



Vivid[™]
for Interventional
Ultra Edition


Your patients rely on you.
You can rely on us.




GE HealthCare

Today's challenges

 **Rising demand**
for minimally invasive procedures¹

 Prevalence among people aged 75 years and older:
9.3% for mitral regurgitation²
3.96% for tricuspid regurgitation³
2.8% for aortic stenosis²

 **10 to 15%**
of adults are not eligible for structural heart procedures because they cannot receive general anesthesia or accept 4D TEE probes⁴

 **Shortage of anesthesiologists**
Of large hospitals, 75% reported an increase in patients' surgery wait time based on availability of anesthesia care in the USA⁵

Rely on us to provide you with superb images

Designed with intuitive ergonomics and user-friendly navigation tools, Vivid systems adapt to each procedure's specific needs. They provide precise quantification, an enhanced view of spatial relationships between flow and surrounding structures and simplified live image guidance.

- Superb image quality with cSound™ software beamformer
- Photorealistic visualization of the anatomy with FlexiLight and HD Color Flow rendering technique for semi-transparent visualization of origin and size of high velocity jets
- Simplified live guidance and improved quality of communication within the heart team with CT Fusion, 4D Markers, FlexiSlice and View-X

4D TEE (6VT-D)
Discover the ultimate solution for complex interventional procedures. Our system delivers superb image quality in 4D, biplane, and triplane modes, allowing enhanced visualization of anatomical details.

Mini 4D TEE (9VT-D)
The world's first and most compact 4D mini-probe,⁷ designed for a wide spectrum of pediatric and interventional cardiology procedures. Its advanced capabilities may even eliminate the need for general anesthesia in adult patients.



Discover superb visualization of anatomy and seamless workflow for your interventional procedures with

Vivid Ultra Edition*




Vivid E95

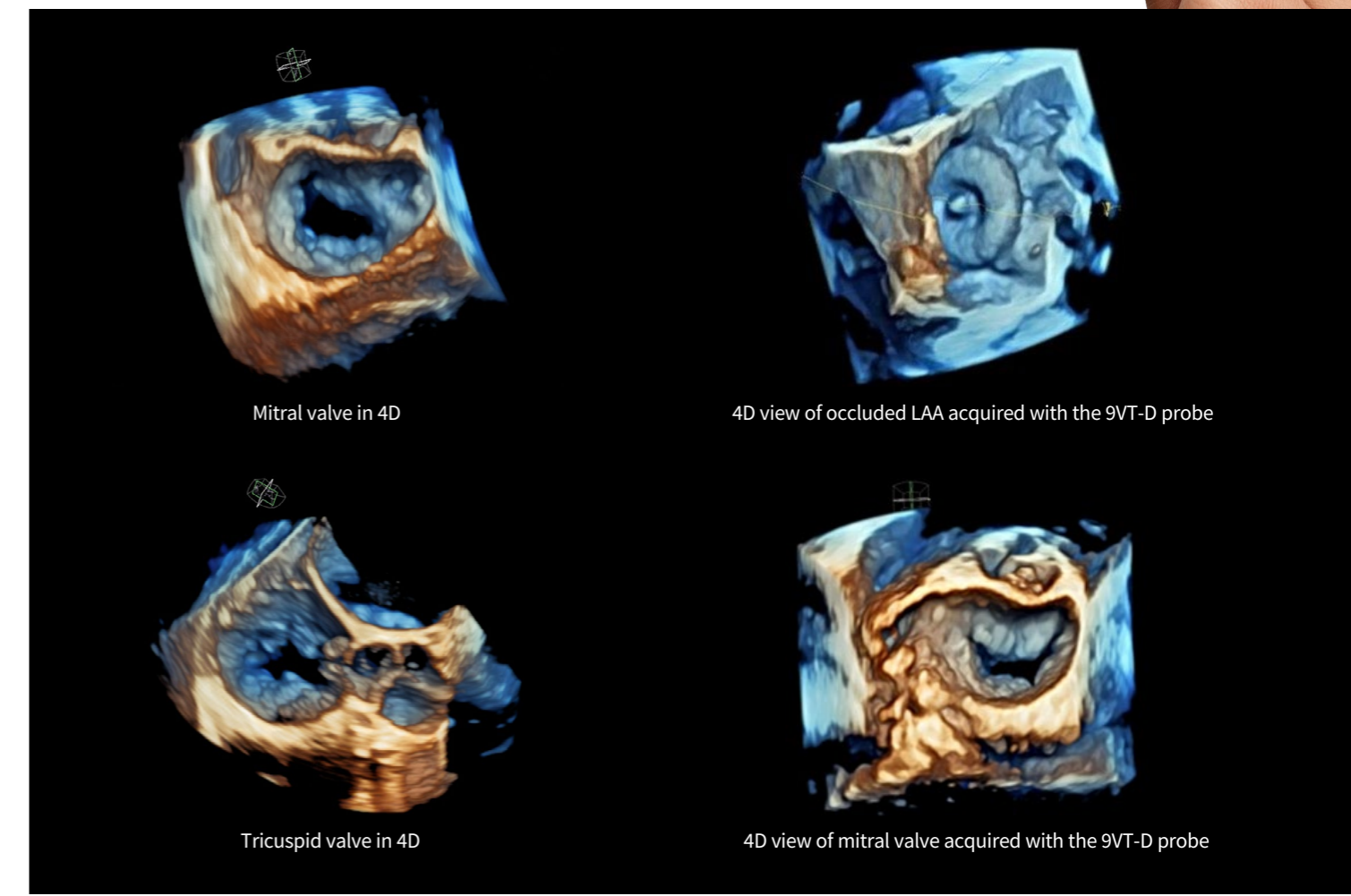


Vivid S70N with Dimension



Vivid iq

 **3.5x**
more graphics processing power⁶



Mitral valve in 4D

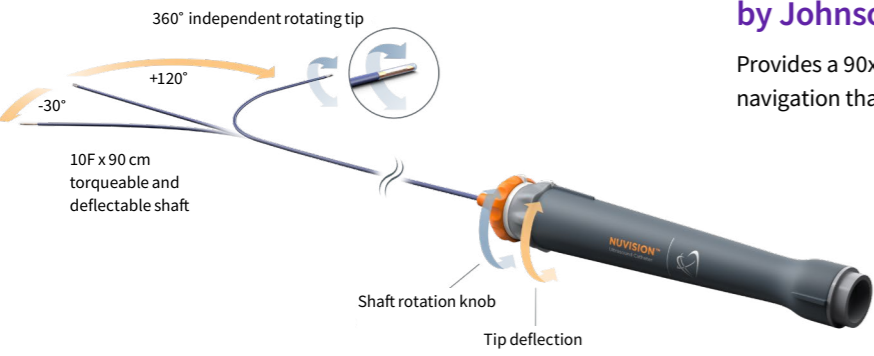
4D view of occluded LAA acquired with the 9VT-D probe

Tricuspid valve in 4D

4D view of mitral valve acquired with the 9VT-D probe

Rely on us to simplify the complex

The use of general anesthesia can limit procedure volume, impacting cath lab efficiency and patient scheduling. Unlock your potential with 4D ICE as an adjunctive or alternative imaging solution in transcatheter device procedures. The 4D ICE NUVISION™ catheter provides patients with an option for conscious sedation, enhancing procedural outcomes and increasing lab efficiency.⁹

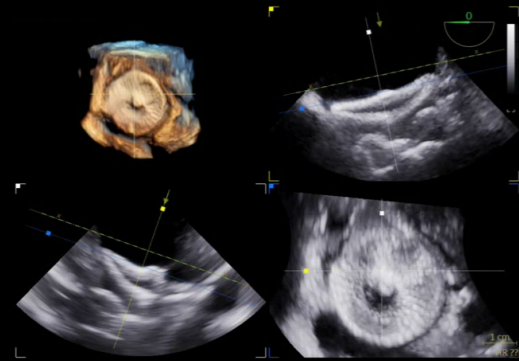


4D ICE NUVISION™⁸ Ultrasound Catheter by Johnson & Johnson MedTech

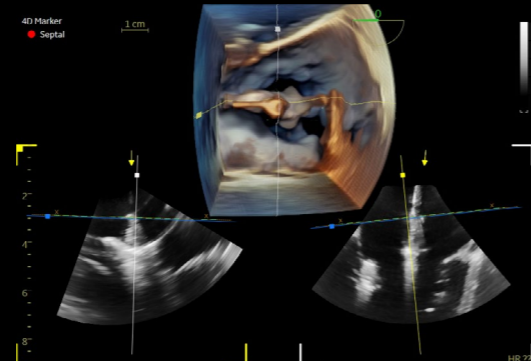
Provides a 90x90° field of view with seamless visualization and navigation thanks to the 360° catheter tip rotation.

-23.5 min

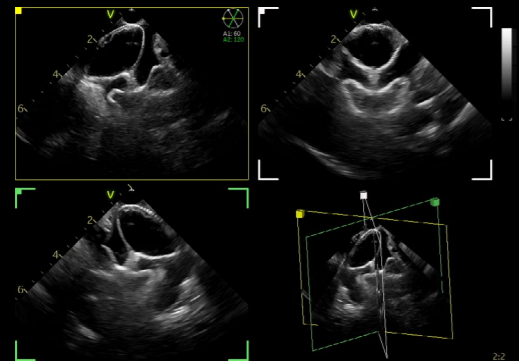
4D ICE NUVISION[®] Ultrasound Catheter allows a significant decrease in mean procedural time in LAAC procedures.¹⁰



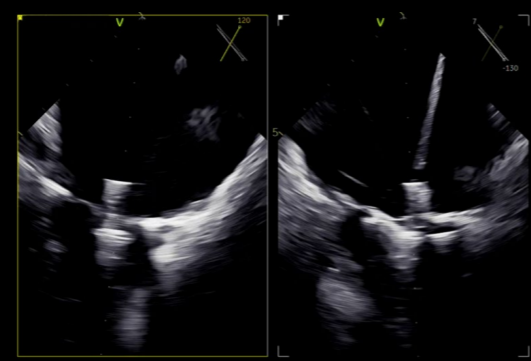
LAAC using FlexiSlice



Tricuspid valve using FlexiSlice



LAA in Triplane



Tricuspid Edge-to-Edge Repair

“The beauty of the 4D ICE NUVISION catheter is that the tip allows for 360° rotation [...] It minimizes the sensation of being disoriented in the right atrium so you’re consistently confident of where and what you are imaging.”¹¹

– Dr. Chehab, MD, FACP, FACC, FSACI
Associate Professor of Medicine at University of Kansas and
Director of the Structural Heart Program at Ascension Via Christi

Rely on us for improved assessment and simplified guidance

Left Atrial Appendage Closure (LAAC)

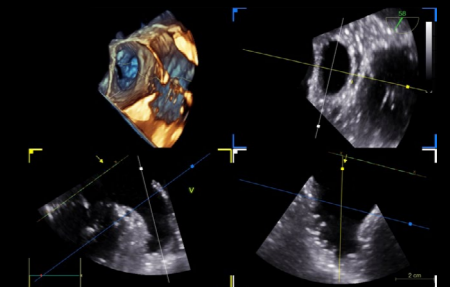
The field of transcatheter LAAC has evolved tremendously in its first 2 decades, with marked improvements in safety, efficacy, and device iterations. Advances in miniaturization have led to the development of novel imaging technologies, such as the mini 4D TEE probe (9VT-D) and the 4D ICE NUVISION catheter. By reducing the need for general anesthesia,⁹ these innovations may improve workflow without compromising image quality, potentially defining a new industry standard.

Assessment pre- and post-device implantation



Comprehensive visualization of the appendage

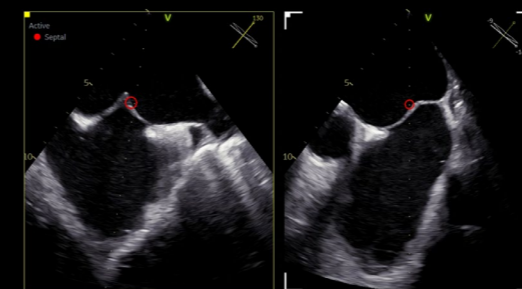
FlexiLight¹² enables comprehensive visualization of the appendage anatomy, facilitating thrombus detection and confirming proper device sealing.



LAA diameters measurements

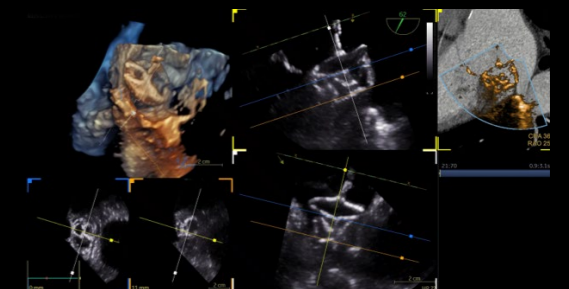
Utilizing FlexiSlice¹³ provides significant value by ensuring that left atrial appendage (LAA) diameter measurements are performed in the same plane using a 4D dataset. This approach overcomes the limitations of 2D measurements while allowing visualization of the LAA orifice shape in the short axis.

Guidance



Location of the transeptal puncture

4D markers¹³ is a powerful tool that may help improve anatomical orientation and communication within the heart team. It could help guide an interventional cardiologist to the correct location when performing a transeptal puncture.



Positioning and orientation of the device

CT Fusion¹² allows access to the CT planning performed in dedicated software from any vendor directly in the scanner. In complex LAAC closures, it may help defining the correct landing zone, ensuring optimal positioning and orientation of the device as planned on CT, potentially improving the procedure outcome.

Mini 4D TEE (9VT-D) for LAAC cases¹⁴

“The use of a mini TEE probe with 4D capabilities (9VT-D) allowed us to directly perform a safe and effective LAAO with conscious sedation and same day hospital discharge.”

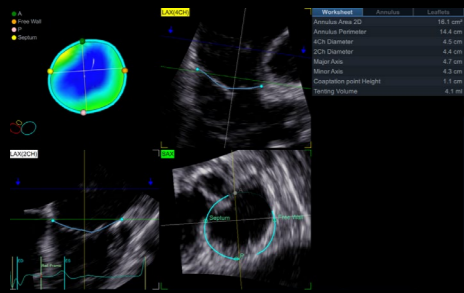
– Dr. Marta Sitges MD, PhD and Dr. Laura Sanchis MD, PhD
Cardiovascular Institute in Hospital Clinic at the
University of Barcelona

Rely on us for improved assessment and simplified guidance (continued)

Transcatheter Valve Replacement

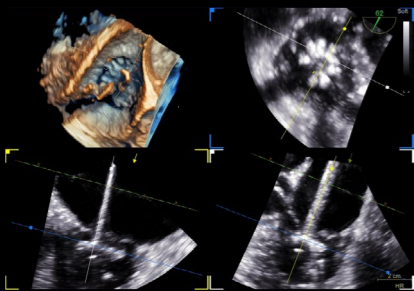
Transcatheter Mitral Valve repair (TMVR) and Transcatheter Tricuspid Valve Replacement (TTVR) are relatively newer procedures with promising early results. Nevertheless, there are several challenges associated with the adoption of TMVR and TTVR, which can be tackled thanks to the Vivid systems' comprehensive solutions.

Assessment pre- and post-device implantation

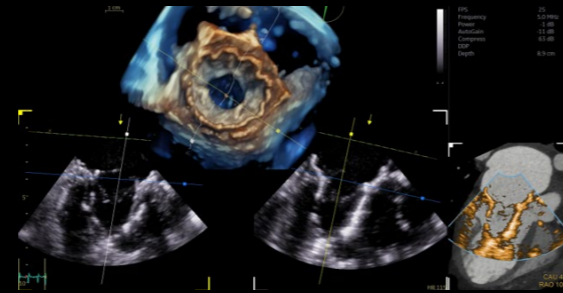


Accurate measurements of the tricuspid valve
4D Auto TVQ¹² is a semi-automated quantification software that delivers precise measurements of the tricuspid valve. By accounting for the saddle shape of the annulus, 4D Auto TVQ can help overcome the limitations of 2D imaging and reduce inter-operator variability.

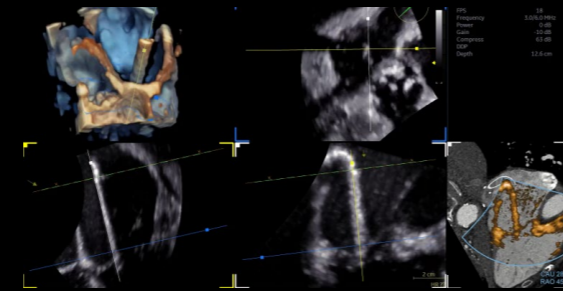
Guidance



Optimal alignment
The use of FlexiSlice¹³ in valve replacement procedures enhances the precision and accuracy of device positioning, ensuring optimal alignment thereby potentially improving procedural success and patient outcomes.



Avoiding Neo-LVOT in TMVR
Avoiding Neo-LVOT obstruction is key in TMVR, but it can be challenging to visually assess it due to device shadowing and artefacts after deployment. CT Fusion¹² offers an overlay of pre-op CT and echo images with the device place. This feature helps identify and rule out any potential obstructions before the final device deployment.



Easy navigation within the right heart
CT Fusion Live¹⁵ provides an extended field of view for a better understanding of the overall anatomy and relationship between cardiac structures. In TTVR, it may help ensure precise navigation within the right heart, which can be challenging. This innovative feature helps maintain correct co-axial alignment of the delivery catheter, potentially improving procedure efficiency.

NUVISION 4D ICE⁸ for Transcatheter Tricuspid Valve Intervention¹⁶

“Overall, the 4D ICE NUVISION Ultrasound Catheter is a great adjunct and complement for transcatheter tricuspid valve intervention imaging. It helps improve the workflow for efficiency of the procedure and enhances the procedure with great certainty and precision.”

– Dr. Nadira Hamid, MD
Cardiologist, Minneapolis Heart Institute, Abbott Northwestern Hospital

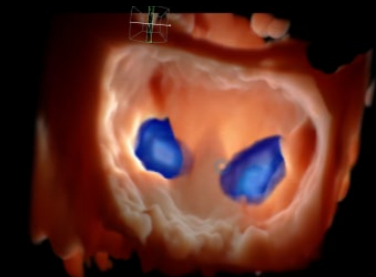
Transcatheter Edge-to-Edge Repair (TEER)

TEER represents a significant advancement in the treatment of mitral and tricuspid valve regurgitation, offering a less invasive alternative to surgery. Vivid systems have been designed to address the significant challenges that comes with any TEER procedures.

Assessment pre- and post-device implantation

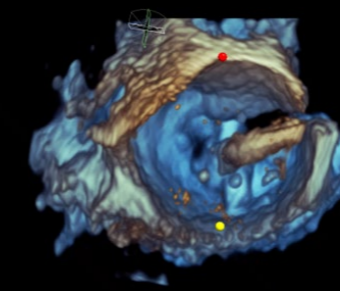


Comprehensive visualization of the valve
FlexiLight¹² is a rendering technique for photo-realistic light-source based illumination of heart structures. It may allow a comprehensive visualization of leaflets and regurgitation orifices.

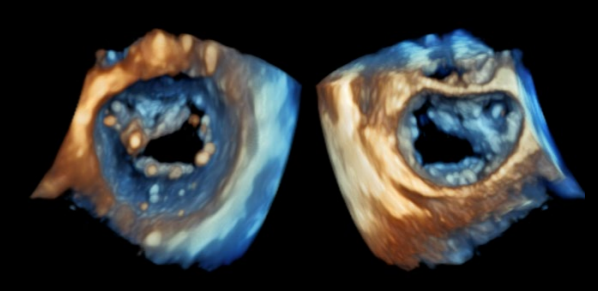


Enhanced visualization of the jets
HD Color¹³ is a 4D color flow rendering technique for semi-transparent visualization of origin and size of high velocity jets, enhancing spatial resolution between flow and surrounding structures. HD Color enhances the visualization of jet origin and improves assessment of residual valve regurgitations.

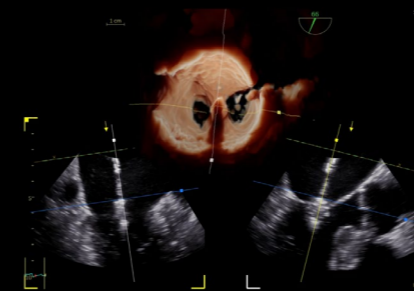
Guidance



Communication within the heart team
4D markers¹³ can be placed on the cardiac anatomy providing proper orientation, better understanding of the relationship between 2D and 4D images and potentially improving communication within the heart team.



Monitoring the grasping of leaflets
Dual Crop¹³ offers a simultaneous view from both the bottom and top of the cropped 4D dataset. This capability is particularly valuable during edge-to-edge procedures, allowing precise assessment of implant positioning while visualizing the valve from both the ventricular and atrial perspectives simultaneously.



Guidance of the TEER device
FlexiSlice¹³ offers real-time access to live 3D Multiplanar Reconstruction and the 4D image. This capability can enhance guidance for the delivery catheter and improve implant positioning.

References:

* Ultra Edition is not a product name, it refers to the 2022 release of the Vivid portfolio.

1. Analysis of Use of Echocardiography Guidance for Cardiac Surgical and Interventional Procedures – March 2021 – Life Science Intelligence.
2. Burden of valvular heart diseases: a population-based study. Nkomo et al. Lancet 2006 Sep 16;368(9540):1005-11.
3. Burden of Tricuspid Regurgitation in Patients Diagnosed in the Community Setting. Topilsky et al. JACC Cardiovasc Imaging 2019 Mar;12(3):433-442.
4. Market Vision Research Report 2023. Project: 22-0722. (Slide 7).
5. Anesthesiologist shortage in the United States: A call for action. J.Menezes and C. Zahalka. Journal of Medicine, Surgery, and Public Health 2 (2024) 100048.
6. 3.5 times more processing power claim refers to the 2022 release of the Vivid portfolio. This Graphic Processing Unit is exclusively available for Vivid E95 and Vivid E90.
7. The 9VT-D probe is exclusively available on Vivid E95 and Vivid E90 with the Ultra Edition release since August 2022.
8. 4D ICE NUVISION catheter is only available in the USA and is exclusively for use with Vivid E95 and Vivid S70N. The combination of the Vivid E95 or Vivid S70N with 4D ICE NUVISION is not CE-marked. 4D ICE NUVISION is distributed by Biosense Webster, Inc., part of Johnson & Johnson MedTech.
9. Evaluating the role of transesophageal echocardiography (TEE) or intracardiac echocardiography (ICE) in left atrial appendage occlusion: a meta-analysis. Akela et al. J Interv Card Electrophysiol 2021 Jan;60(1):41-48.
10. Real-world experience utilizing the Nuvison 4D intracardiac echocardiography catheter for left atrial appendage closure. Adams et al. Sci Rep. 2024 May 24;14(1):11937.
11. Dr. Chehab is a paid consultant for GE HealthCare and was compensated for participation in this article. The statements by Dr. Chehab described here are based on his own opinions and on results that were achieved in his 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.
12. CT Fusion, FlexiLight and 4D AutoTVQ are exclusively available for Vivid E95, E90, E80 product and EchoPAC™ products.
13. HD Color, Dual Crop, 4D Markers, FlexiSlice are exclusively available for Vivid E95, E90, E80, S70N, iq and EchoPAC products.
14. Quote taken from the Vivid Magazine Edition 1 – Case study JB23562XX. Dr. Laura Sanchis and Dr. Marta Sitges are paid consultants for GE HealthCare and were compensated for participation in the Vivid Magazine article. The statements by Dr. Laura Sanchis and Dr. Marta Sitges described here are based on their own opinions and on results that were achieved in their 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.
15. CT fusion Live is exclusively available for Vivid E95, E90, E80 products.
16. Quote taken from the Vivid Magazine Edition 2 – Case study JB24984XX. Dr. Hamid is a paid consultant for GE HealthCare and was compensated for participation in the Vivid Magazine article. The statements by Dr. Hamid described here are based on her own opinions and on results that were achieved in her unique setting. Since there is no “typical” hospital and many variables exist, i.e. hospital size, case mix, etc., there can be no guarantee that other customers will achieve the same results.

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