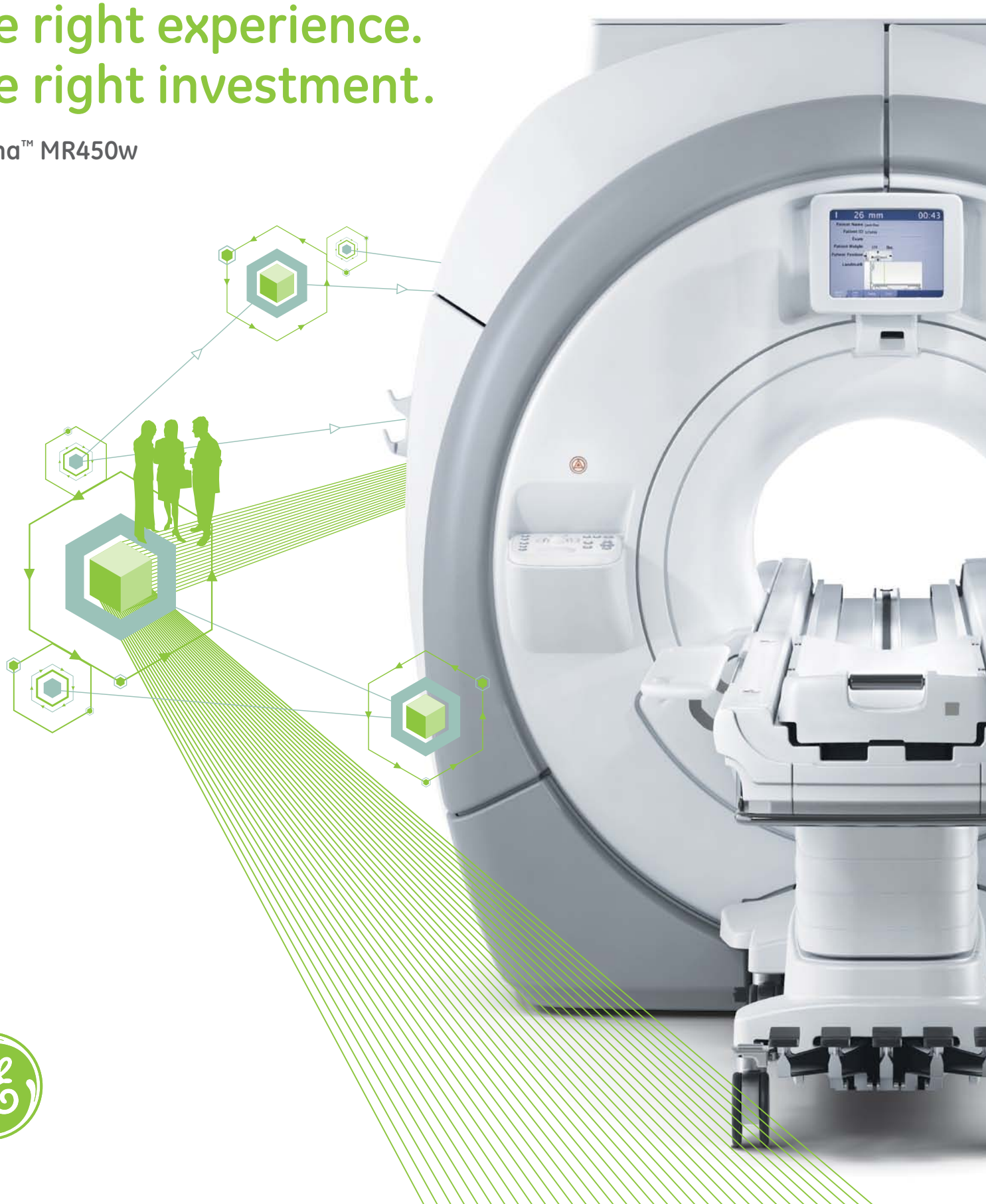
GE Healthcare

The right capabilities.
The right experience.
The right investment.

Optima™ MR450w



The world of MR is always changing.

Patient expectations of MR have shifted in recent years, as people have begun demanding a better, more comfortable scanning experience. Increasing the size of the bore is a good first step — but it's only the beginning.

The right system should overcome traditional limitations of wide-bore MR, offering both excellent images and a user-friendly experience. Patients should be more comfortable during their scan, and clinicians more comfortable in making a definitive diagnosis. All the while, organizations should expect their MR system to help them deliver solid financial returns, maintain a high standard of patient safety, and increase the quality of their care.

Today, the right way has arrived.

The Optima MR450w is wide-bore MR done right.

Thanks to cutting-edge technologies, we've advanced the capabilities of wide-bore MR by delivering both uncompromised image quality and high productivity—all with an expansive 50cm field of view.

But it's about more than the bore. Built on a fully redesigned MR platform, the Optima MR450w offers a range of advanced new functionality, making it a workhorse system for practices of all sizes and specialties.

It is also extremely accessible. Its cost and capabilities make it a great choice for first-time MR customers who can make it their only scanner, as well as established MR users seeking a versatile, hard-working system. Its 1.5T field strength is the industry's best-known and most-used. And its bore diameter and field of view make MR scans accessible to more patients who need them.

The Optima MR450w is the right MR system in so many ways.

The right capabilities

Advanced functionality gives clinicians the tools they need to make definitive diagnoses—and help grow practices.

The right experience

Exclusive ease-of-use features help make life easier for both patients and technologists.

The right investment

Administrators can drive new levels of productivity, scanning a broader patient population on a more predictable schedule.

The right capabilities — to diagnose *and* grow.

The Optima MR450w delivers exquisite image quality to aid in your diagnosis. To meet your high quality expectations, the advanced capabilities of our Discovery™ MR platform have been applied in the Optima MR450w, making it both versatile and powerful.

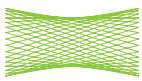
FROM ADVANCED TECHNOLOGIES...

Redesigned magnet

A completely new 145cm long magnet is designed to ensure uniform tissue contrast in a patient-friendly space.

eXtreme gradients

Strong whole-body gradients deliver 34 mT/m amplitude and 150 T/m/s slew rate on each axis, yielding scans that are fast, accurate, and highly reproducible.

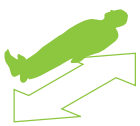


OpTix RF digital receiver

An exclusive optical RF system increases signal clarity and maximizes signal intensity for clean, crisp images.

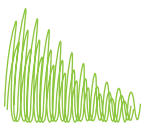
Anatomy-optimized RF coils

High-density coils focus elements around the anatomy of interest and provide extended coverage where needed, for optimal image quality in virtually every procedure.



Express patient table

A fully removable table minimizes time between scans to help boost productivity.



Acoustic Reduction Technology

Reduce an acquisition's acoustic noise with virtually no compromise to image quality.

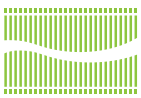
...COME POWERFUL ABILITIES.

Large field of view

With a 50cm field of view, you can cover more anatomy in fewer scans.

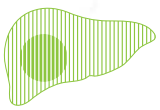
Unmatched breast imaging

Thanks to applications like IDEAL and VIBRANT-FLEX, no comparable solution can capture so much so well.



Two-station whole-spine imaging

Acquire an entire spine in a fraction of the time — and with multiple contrasts.



Holistic Liver Assessment

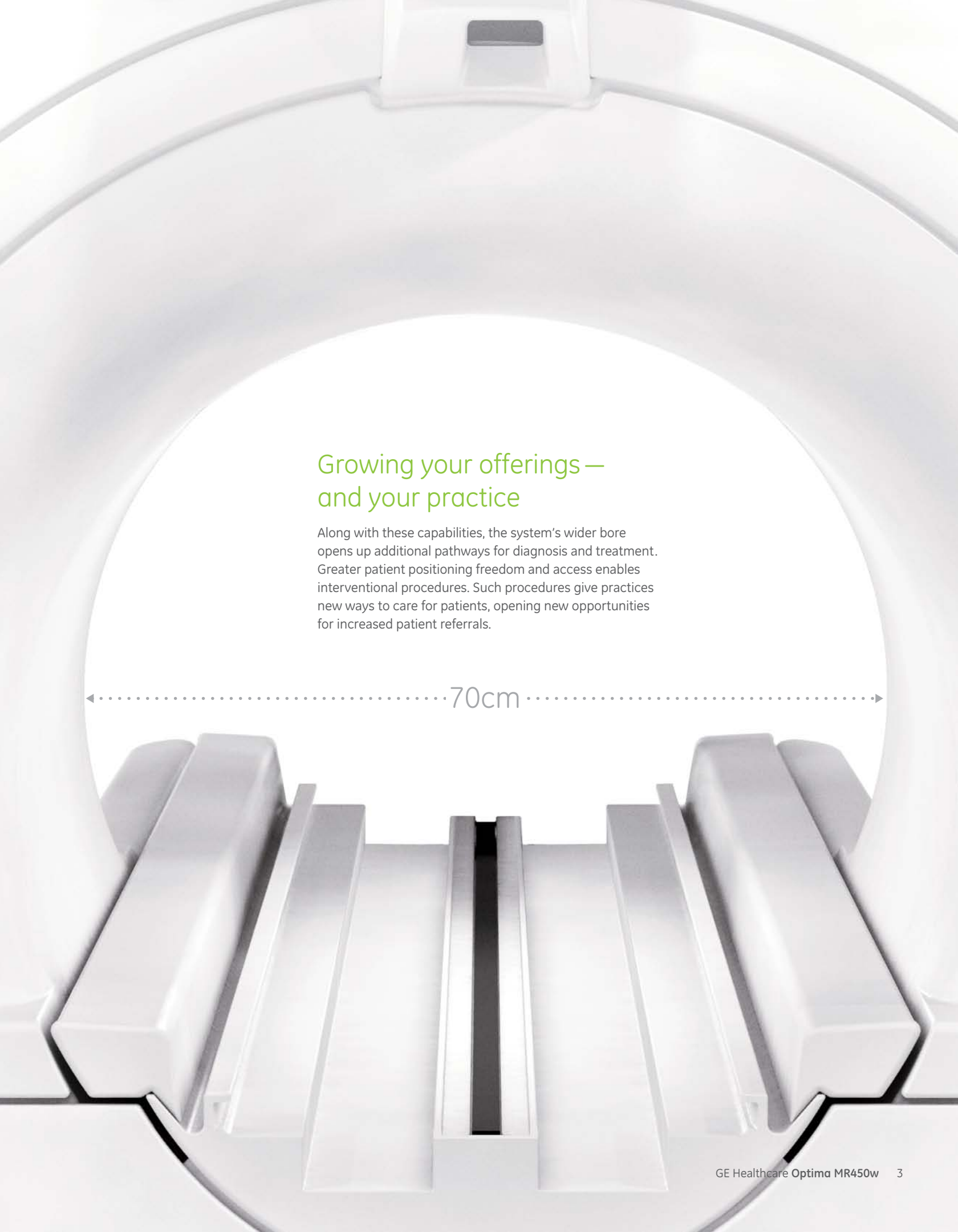
An industry first, MR-Touch opens up new opportunities for care by identifying variations in liver tissue stiffness.

3-D Arterial Spin Labeling (3D ASL)

Generate a full-coverage, high-SNR 3D image of the brain, great for evaluating cerebrovascular conditions such as stroke.

Growing your offerings — and your practice

Along with these capabilities, the system's wider bore opens up additional pathways for diagnosis and treatment. Greater patient positioning freedom and access enables interventional procedures. Such procedures give practices new ways to care for patients, opening new opportunities for increased patient referrals.



The right experience — for patients

The Optima MR450w comes with a 70cm bore, offering a more comfortable experience for your patients — especially larger individuals, children, and those prone to claustrophobia. And the improved patient experience goes beyond the bore — next-generation clinical applications help reduce exam time and improved patient comfort features result in a cooler, quieter experience.

Image A

Image B

A work of ART

Acoustic Reduction Technology delivers a quieter patient experience.

The right MR experience goes beyond bore size and positioning — patients today are also demanding a quieter MR acquisition. New Acoustic Reduction Technology (ART) delivers just that, reducing acoustic noise.

ART is a highly useful application that's usable in brain, spine and MSK scans. And because ART reduces noise by optimizing the gradient performance, there's virtually no compromise to image quality.

Image B, captured at the same resolution and scan time as image A, was acquired using ART. The acquisition was 10 dBA quieter — with virtually no compromise to image quality.

Express Patient Table

Transfer patients once to improve throughput.

Easily docked and undocked by a single technologist, the Express detachable patient table helps improve workflow and efficiency by minimizing time between scans. It allows for faster patient positioning accuracy compared to fixed table designs, and can support up to 500 lbs.

Patients are able to prep in private, and single transfers of patients directly onto the MR table create a more comfortable patient experience. In the event of an emergency, just one technologist can typically undock the table and safely transport the patient out of the room in under 30 seconds.

Beyond productivity, the table enables new kinds of growth for your practice, including interventional radiology and advanced breast imaging.

The right experience — for technologists

Staying on schedule has an added benefit — it may help increase the job satisfaction of technologists, aiding in their retention. This can help enable administrators to hold onto talent longer, saving on turnover and training costs.

In-Room Operator Console

Fast exam setup — at your fingertips.

Mounted conveniently on the front of the magnet, the high-resolution color console of the Optima MR450w consolidates patient set-up information and operator controls in one place that's easy to see. View patient, system and scan information, control and select parameters, change scanner configurations, and initiate scans in real time right in the room. Save footsteps by eliminating multiple trips to and from the control room.

When AutoStart™ is selected on the iROC, the system will start scanning automatically when the scan room door is closed.

Optional

Dual-sided scanner control panels

Within reach.

Control the scanner from either side of the patient table and easily access cardiac or peripheral gating leads and IV lines. Backlit buttons indicate the next logical step in the exam process, simplifying patient setup.

IntelliTouch patient positioning

Start scanning in just two simple steps.

Set up your patients in as little as 30 seconds, and in just two simple steps. Along with the use of the detachable table, IntelliTouch patient positioning shortens in-room set-up time by up to 70% over fixed-table designs.

To operate, simply press the IntelliTouch strip on either side of the patient table at the landmark location, then press the Advance to Scan button to begin scanning.

Optional

The right investment — for administrators.

In today's economic environment, productivity and throughput are top-of-mind for administrators everywhere. The Optima MR450w allows you to keep up with evolving expectations around comfort, capabilities, and definitive diagnosis. With an advanced suite of clinical applications — including IDEAL, LAVA-Flex, VIBRANT-Flex, and Cube — you can handle more patients with fewer scans, helping boost the efficiency of your practice and making scheduling more predictable.

Buying GE is a good long-term investment. With the GE Continuum, we can help you maintain your clinical capabilities and your competitive edge. And our world-class service organization will keep uptime high, year after year.

Introducing MR-Touch

MR Elastography for non-invasive, holistic liver assessment.

Patients who suffer from chronic liver diseases such as fibrosis and cirrhosis often require ongoing observation by a gastroenterologist. This can entail invasive procedures that don't always provide a full picture of the liver.

The new MR-Touch, developed by GE with the Mayo Clinic, approaches liver exams by using acoustic waves to identify variations in tissue stiffness. This provides an Elastrogram, an entire view of the liver. The Elastrogram enables radiologists and gastroenterologists to monitor a patient frequently and to help them make informed decisions about treatment. Moreover, it opens a new opportunity to provide an innovative service to your existing referral community and beyond.

Optional

Reliable service, right away

Keeping your MR system up and running is critical to keeping a practice productive. To help reduce failures and interruptions to patient flow, we maintain one of the world's largest and most experienced service forces.

In addition, the MR systems from GE build upon existing product service capabilities to move from detection to prediction, allowing the ability to analyze more data than ever and potentially eliminate faults before they occur.

Image Gallery

The following pages illustrate how the Optima MR450w generates stellar images across areas of care.

Spine

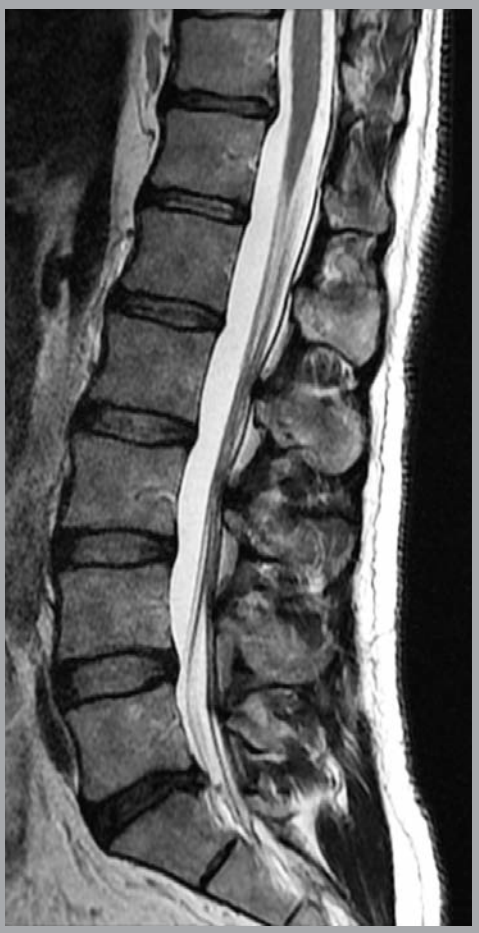
T1 FLAIR

Two-station Whole Spine

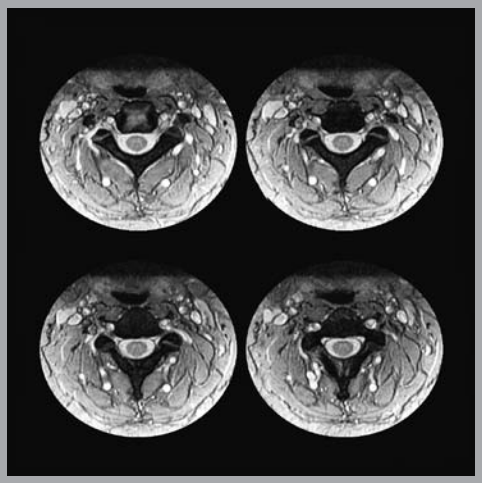
IDEAL In-phase

IDEAL Water Only

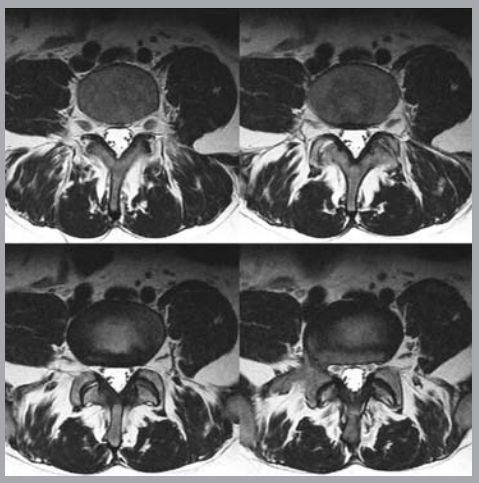
frFSE T2



frFSE T2 with ARC (acquired in 56 sec.)

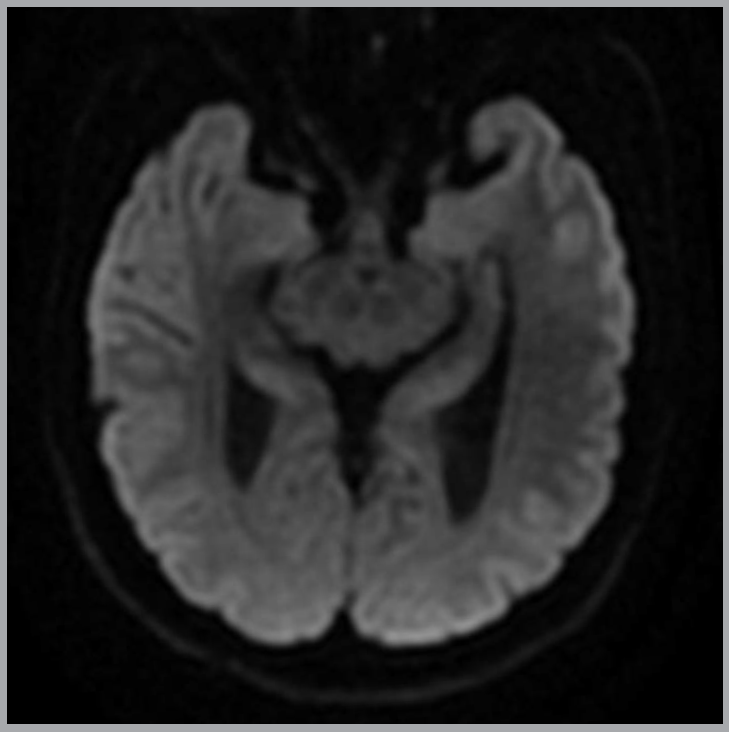


3D MERGE

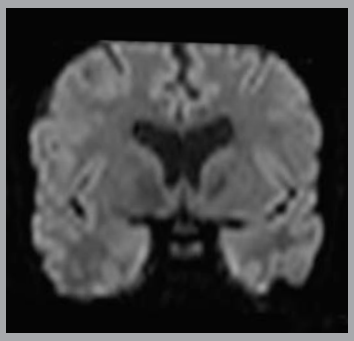


frFSE T2

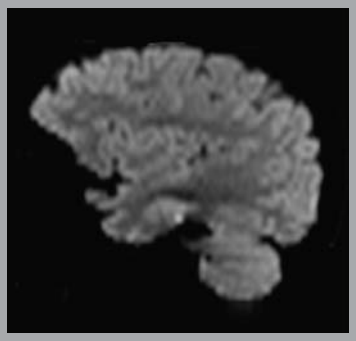
Neuro



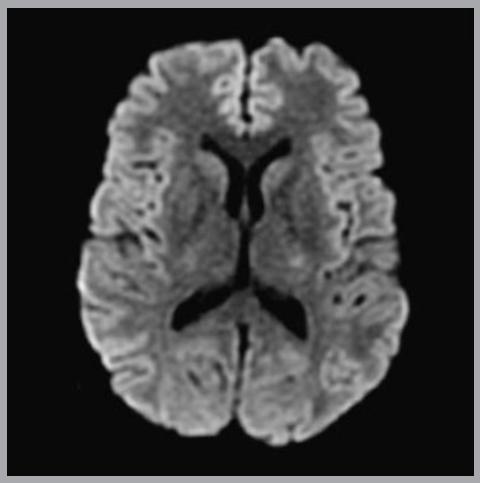
High Resolution Tetrahedral eDWI
Diffusion imaging is a demanding application for gradients in any environment. Combining eXtreme gradient technology and tetrahedral gradient encoding provides shorter TEs, less susceptibility and more SNR.



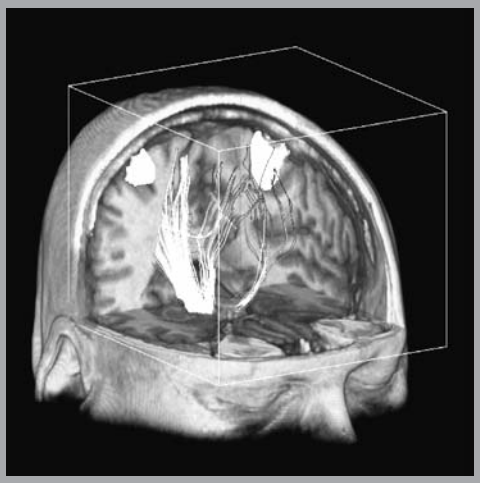
Reformat



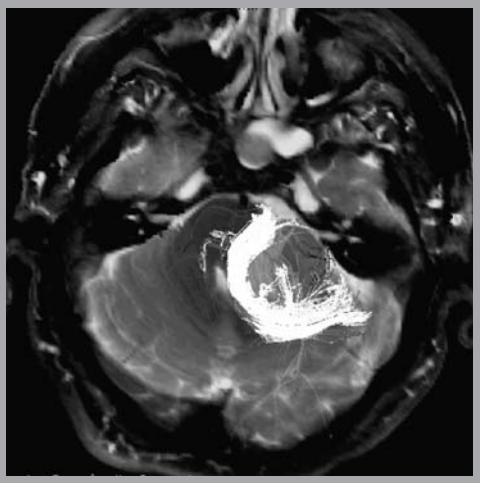
Reformat



3mm DTI with 20 Directions
The Optima MR450w delivers uncompromised high-resolution, 20-direction diffusion tensor images. Using a robust and efficient seeding process, FiberTrak effectively generates three-dimensional renderings of the diffusion along white matter tracts.



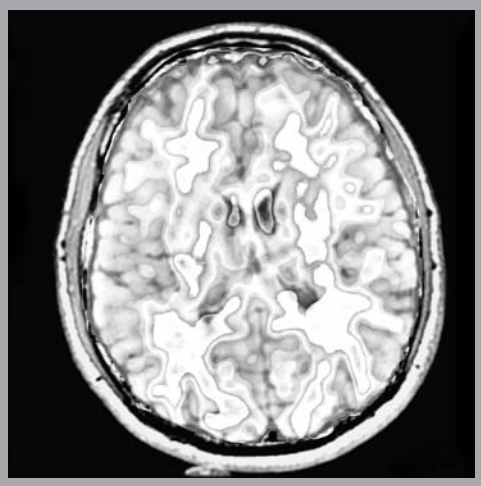
BrainWave Fusion
BrainWave Fusion provides the ability to fuse high-resolution anatomical images with fMRI activation maps and diffusion tensor fiber maps.

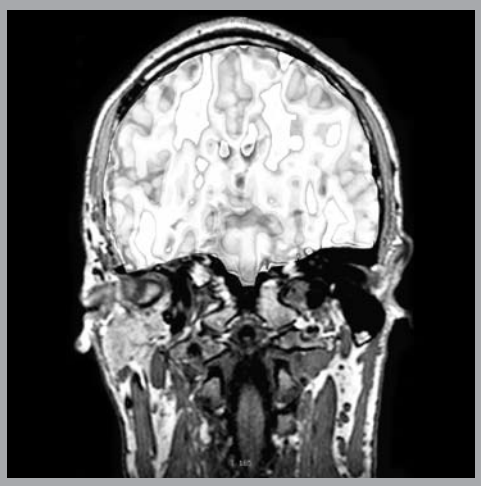


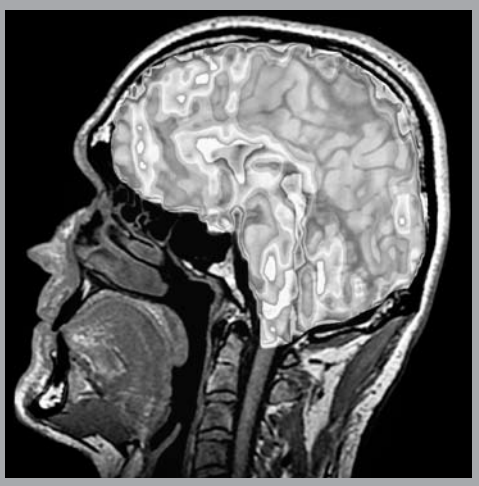
FiberTrack of 22 direction DTI overlaid on 512 x 512 PROPELLER T2

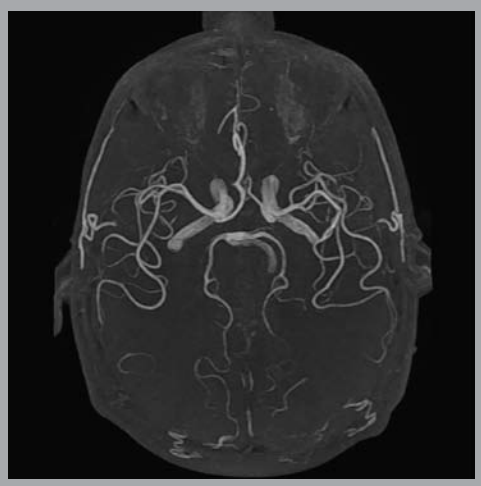
3D Arterial Spin Labeling (3D ASL)

This technique offers full-brain coverage, delivering robust, high-SNR 3D images. It works by generating a 3D FSE acquisition with spiral readout, with pulsed continuous labeling close to the image slab. Background suppression is then added for motion insensitivity. The application is great for evaluating cerebro-vascular conditions such as stroke.

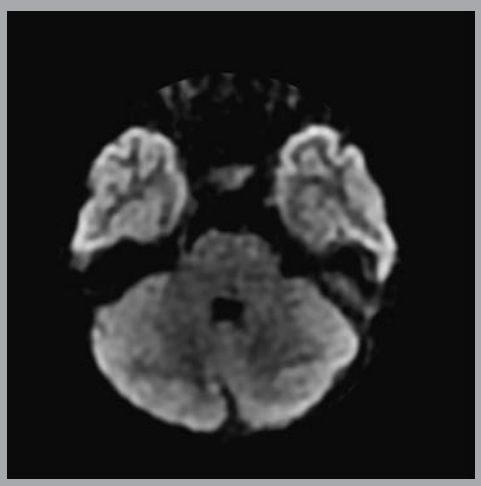






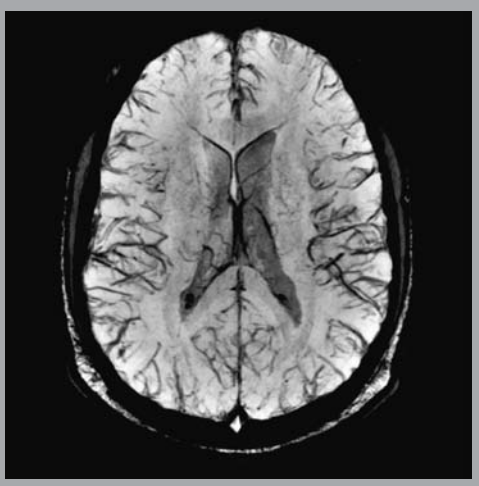


High-resolution 3D TOF MRA demonstrating the benefits of the additional SNR provided by OpTix RF.



PROPELLER DWI

PROPELLER DWI corrects for susceptibility artifacts at air/tissue interfaces, which are commonly seen in the temporal lobes when using standard EPI sequences. It also reduces artifacts from dental and/or surgical implants.



SWAN

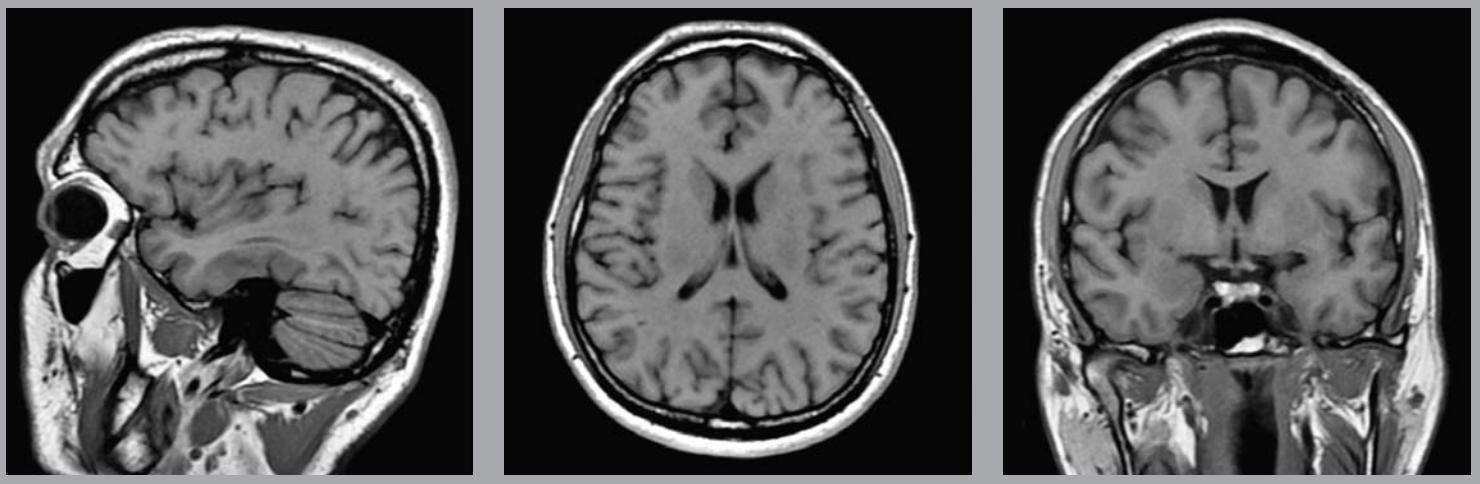
SWAN is a unique 3D T2*-weighted technique that provides the ability to clearly delineate small vessels. As a 3D application, SWAN benefits from the added SNR of the OpTix optical RF technology.

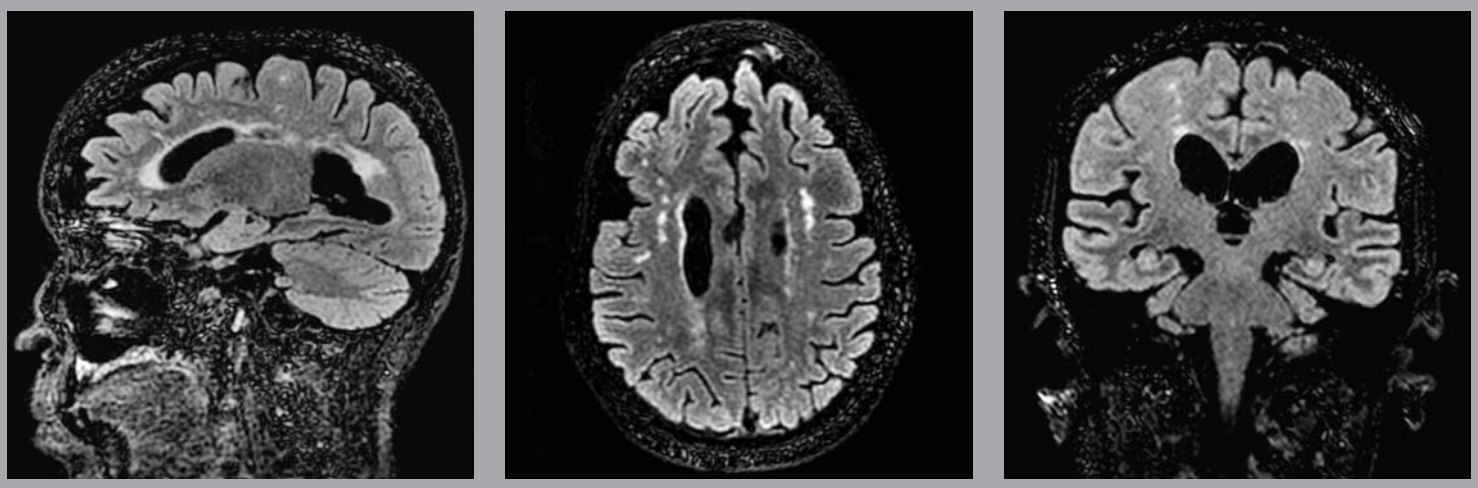
Neuro

Continued

Cube T1

Cube is a volumetric imaging technique with isotropic resolution—scan once and reformat into any plane with excellent resolution. Cube utilizes a unique, advanced acceleration technique, ARC, which reduces scan times for 3D imaging and allows you to reduce voxel size in order to enhance the quality of the reformatted planes.





Cube T2 FLAIR

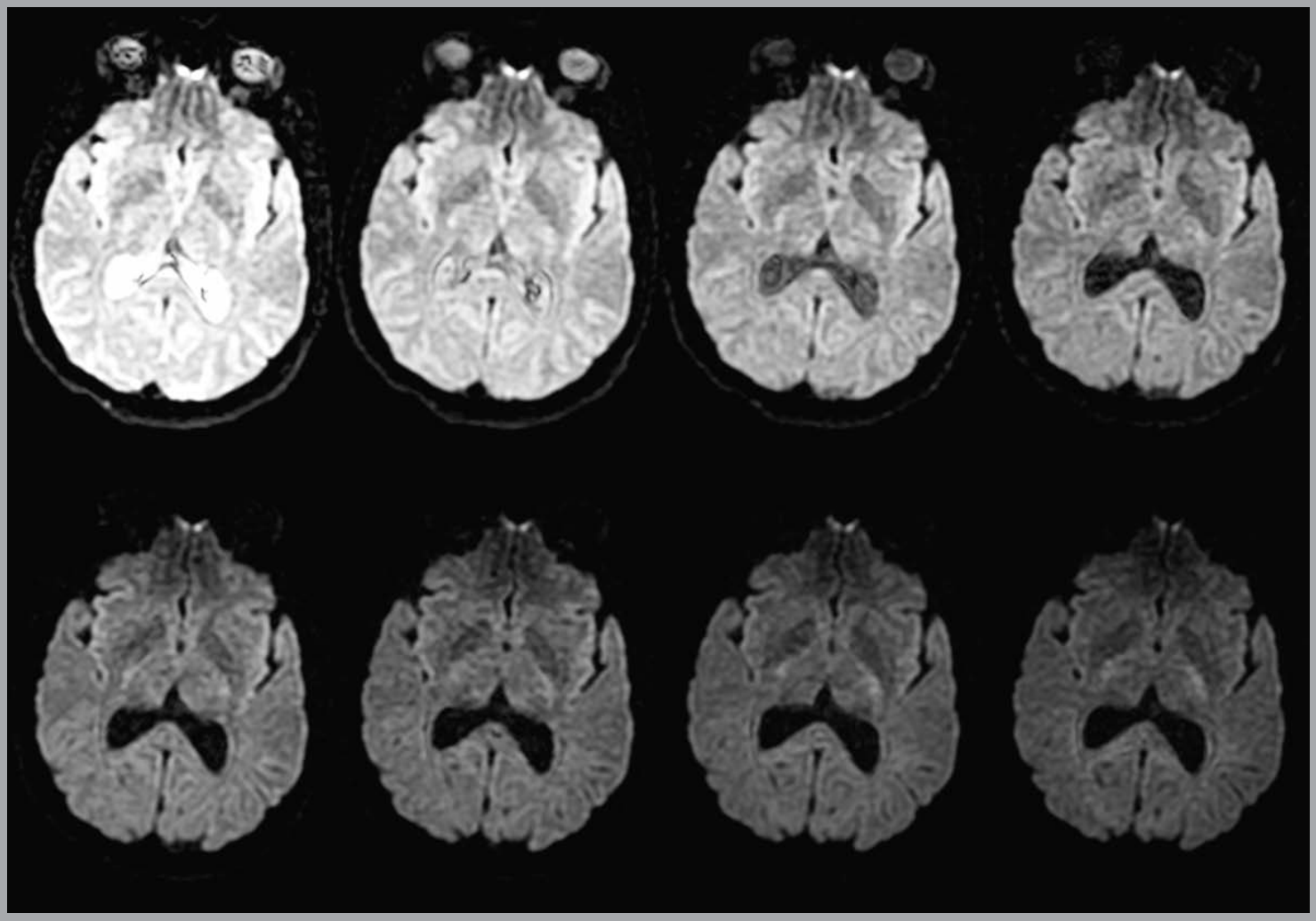
Cube is compatible with multiple contrasts making it a versatile technique for rapid but uncompromised neuro imaging.

Neuro

Continued

Multi B-value eDWI

This new technique represents the next level in diffusion imaging, delivering more SNR, less scan time, and more accurate ADC. It applies an EPI single shot sequence with adjustable multiple b values, using either IR-prep or SSRF pulses for fat suppression. It can operate with a respiratory or cardiac triggered sequence.

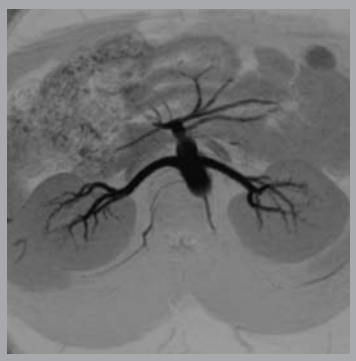


Multi B-value eDWI of the brain showing b values ranging from 250 to 2000.

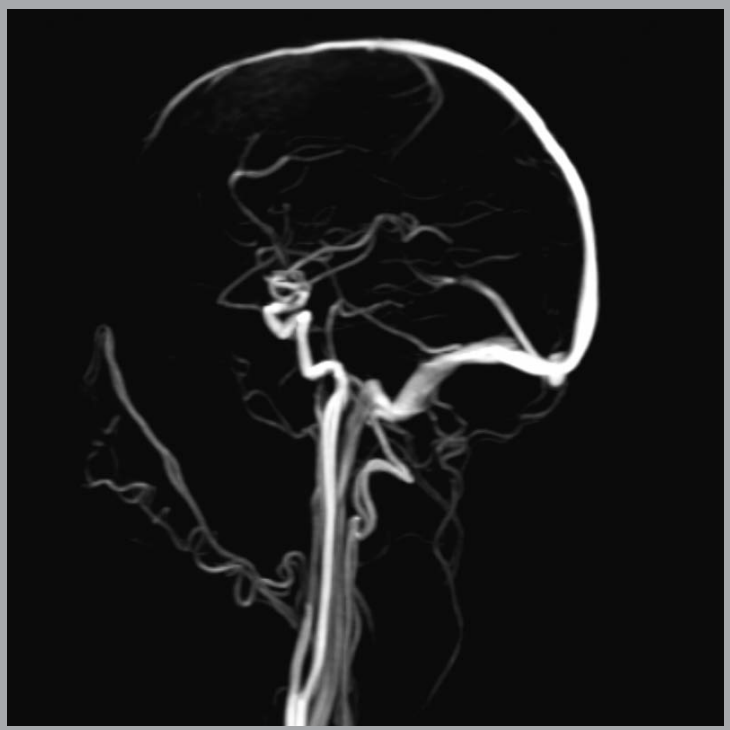
Non-contrast Angiography

Inhance Inflow IR eliminates the need for contrast on renal MRA studies, and does it without adding time-consuming set-up. Combined with the Express user interface with automated fat and background suppression, prescription is dramatically simplified.

Inhance Inflow IR



Inhance Inflow IR



Inhance 3D Velocity

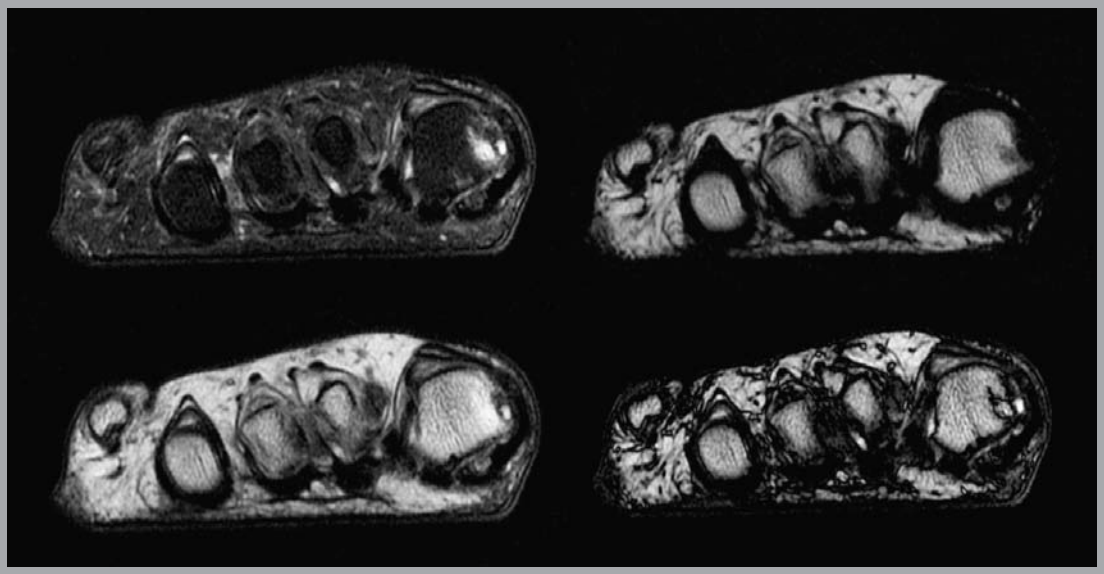
Inhance 3D Velocity is a non-contrast enhanced technique designed to acquire angiographic images of the brain and renal arteries with excellent background suppression in short scan times. The technique is capable of obtaining the whole neurovascular anatomy in 5–6 minutes.

Inhance 3D DeltaFlow

This application delivers excellent contrast and surrounding tissue subtraction—all without use of a contrast agent. It subtracts the systolic from the diastolic phase, helping eliminate venous and background signal.

MSK

With the Optima MR450w, patients can be imaged in a more comfortable position.



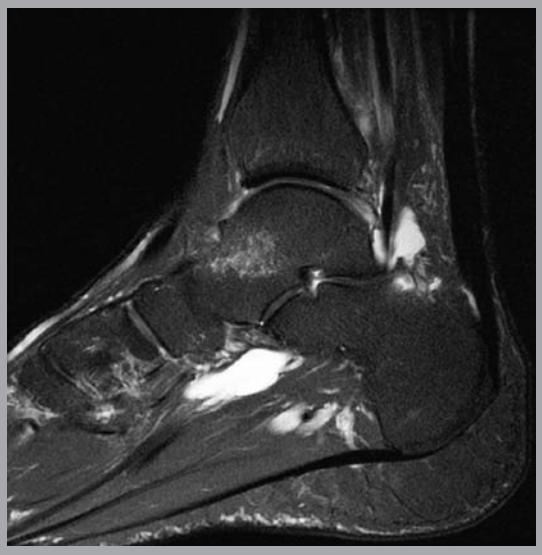
IDEAL

3D MERGE is designed to deliver enhanced contrast and SNR for musculoskeletal and spine imaging. It also benefits from the additional SNR of the OpTix RF technology.

3D MERGE

T2 Fat Sat

The performance of the new Optima MR450w magnet delivers uncompromised off-center imaging with uniform fat saturation performance in a wide bore environment.

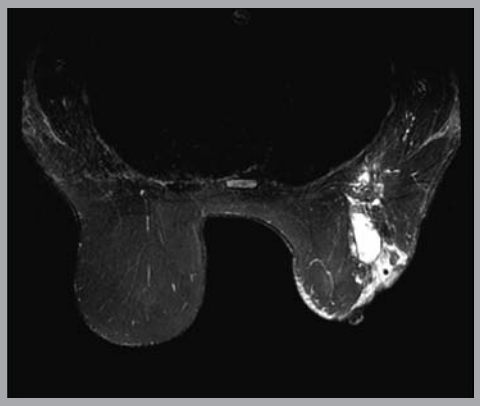


T2 Fat Sat

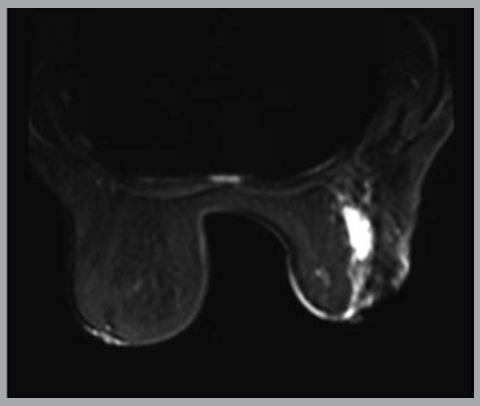
PD (640 x 320 resolution in 3:37)

Breast

IDEAL provides a robust, high-resolution alternative to FSE Fat Sat or STIR for T2 fat-suppressed breast imaging.

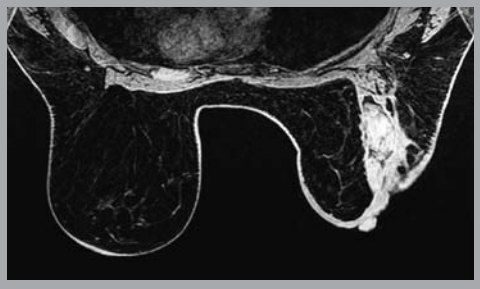


IDEAL Water Only



DWI

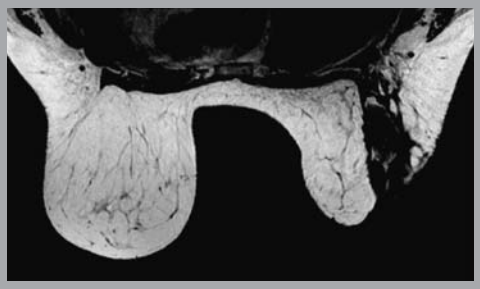
The Optima MR450w performs excellent breast diffusion imaging. Breast diffusion can be performed with the HD Breast Array or with the integrated body coil, which allows for a larger imaging field.



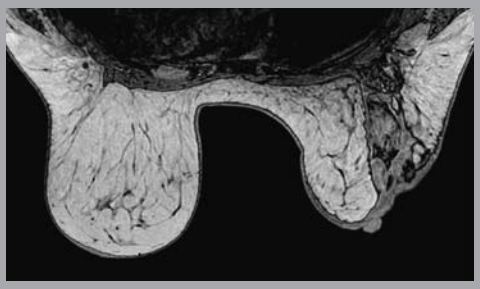
VIBRANT-Flex Water Only

VIBRANT-Flex In-phase

VIBRANT-Flex generates up to 4 contrasts with high-resolution in just one short scan, and virtually eliminates fat suppression failures in breast imaging — even over a large FOV with irregular anatomy. As a result, you gain 4X more data and enhanced ability to "do it once and do it right" on an exam that you don't want to repeat.



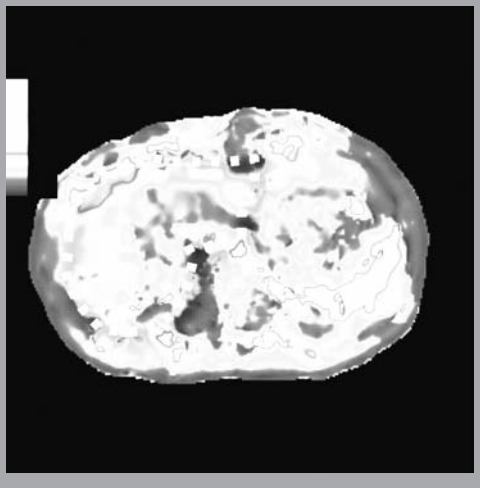
VIBRANT-Flex Fat Only



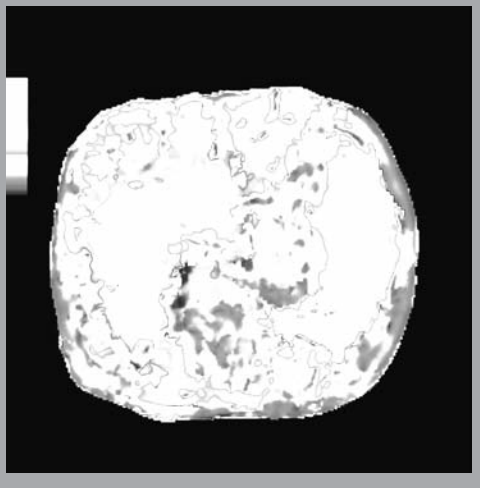
VIBRANT-Flex Out-of-phase

Liver

In these elastograms — acquired with MR-Touch — relative stiffness is shown on a color scale ranging from softest (purple) to hardest (red). The stiffness of normal liver tissue is very low, as seen in the left example. The red in the right image shows high-tissue stiffness.

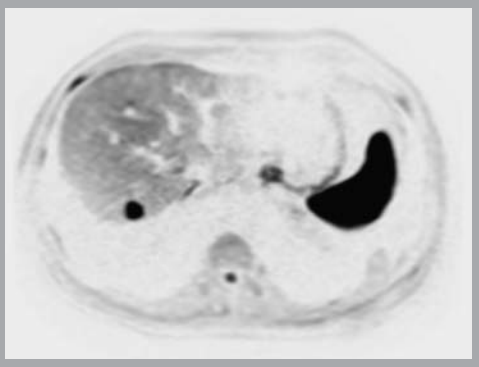


MR-Touch Elastogram (volunteer)



MR-Touch Elastogram (patient with cirrhosis)

Abdominal



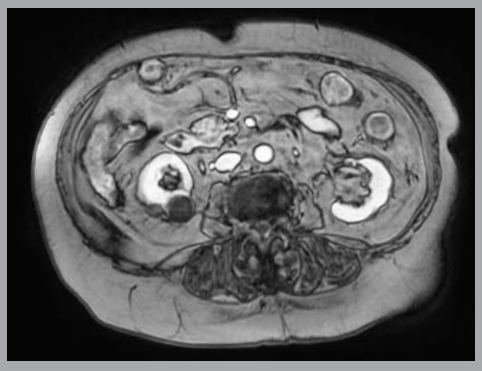
eDWI

T2 FSE

LAVA-Flex Water Only

LAVA-Flex Fat Only

LAVA-Flex In-phase



LAVA-Flex Out-of-phase

LAVA-Flex

LAVA-Flex generates up to 4 contrasts with high-resolution in just one short scan, and virtually eliminates fat suppression failures even over a large FOV whole abdomen.

The eXtreme gradients and OpTix RF technology enable the Optima MR450w to deliver excellent large FOV diffusion imaging. With ARC, this 21-slice SSFSE series was acquired in 15 seconds.

The right choice.

For those seeking to realize the true potential of wide-bore MR, the Optima MR450w is the clear choice. That choice brings more than excellent patient care—it also provides a range of benefits for every key stakeholder in your practice.

Radiologists get the high-quality images they demand for definitive diagnoses.

Administrators get satisfied patients, precise scheduling, and opportunities for growth.

And technologists get to handle more patients with less hassle, capturing images with more consistency.

About GE Healthcare

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services help our customers to deliver better care to more people around the world at a lower cost. In addition, we partner with healthcare leaders, striving to leverage the global policy change necessary to implement a successful shift to sustainable healthcare systems.

Our "healthymagination" vision for the future invites the world to join us on our journey as we continuously develop innovations focused on reducing costs, increasing access and improving quality around the world. Headquartered in the United Kingdom, GE Healthcare is a unit of General Electric Company (NYSE: GE). Worldwide, GE Healthcare employees are committed to serving healthcare professionals and their patients in more than 100 countries. For more information about GE Healthcare, visit our website at www.gehealthcare.com.

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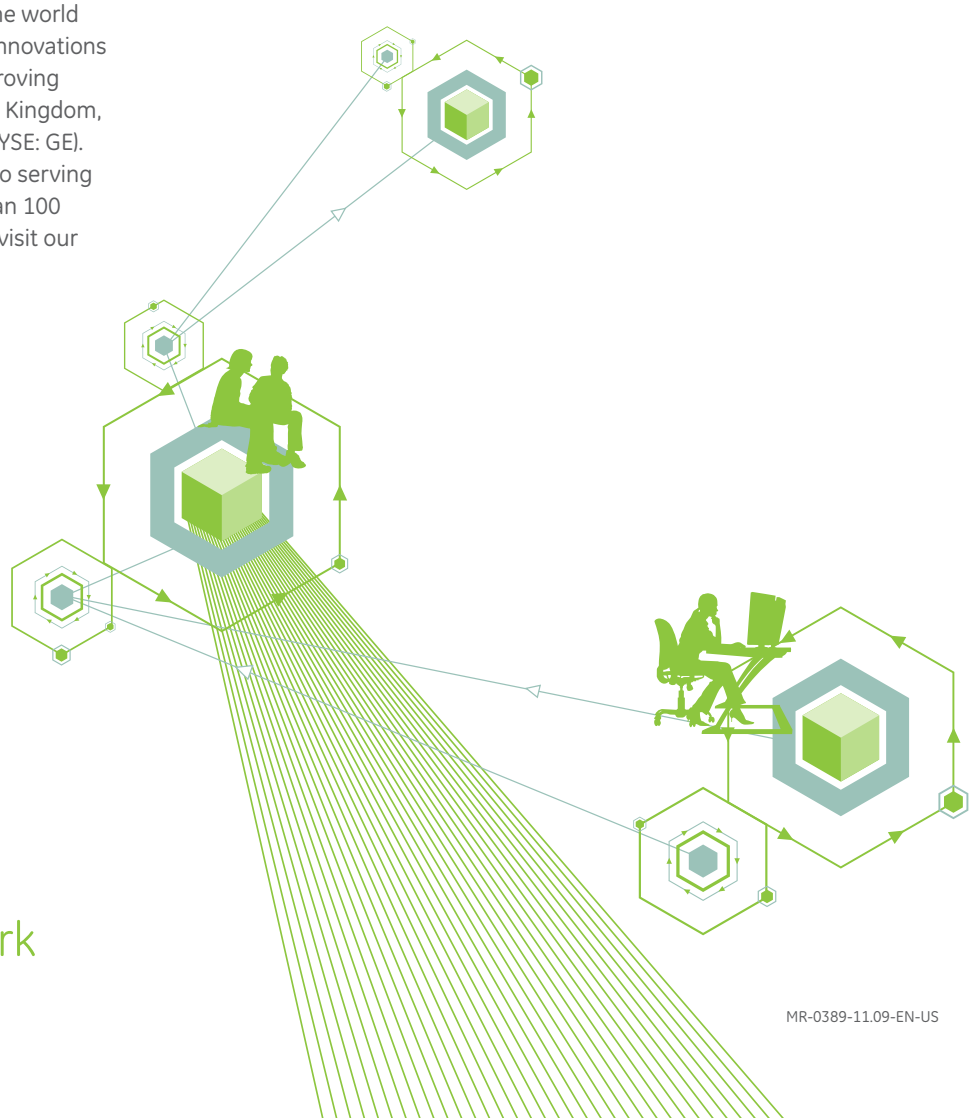

imagination at work

MR-0389-11.09-EN-US