HealthCare

Bold innovation that solves for sonographers

How Vivid™ Pioneer supports simple, efficient, and consistent scanning

Cardiac sonographers are at the heart of many diagnoses, capturing the images that can change lives. Their expertise is essential to quality care, yet the demand for skilled sonographers is increasing at unprecedented rates—leading to a shortage and strain on healthcare systems.[1] Under increasing pressure, institutions are exploring transformative technology in echocardiography. It's critical to find solutions that can ease everyday challenges by simplifying and streamlining scanning, while delivering greater consistency and confidence.



Amy Dillenbeck has spent more than 17 years on the front lines of cardiac imaging. She's the founder and Director of the School of Health Professions Cardiac Ultrasound, which is part of the Cleveland Clinic Hospital in Ohio. Dillenbeck works in a high-volume setting, with an estimated 450 exams performed daily—15 to 20% of them conducted bedside. The hospital system operates with a fleet of 75 to 100 premium ultrasound systems, approximately half are Vivid platforms.

Dillenbeck says staffing shortages are just one of many stressors weighing on today's sonographers—pressures that need problem-solving. Faced with increasingly complex cases and technically-difficult patients, she wants technology that can help balance the need for high-quality images with heavy caseloads and the demand for faster, more efficient care. Another priority is closing the gap between new and experienced sonographers to help minimize ongoing issues like interobserver variability.

Dillenbeck is among the first to experience GE HealthCare's Vivid Pioneer ultra-premium cardiovascular ultrasound. We recently asked Dillenbeck to share her experience scanning with Vivid Pioneer and what the new technology could mean for sonographers.

What's the hardest part about being a sonographer today?

Dillenbeck: *We struggle with balancing quantity with quality and I think it's a challenge that is faced across the country. The issue is figuring out how we can find a way to make both work together. In healthcare, everyone is understaffed and overworked and there's an increasing demand for more studies, images, and advanced imaging techniques. Solving for interobserver variability is also an issue because we want our data to be accurate. The challenge is trying to meet all the expectations. I think a lot of it comes down to efficiencies and workflows. Finding ways to work smarter.*

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You have a huge fleet of ultrasound systems. What are you looking for in a premium ultrasound platform?

Dillenbeck: *The number one thing is good quality imaging without having to work hard to get nice images. I've worked on systems where you need to adjust so many knobs and adapt for different variables and parameters to get a pretty image. I'd like a system where you put the transducer on the chest, find the right window, and the system optimizes the image—regardless of operator experience.*

Having a system that is intuitive is another priority. You don't want to feel like you're thinking too much, or trying to figure out where the knob is, or how to optimize. As a sonographer, you want to keep coasting, gliding, and intuitively know what to do next.

You currently work with the Vivid E95 system and have now experienced Vivid Pioneer. How would you describe the new platform in a few words?

Dillenbeck: *The technology is just getting better and better. Every version of the system is a better version because of the advancements. I'd describe Vivid Pioneer as forward-thinking innovation. I was blown away by the image quality and ease to get that quality.*

Enhancing image quality was a core focus of the new Vivid Pioneer. Can you elaborate on your experience?

Dillenbeck: *I think the image quality is really outstanding and with less effort. The Vivid E95 is a great system, and with Vivid Pioneer, you're adding a lot more technology and options for optimization—which makes a big difference.*

I'd describe it like I just got a new pair of glasses. With the Vivid E95, it was pretty nice and I could see things pretty well, but then you try Vivid Pioneer. Wow, it's like a whole other world. You put the glasses on and everything is so crisp and beautiful. I didn't realize it could be this good and what I've been missing.

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For the 2D aspect, it has better spatial resolution. For tissue characterization, the images are more crisp and more defined compared to the Vivid E95 version, and I don't need to adjust a lot of knobs. It's a benefit when you can see with less effort. The tissue really pops and you get really good definition with the endocardium and the myocardium.

In some systems, when you switch from 2D to 3D or 4D, the quality of your 2D image degrades, but that doesn't happen with Vivid Pioneer. From the start, you get high-quality images, which really helps your 3D image. That's one thing I'm really excited about—there's no degradation in image quality and the 3D is phenomenal.

> *"You put the glasses on and everything is so crisp and beautiful. I didn't realize it could be this good and what I've been missing."*

How would you describe the Color Flow and color Doppler?

Dillenbeck: *It's more precise, crisper, and trustworthy. The Color Flow now looks more saturated so you can be more confident in the results because the Color Flow is keeping up and fills the chamber and the LVOT. We are seeing precise jets that are easier to find, better defined, and more measurable.*

I think it's going to be helpful when grading severity of regurgitation. It will also make it easier to measure anatomy like the vena contracta. The width of the jet is clearer so you don't feel like you're missing anything. Having really precise, crisp, defined tissue characterization will also help when measuring patients for their LV dimensions in the parasternal.

Can you describe your experience with the 6Sc-D probe and how could it be an advantage in everyday practice?

Dillenbeck: *The 6Sc-D probe allows us to reach a depth of 15 to 20 centimeters and still have high-quality imaging. We were able to do a full study on a 200-pound patient with great tissue characterization, Color Flow, and Doppler. It's also exciting because of the smaller footprint and the ability to scan between ribs—which is helpful for pediatrics and older, petite patients. Plus, in terms of handling, it's a little lighter, so this is a good alternative to a traditional probe.*

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Image quality is the foundation for AI-driven insights. How does Vivid Pioneer's image quality give you more confidence in AI and automated measurements?

Dillenbeck: *When you're confident in what you're seeing and the images you're getting, and you don't have to adjust all the settings, you'll feel more confident in where you're labeling and defining borders and dimensions, and when you're getting your measurements. I think it really helps with the clinical evaluation.*

Solving for interobserver variability is a priority because we want to be as accurate as possible with the data. Letting the system work automatically reduces the need to modify data and I think leads to more accurate results.

You have described many enhancements. How could these added capabilities impact your everyday workflow?

Dillenbeck: *There are a few things that sonographers will notice immediately. The first is efficiency. We waste a lot of time trying to optimize images. With Vivid Pioneer, I feel like we won't need to spend 30 seconds to a minute trying to optimize each image—and that will be huge because we take 100 or more images in our study. Having a good baseline image from the start with Vivid Pioneer will be super helpful. And the system's AI and other instruments will improve workflow, too.*

I also believe it will absolutely help collaboration—the more trust the reader has in the images and seeing the sonographer's abilities, the better the relationship, and reading and interpreting. And I think this technology will be priceless for people early in their careers because the optimization will build confidence.

The last part has to do with ergonomics—the impact on the body from pushing. Our studies are getting longer and more complex. Condensing studies because images are coming up quickly and optimizing efficiently will put a lot less strain on shoulders, necks, and backs. I also think newer sonographers won't feel the need to push as hard to get a good image, which could help reduce injuries and support longer careers.

Designed with ergonomics in mind, Vivid Pioneer is lightweight, weighing just 104 to 110 kgs. What is your perspective on the portability of the system?

Dillenbeck: *The body of the Vivid Pioneer is smaller and more compact than other systems—it's really impressive. Even without touching it, Vivid Pioneer looks more ergonomic and user-friendly.*

We work in a very large hospital with multiple buildings, so traveling for bedside exams can be challenging. Sometimes, you almost need a running start just to get up the ramps. Vivid Pioneer moves easily, which is especially helpful in ICUs where you need to work around dialysis and lung machines. The system's small footprint lets you squeeze into tight spaces, eliminating the need to extend your arms to reach patients during exams. That can make a big difference in protecting arms and shoulders. It really makes for a nice bedside experience while keeping the quality of the larger systems.

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Vivid Pioneer features a battery support with standby and power interruption modes. What are the main benefits and how could it impact your practice?

Dillenbeck: *I think it's going to be a huge benefit bedside, for stat situations, cath labs, and operating rooms—anywhere you need to get in quickly, get your images, and then get out. You can save time because you don't have to boot up the system again.*

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Vivid Pioneer offers a simplified user interface with a customizable workflow. How would you describe the user experience?

Dillenbeck: *I really like that Vivid Pioneer is so intuitive. It's similar to the Vivid E95 platform if you're used to it, but it's also improved. You have eliminated some of the buttons and most of the others now have icons instead of words, making them easy to follow. They're also located in one central location, making the Vivid Pioneer system very intuitive*

Transitioning to a new echocardiography system can bring challenges. What was the learning curve like for you?

Dillenbeck: *As a sonographer, one of the fears of trying out a new system is that you won't be as fast or it won't be as intuitive. That is not the case with Vivid Pioneer. From the day I started, within one study, I was using it without even looking.*

There will be a learning curve if you have never used a GE HealthCare system before, but the transition can definitely happen within a few studies. Vivid Pioneer has a little bit different look than other systems, but I think you could go back and forth easily.

Vivid Pioneer makes your life so much easier. I can see sonographers fighting over it. ■

> *"Vivid Pioneer makes your life so much easier."*

Amy Dillenbeck, MS, ACS, RDCS, RCS, FASE is the Director & Instructor at the School of Health Professions Cardiac Ultrasound Program at the Cleveland Clinic in Ohio. Dillenbeck, who has more than 15 years of experience in cardiac sonography, specializes in curriculum development, teaching, and driving quality improvements in cardiac ultrasound practices. She leads US training sessions and chairs educational programs, committed to fostering growth and pushing innovation in echocardiography.

1 White Paper from 2024 Consensus Committee on the Future of Medical Imaging and Radiation Therapy, *American Society of Radiologic Technologists*, last modified Oct. 30, 2024 https://www.asrt.org/docs/default-source/research/whitepapers/2024-consensus-committee-on-the-future-of-medical-imaging-and-radiation-therapy.pdf?sfvrsn=1f869819_12

The statements by Amy Dillenbeck described here are based on her own opinions and on results that were achieved in her unique setting. Since there is no "typical" hospital/clinical setting and many variables exist, i.e., hospital size, case mix, staff expertise, etc. there can be no guarantee that others will achieve the same results.

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