
PHILIPS
Ultrasound
EPIQ 5
The evolution
of premium ultrasound
Philips EPIQ 5 ultrasound system

The new **challenges** in global healthcare

Unprecedented advances in premium ultrasound performance can help address the strains on overburdened hospitals and healthcare systems, which are continually being challenged to provide a higher quality of care cost-effectively. The goal is quick and accurate diagnosis the first time and in less time.

Premium ultrasound users today demand improved clinical information from each scan, faster and more consistent exams that are easier to perform, and allow for a high level of confidence, even for technically difficult patients.

EPIQ 5 is the new direction for premium ultrasound, featuring an exceptional level of clinical performance to meet the challenges of today's most demanding practices.

Performance

More confidence in your diagnoses even for your most difficult cases

The **evolution** of premium ultrasound

It's our most powerful architecture ever applied to ultrasound imaging – touching all aspects of acoustic acquisition and processing, allowing you to truly experience ultrasound's evolution to a more definitive modality.

Supported by our family of proprietary PureWave transducers and our leading-edge Anatomical Intelligence, this platform offers our highest level of premium performance.

Key trends in global ultrasound

- The need for more definitive premium ultrasound with exceptional image quality and intelligence that provides automated views and quantification
- A demand to automate most operator functions to allow for ease of use and consistency of exam between users
- The demand for greater workflow and throughput due to the aging global population resulting in increased ultrasound volumes
- The need for ultrasound to address the technically challenging patient
- A movement to use ultrasound first - even for advanced image-guided therapy - due to concerns about radiation dose and exam cost

Creating **new realities**, redefining clinical expectations

nSIGHT Imaging goes beyond conventional ultrasound performance for new levels of definition and clarity.

Philips *n*SIGHT Imaging is a totally new approach

The Philips proprietary ***n***SIGHT Imaging architecture introduces a totally new approach to forming ultrasound images. Unlike conventional systems that form the image line by line, ***n***SIGHT creates images with superb resolution down to the pixel level.

Extraordinary architecture

nSIGHT Imaging incorporates a custom multi-stage precision beamformer along with massive parallel processing. This proprietary architecture captures an enormous amount of acoustic data from each transmit operation and performs digital beam reconstruction along with mathematically optimized focal processing to create real-time images with exceptional resolution and uniformity.

Frame rate

Conventional
Users must choose between frame rate and image quality

***n*SIGHT Imaging**
More than doubles the frame rate without impact to image quality

nSIGHT Imaging creates superbly focused images with fewer transmit operations so you can experience both highly detailed ultrasound images and extraordinary temporal resolution.

Uniformity

Conventional
Best resolution is limited to transmit focal zone

***n*SIGHT Imaging**
Corrects focus during beam reconstruction for superb uniformity

nSIGHT Imaging achieves superb uniformity through coherent beam reconstruction algorithms that apply mathematical focal correction coefficients continually at all depths of the image.

Penetration

Conventional
Penetration limitations and poor sensitivity to weak signals

***n*SIGHT Imaging**
Superb penetration across full range of frequencies

nSIGHT Imaging architecture's ultra-wide dynamic range and unique beam reconstruction reinforces weak tissue signals allowing enhanced penetration at higher frequencies even on difficult patients.

Image quality: the numbers tell the story

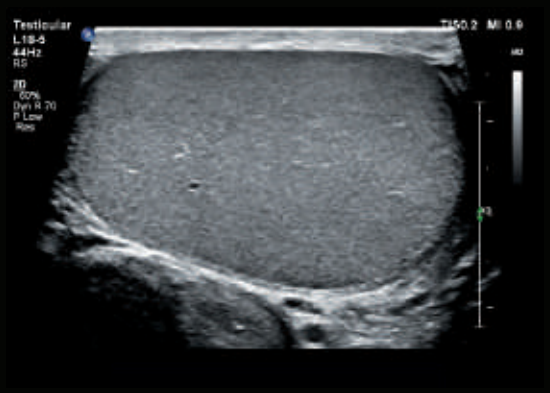
Comparing EPIQ 5 to conventional premium systems shows breakthrough advances in imaging performance.

- Up to **76%** increase in penetration (penetration = ability to scan at depths and maintain resolution in order to complete the study)*
- Up to **160%** increase in temporal resolution (ability to maintain resolution at high frame rates)*
- Over **85%** completion rate for technically challenging exams using ***n***SIGHT Imaging and the PureWave C9-2, as demonstrated in clinical studies**

* 2013 quantitative engineering study comparing Philips iU22 ultrasound system with EPIQ 5
**Summary of results from EMEA technically difficult patient study (EPIQ), 2014

Exceptional images
for a new era

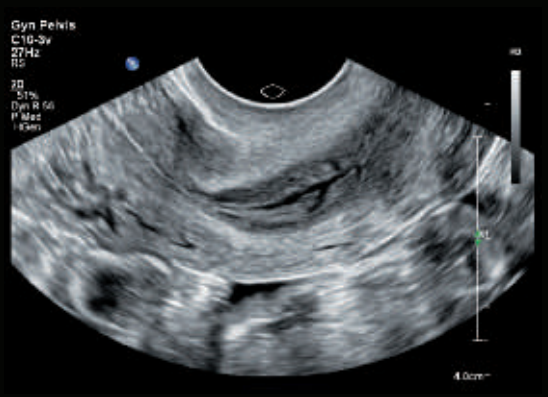
Right kidney cyst



Testicle, wide-scan imaging

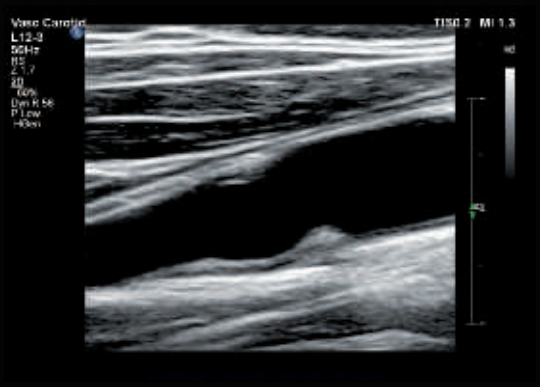
Superficial venous thrombosis

Fetal echo, 26-week gestation

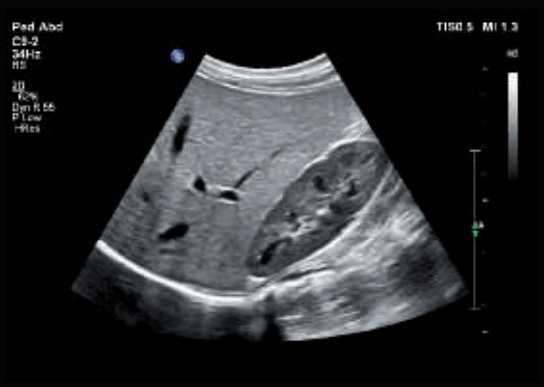


Cervix

Neonatal head

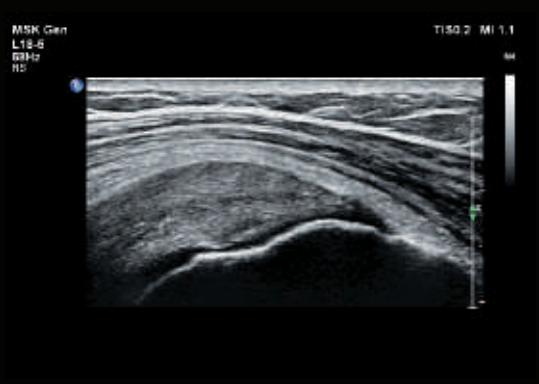


Common carotid artery plaque

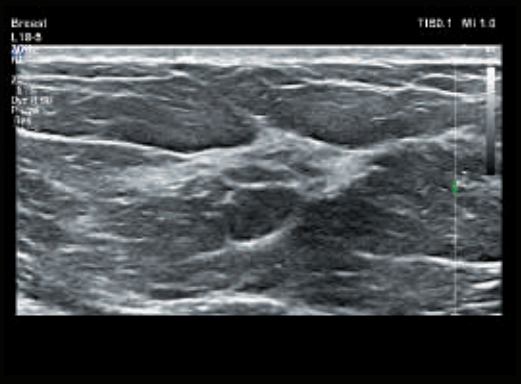


Pediatric liver and right kidney

Liver hemangioma



Rotator cuff



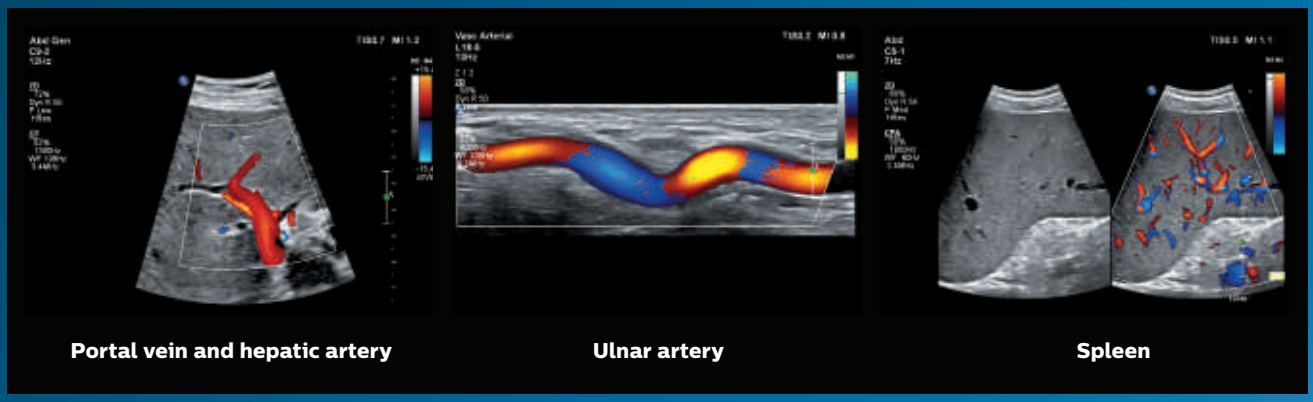
Breast fibroadenoma

Fetal diaphragm

The next generation of **color flow** imaging

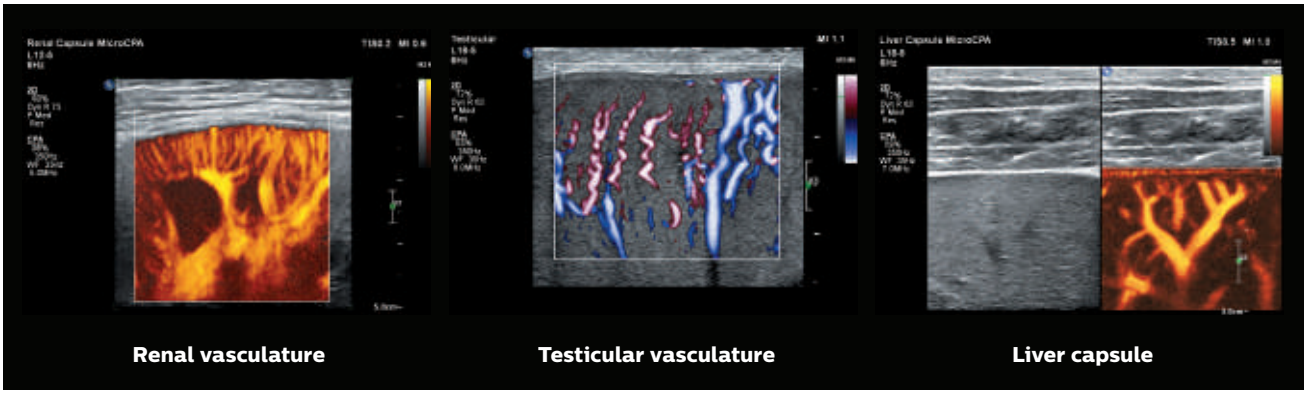
nSIGHT Imaging architecture incorporates new color Doppler technology that increases flow resolution, sensitivity and frame rate. New proprietary flow algorithms produce exceptional vessel border delineation while preserving 2D imaging characteristics in color Doppler modes. New color map options allow enhanced visualization of flow for color blind users.

Color Flow Imaging



Portal vein and hepatic artery | Ulnar artery | Spleen

New MicroCPA
for exceptional small vessel visualization



Renal vasculature | Testicular vasculature | Liver capsule

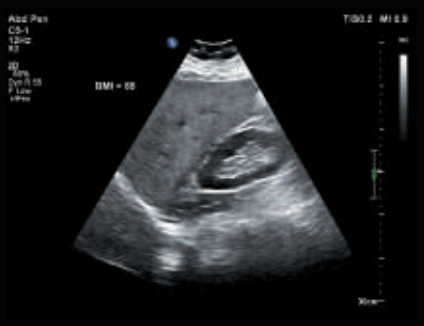
In the past, obtaining flow information in small low-flow vascular structures has been a challenge. Now the EPIQ's MicroCPA feature – visualization of low velocity micro circulation – is quick and simple, allowing for more diagnostic confidence when evaluating organ perfusion or small vascular beds.

The **power of PureWave** to image technically difficult patients

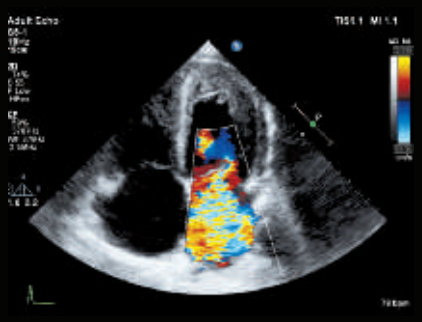
nSIGHT Imaging strengthens the power of PureWave to image technically difficult patients. PureWave crystal technology represents the biggest breakthrough in piezoelectric transducer material in 40 years. The pure, uniform crystals of PureWave are 85% more efficient than conventional piezoelectric material, resulting in exceptional performance. This technology allows for improved penetration in difficult patients with a single transducer and for excellent detailed resolution.

PureWave transducers offer enhanced technology for imaging technically difficult patients in a wide range of applications

- PureWave C5-1 and the C9-2 for difficult-to-image abdominal and OB patients
- PureWave S5-1 for difficult-to-image cardiology patients and transcranial applications
- PureWave C10-3V for difficult-to-image early obstetrical and gynecological exams

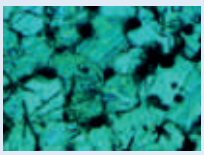


Liver, technically difficult patient (BMI=55)



Apical four- chamber view with mitral regurgitant jet

30-week gestation, technically difficult patient (BMI=40.1)



Conventional (x800)

PureWave (x800)

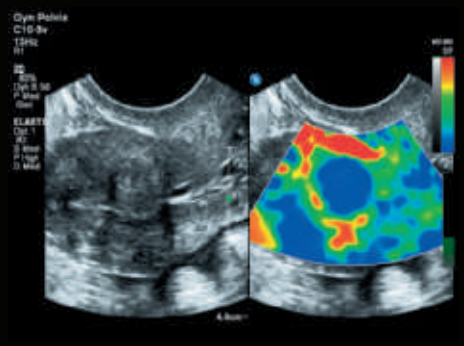
PureWave crystals have virtually perfect uniformity for greater bandwidth and twice the efficiency of conventional ceramic materials. The result is excellent imaging and Doppler performance.

Uniquely designed for **elastography** – revealing more definitive information on tissue stiffness

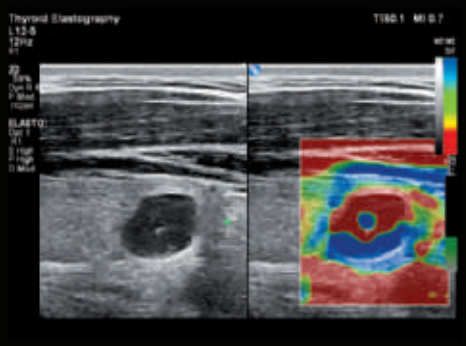
The EPIQ platform supports both strain and shear wave methods of elastography. Highly sensitive strain imaging can be used to rapidly assess relative tissue stiffness values across a variety of applications. Shear wave elastography utilizes a unique pulsing scheme to generate and detect the propagation speed of shear waves, providing an absolute measure of tissue stiffness. In addition, the EPIQ platform is designed to support the future of elastography including quantitative real-time shear wave imaging across a variety of transducers and applications.

Strain elastography

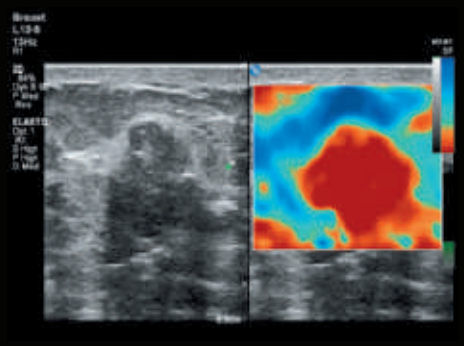
Philips strain elastography incorporates nanometer tissue strain tracking technology – a highly sensitive method of tracking tissue deformation requiring virtually no external compression for reproducible strain imaging results. Inherent patient physiologic movements provide the compression to generate the elastography image.



Uterine fibroadenoma



Thyroid elastography



Breast lesion elastogram

Shear wave elastography

ElastPQ uses ultrasound shear wave elastography to provide a non-invasive, reproducible and easily performed method of assessing liver fibrosis. A special pulse sequence technique using existing transducers produces shear waves in tissue and measures the propagation speed of the waves. Now tissue stiffness samples can be acquired during a routine ultrasound examination of the liver. According to the latest studies, using shear wave elastography may help reduce or avoid conventional liver biopsies.[1] Many studies are suggesting that instead of a costly and painful biopsy procedure, an easy ultrasound exam becomes the routine method to assess liver disease status.

Elasto point quantification

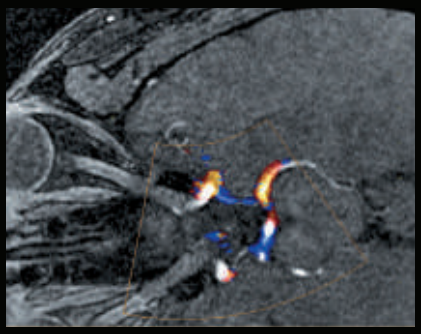
[1] Ferraioli G, et al. Point shear wave elastography method for assessing liver stiffness. World J Gastroenterol 2014 April 28;20(16):4787-4796.

Fast and effective
image fusion and needle navigation

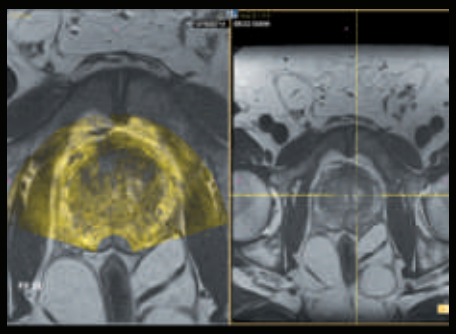
Make confident decisions even in challenging diagnostic cases with fully integrated fusion capabilities that feature streamlined workflows to allow clinicians to achieve fast and effective fusion of CT/MR/PET with live ultrasound.

By combining imaging modalities directly on the ultrasound system, you now have access to an even more powerful diagnostic tool with advanced visualization, allowing for fast decisions, and potentially accessing earlier treatment pathways than without fusion.

Fusion and navigation



Cerebral artery assessment using transcranial ultrasound and CT fusion



Ultrasound and MR prostate fusion helpful in targeting lesions for biopsy

New Auto Registration – image fusion simplicity

EPIQ's exclusive Anatomical Intelligence Ultrasound (AIUS) comes to image fusion with automated registration of CT and ultrasound volumes. Anatomical information within the CT volume is analyzed and automatically matched with the ultrasound structures, allowing the user to achieve image fusion within seconds. Now image fusion is quick and simple, allowing you to focus less on setup and more on the procedure.

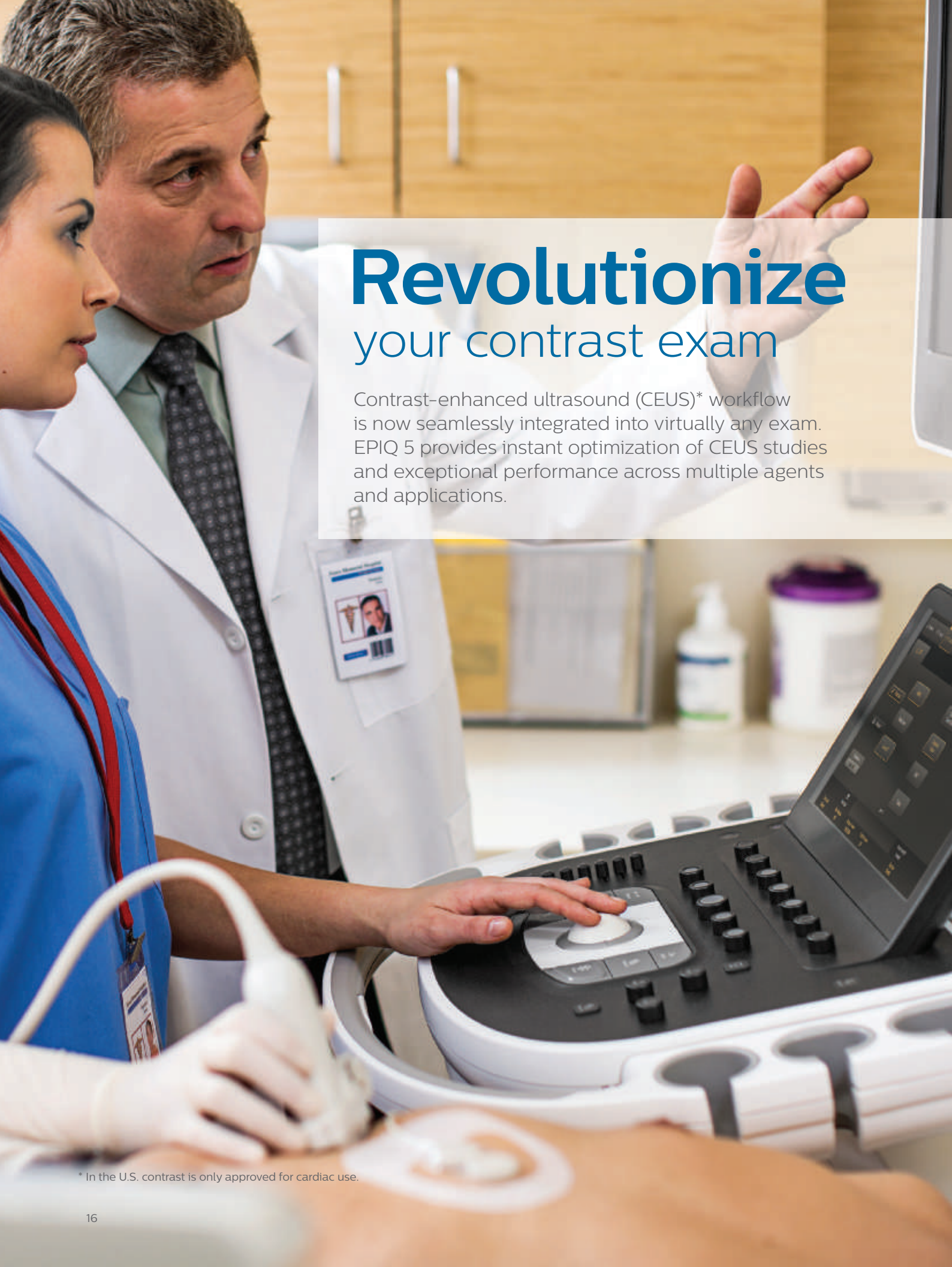
Advanced needle navigation

Needle navigation is a performance-enhancing tool for challenging interventional cases such as a hard-to-visualize small-lesion biopsy or difficult-to-access ablations that are close to critical structures. Procedures may now be completed in less time and with fewer confirmatory scans.[2]

A reusable adaptive needle tracker and an expanded range of coaxial needle-tip tracked instruments offer you a wide range of compatibility with biopsy and ablation devices depending on the degree of procedure complexity.

Expand fusion and navigation capabilities through a range of transducers across applications, including the PureWave C5-1 and C9-2 (abdominal), L12-5 (breast and small parts), C10-4ec (prostate), and S5-1 (transcranial fusion).

[2] Kim E, et al. CT-Guided liver biopsy with electromagnetic tracking: results from a single-center prospective randomized controlled trial. American Journal Roentgenology 2014;203:W715-723.

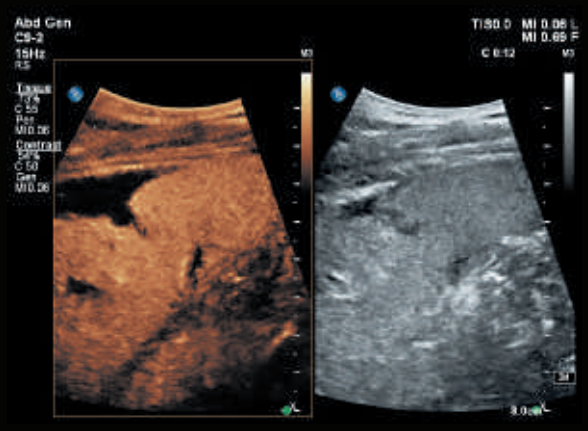


Revolutionize
your contrast exam

Contrast-enhanced ultrasound (CEUS)* workflow is now seamlessly integrated into virtually any exam. EPIQ 5 provides instant optimization of CEUS studies and exceptional performance across multiple agents and applications.

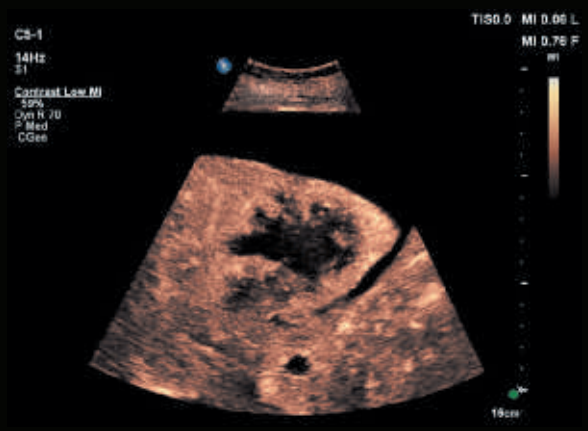
* In the U.S. contrast is only approved for cardiac use.

***n*SIGHT Imaging allows higher sensitivity to lower bubble concentrations while providing exceptional temporal resolution during critical wash-in/wash-out phases.**

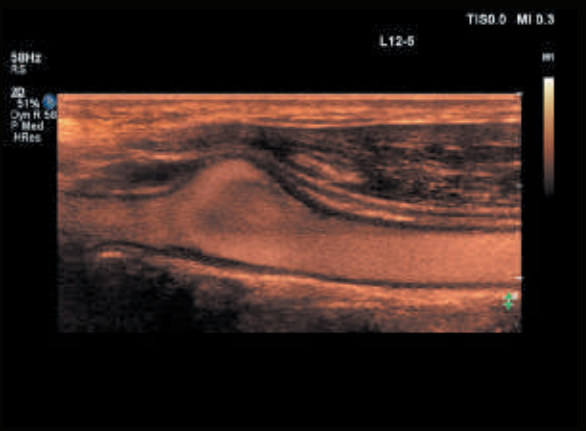


Splenic laceration

Aortic Type II endoleak

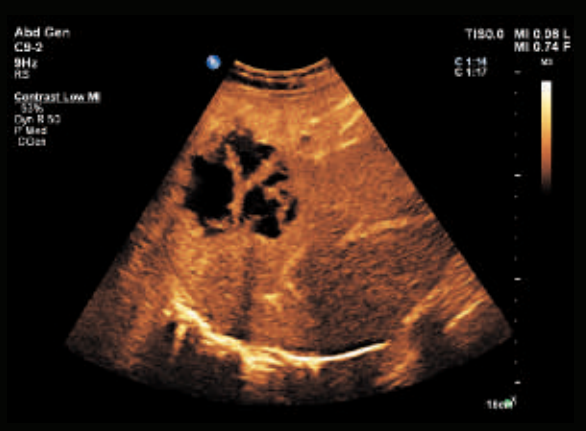


Liver mass



Carotid bulb

Renal cell carcinoma



Liver lesion

Designed
to reinvent the user experience

EPIQ 5 has completely reinvented the premium ultrasound user experience. Ease of use, workflow, ergonomics, portability – we've revolutionized how you interact with an ultrasound system from every standpoint, and kept it beautifully intuitive.

More than 80% of sonographers experience work-related pain, and more than 20% of these suffer a career-ending injury.[3] The EPIQ 5 tablet-like interface results in dramatic reduction in reach and button pushes, with 40% to 80% less reach and 15% fewer steps.*

Advanced workflow

The design of the platform features "walk-up usability," meaning that users can perform an exam with minimal training.[4] The system offers the automation to drive efficiency throughout exams with features such as Real Time iSCAN (AutoSCAN), which automatically optimizes gain and TGC continuously to provide excellent images in 2D, 3D, or 4D.

Amazingly portable

At just 104 kg (230 lb), EPIQ 5 is lightest in its class and 40% lighter than the heaviest competitive premium system. Easily transport EPIQ 5 on both carpet and tile floors. The monitor folds down to reduce overall system height for transport, and the integrated cable hooks and catch tray are ideal for portable studies. Wireless DICOM further aids workflow.†

EPIQ 5 features integrated efficiency tools and multiple degrees of articulation for scanning comfort.

Library quiet

EPIQ 5 is almost silent when running. A noise test determined that EPIQ 5 runs at 37-41 dB, which is equivalent to the sound of a library.

Scanning comfort

Multiple degrees of articulation for both the control panel, and 54.5 cm (21.5 in) LCD monitor with 720° of freedom allows for ergonomic alignment, whether sitting or standing, for scanning comfort.

SmartExam

SmartExam decreases exam time by 30-50%, keystrokes by as many as 300 per exam, and results in a high level of consistency among users.[5] It is fast and easy to customize, providing consistent and accurate annotation, automatic mode switching, and missed view alerts to streamline exams. The result is more time to focus on your patients, increased confidence in complete studies, less focus on requirements, less repetitive motion, less stress, and enhanced schedule maintenance and department efficiencies.

Auto Doppler for vascular imaging

Auto Doppler takes time-consuming color box positioning and sample volume placement from ten steps to three steps and reduces the number of repetitive button pushes by an average of 68%.[6]

Active native data

Active native data allow for post-processing of many exam parameters.

Set-up Wizard

Set-up Wizard allows users to step up to the system, easily establish user configurations, and get running quickly.

Access to multimodality images

Use multimodality query retrieve to view DICOM images such as CT, NM, MR, mammography, and ultrasound. Easily compare past and current studies without the use of an external reading station and even review these multimodality images while live imaging.

A tablet-like touch interface allows quick navigation to system functions and results in dramatic reduction in reach and button pushes, with 40% to 80% less reach and 15% fewer steps.*

EPIQ 5 makes it easy to be green

25%

less power

EPIQ 5 is one of the greenest systems we have ever designed. It consumes 25% less power than our legacy premium ultrasound.

[3] Society of Diagnostic Medical Sonography, Industry Standards for the Prevention of Musculoskeletal Disorders in Sonography, May 2003.
[4] External user study where all users had over 90% success (gold standard in usability) on their set tasks with no training on EPIQ, Jan 2013.
[5] University of Colorado, protocols study, Apr. 2007.
[6] Auto Doppler clinical study. Dec 2011.
* 2013 engineering study comparing Philips iU22 ultrasound system with EPIQ 5.
† Check for availability in your geography.

Anatomical Intelligence is the heart of EPIQ 5

At the heart of the powerful EPIQ 5 architecture is our Philips exclusive Anatomical Intelligence Ultrasound (AIUS), designed to elevate the ultrasound system from a passive to an actively adaptive device.

Anatomical Intelligence

Achieve new levels of simplicity

Anatomical Intelligence Ultrasound (AIUS) from Philips is designed to elevate the ultrasound system to an actively adaptive device.

Q-App quantification applications

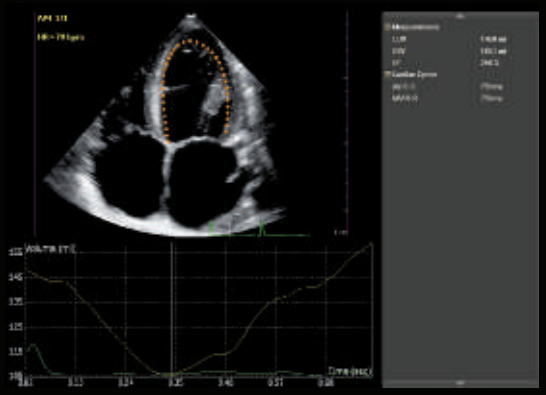
EPIQ 5 offers a wide variety of sophisticated Q-Apps to quantify ultrasound image information.

General Imaging Q-Apps

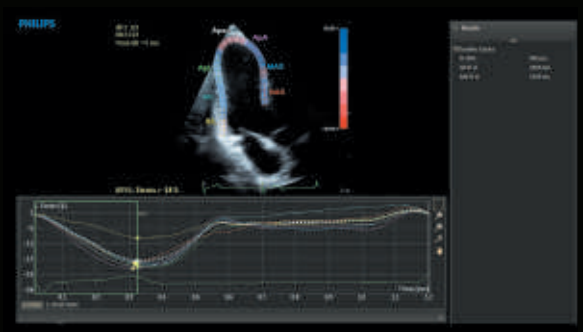
- Intima Media Thickness (IMT)
- General Imaging 3D Quantification (GI 3DQ)
- Region of Interest (ROI)
- MicroVascular Imaging (MVI)
- Vascular Plaque Quantification (VPQ)

Cardiology Q-Apps

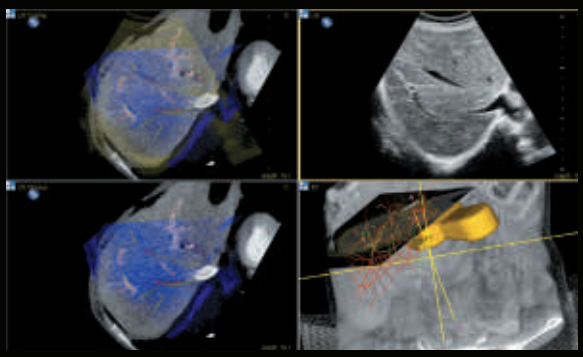
- Strain Quantification (SQ)
- CMQ Stress
- Automated 2D Cardiac Quantification[A.I.] (a2DQ[A.I.])
- Automated Cardiac Motion Quantification[A.I.] (aCMQ[A.I.])



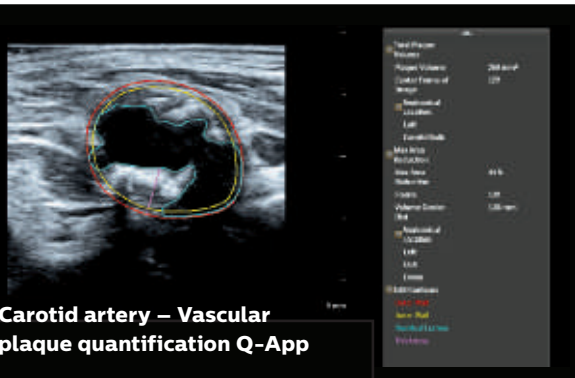
a2DQ[A.I.] with ZeroClick for fast, reproducible EF on all your patients.



aCMQ[A.I.] with ZeroClick technology provides both EF and GLS from the same 2D images.



Anatomical Intelligence liver vessel segmentation for CT and ultrasound provides image fusion in less than one minute.



Carotid artery – Vascular plaque quantification Q-App

VPQ and the VL13-5 transducer allow advanced analysis of plaque volume and morphology.

Automation

Automated 2D Cardiac Quantification[A.I.] (a2DQ[A.I.]) with ZeroClick technology for adult and pediatric echo

The ideal tool of every echo lab, Automated 2D Cardiac Quantification[A.I.] (a2DQ[A.I.]) with ZeroClick technology uses AIUS for an Auto-ROI to drive the Q-App and provide rapid access to proven 2D EF and volumes. AutoEF is available during the study and so fits in with an everyday echo protocol.

Automated Cardiac Motion Quantification[A.I.] (aCMQ[A.I.]) with ZeroClick technology for adult echo

The ZeroClick technology of the Automated Cardiac Motion Quantification[A.I.] (aCMQ[A.I.]) uses speckle mechanics to provide reproducible 2D Global Longitudinal Strain (GLS) speckle measurements. A proven EF is also calculated by using the Auto-ROI that drives the automation within the aCMQ[A.I.] Q-App.

Automatic registration for image fusion and navigation

CT and ultrasound vessel and surface registration allows you to complete the challenging task of registering a CT volume with ultrasound in less than one minute – 1/10 the standard alignment time.

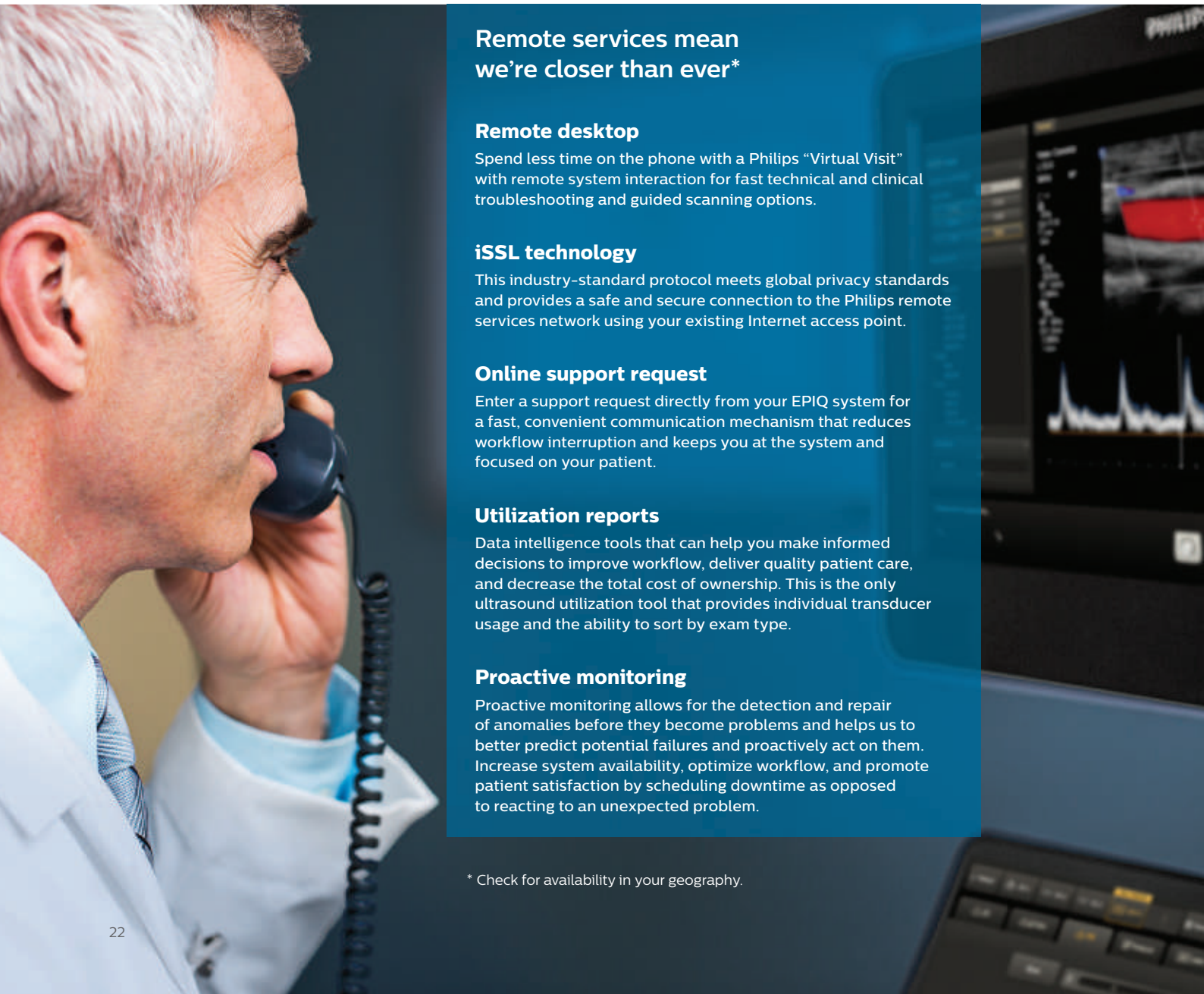
Navigation

Vascular Plaque Quantification is a non-invasive tool that uses 3D technology to visualize and quantify both the overall volume of vascular plaque in the carotid artery and the percent area of vessel reduction, as well as other characteristics of plaque composition. VPQ may prove to be a valuable tool to aid in determining who is at an increased risk of stroke or cardiovascular disease based on this important measurement of plaque buildup in the carotid artery.

Advanced **support services** are proactive and predictive

We understand your challenges: uncertain economic times, changing healthcare landscapes, and the impact of healthcare reform. We know that efficient workflows and system uptime are critical success factors in running an effective healthcare business.

Philips is committed to offering innovative solutions to provide you with world-class services that move from reactive to proactive and with predictive service models that provide high system availability and enhanced workflow to help you deliver high quality patient care.



Remote services mean we're closer than ever*

Remote desktop

Spend less time on the phone with a Philips "Virtual Visit" with remote system interaction for fast technical and clinical troubleshooting and guided scanning options.

iSSL technology

This industry-standard protocol meets global privacy standards and provides a safe and secure connection to the Philips remote services network using your existing Internet access point.

Online support request

Enter a support request directly from your EPIQ system for a fast, convenient communication mechanism that reduces workflow interruption and keeps you at the system and focused on your patient.

Utilization reports

Data intelligence tools that can help you make informed decisions to improve workflow, deliver quality patient care, and decrease the total cost of ownership. This is the only ultrasound utilization tool that provides individual transducer usage and the ability to sort by exam type.

Proactive monitoring

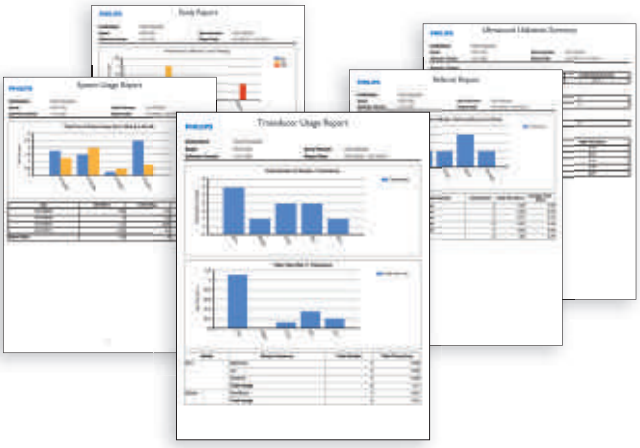
Proactive monitoring allows for the detection and repair of anomalies before they become problems and helps us to better predict potential failures and proactively act on them. Increase system availability, optimize workflow, and promote patient satisfaction by scheduling downtime as opposed to reacting to an unexpected problem.

* Check for availability in your geography.

The remote desktop allows Philips service engineers to gain a live view of your system's console for remote operation, real-time clinical troubleshooting, and issue resolution.

Exceptional serviceability

Philips offers the only ultrasound utilization tool that provides individual transducer usage and the ability to sort by exam type.



The system features superior modular design for rapid repair, getting your system up and running quickly.

Intelligent software architecture

Software is easily optimized, maintained, and restored by the service user without risk to patient data, giving you peace of mind when dealing with software anomalies and confidence that your data is safe.

This software architecture takes patient data privacy to a new level. Patient data is stored on a separate partition and physical location to provide protection and ease of removal, providing you total control of your data.

Clinical education solutions

Our comprehensive, clinically relevant courses, programs, and learning paths are designed to help you improve operational efficiency and enhance patient care.

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