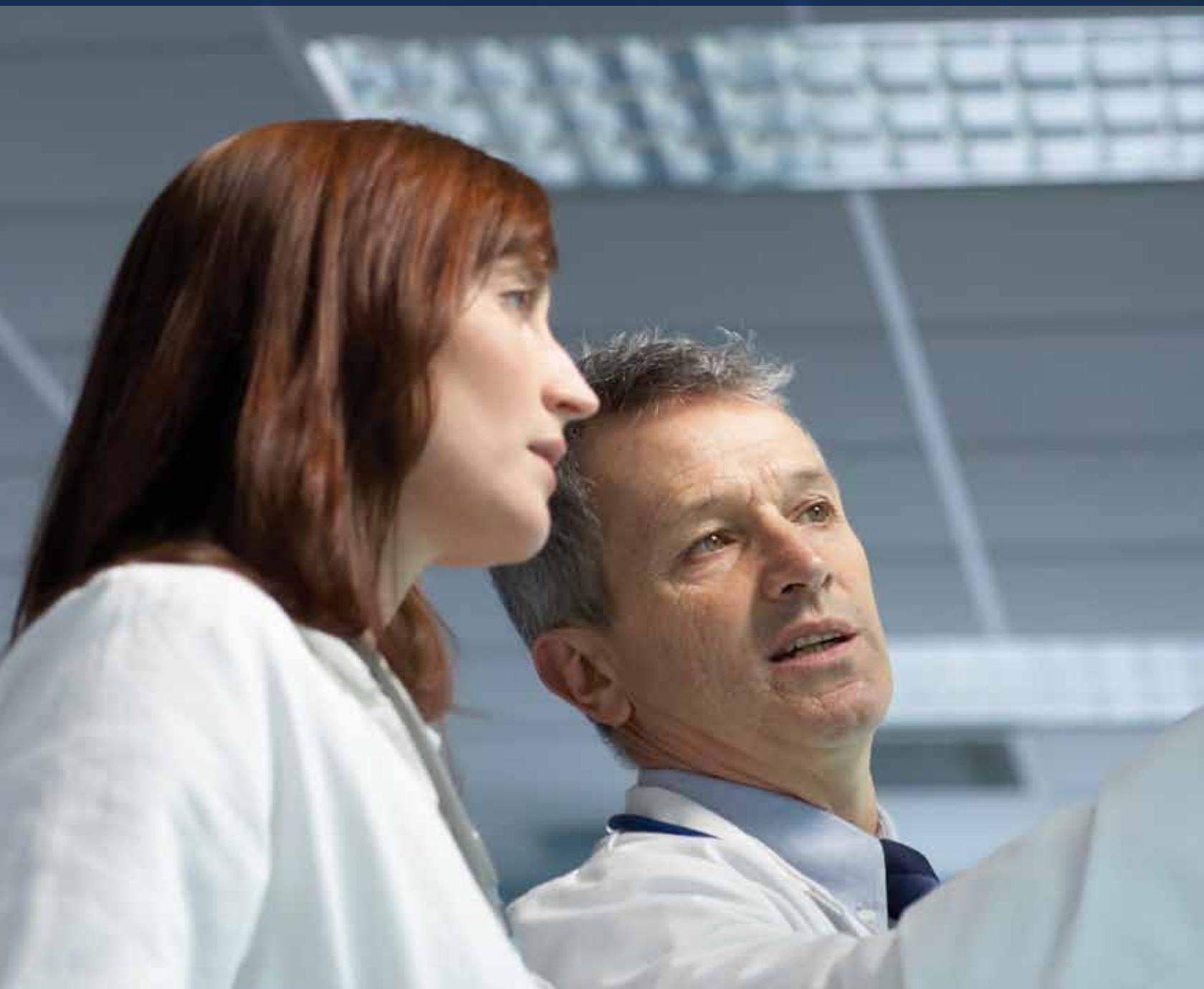


# Power. Simplicity. Cardiac MR.



Tissue characterization and function.  
Morphology and flow.  
Information and insight.

Cardiac MR from GE Healthcare combines power and simplicity, to help you see well beyond just cardiac anatomy. It gives you comprehensive clinical information on hard-to-detect cardiac conditions that no other single imaging modality can provide.

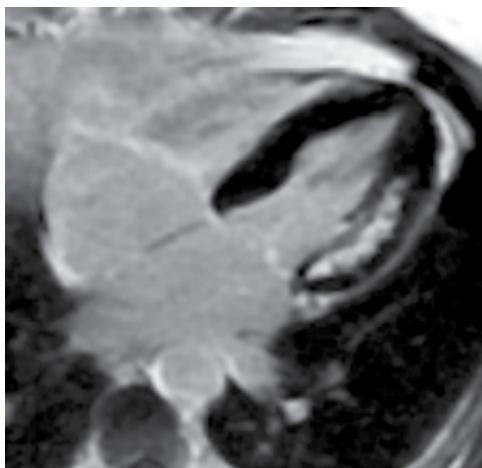


# Answers beyond anatomy.

GE Cardiac MR gives you the power to effectively characterize myocardial tissue, so you can assess a wide range of cardiac diseases, and iron overload other modalities can't see.

With GE Cardiac MR, you have the ability to visualize not just anatomy, but deep inside the myocardium to see exactly what's happening. MR also has the power to examine patients easily and effectively—from pediatric patients<sup>†</sup>, to those concerned about radiation exposure, to women with silent ischemia.

With GE Cardiac MR, you see things you can't see any other way—for your shortest path to diagnostic confidence.



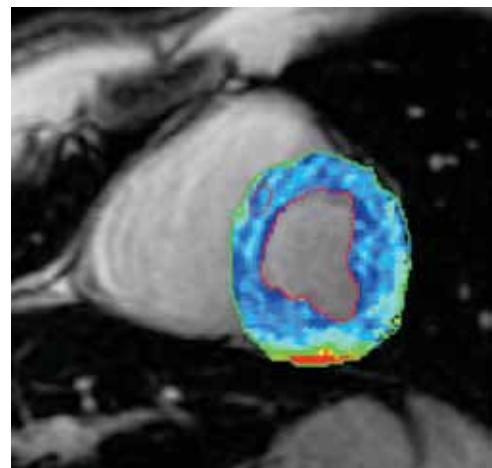
Viability imaging

Image courtesy of Centre Cardiologique du Nord, Paris, France



T2-weighted edema imaging

Image courtesy of CNR, Pisa, Italy

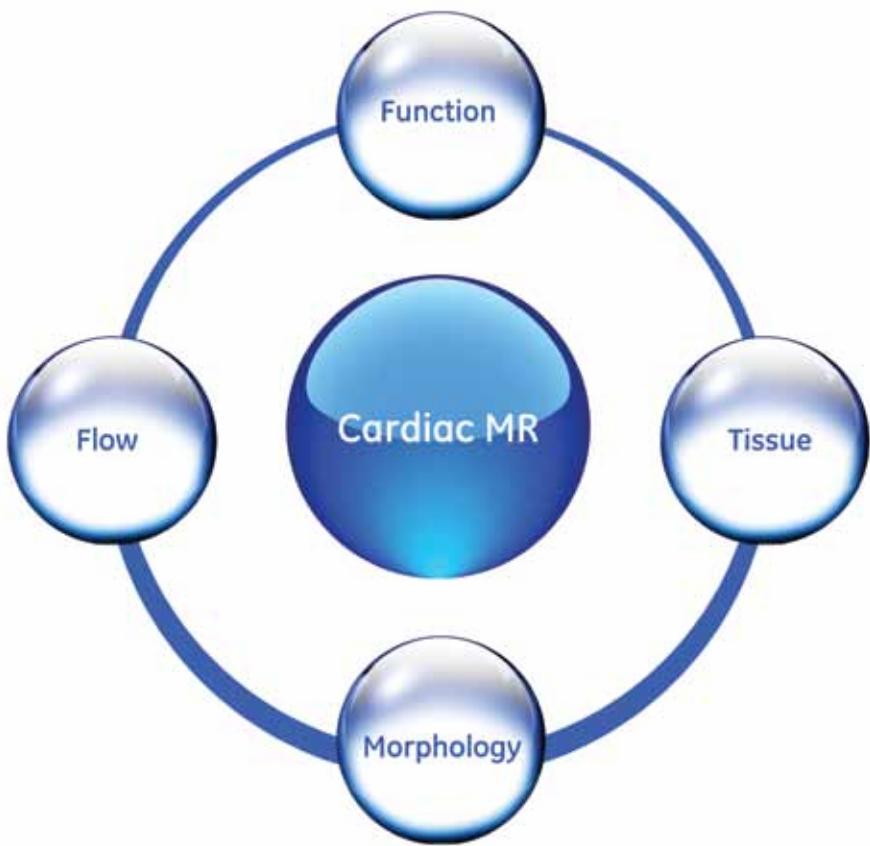


T2\* imaging

Image courtesy of Advanced Cardiovascular Imaging, New York City, USA

From ischemic heart disease and cardiomyopathies, to congenital heart disease and MR angiography, GE Cardiac MR gives you quick, easy ways to assess a wide range of cardiac diseases, free of ionizing radiation.

See it all.

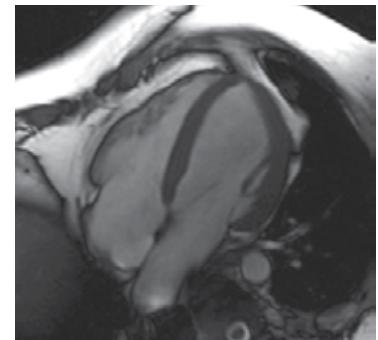
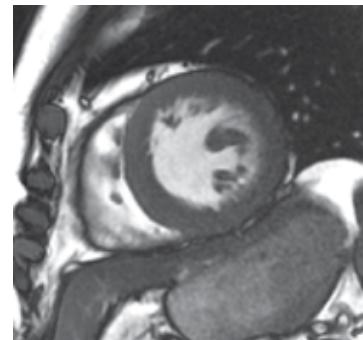




#### Gated 2D FIESTA/FGRE Cine

*High-quality cardiac images for wall motion assessment.*

Optimized for cardiac imaging, the 2D FIESTA/FGRE Cine pulse sequence provides excellent blood-to-myocardium contrast. Short TR/TE allows for the acquisition of high-quality cardiac images that are less sensitive to turbulent blood flow and off resonance artifact.

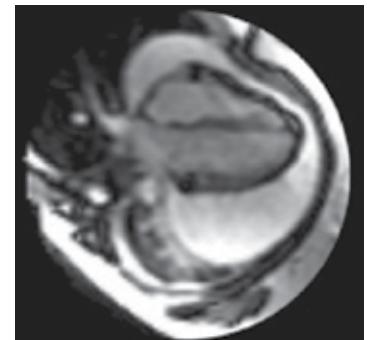
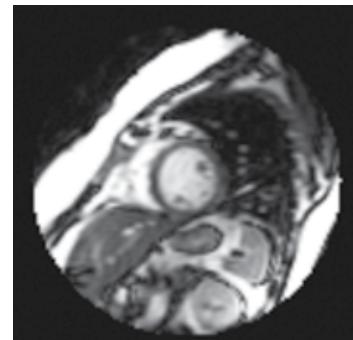


2D FIESTA Cine from 1.5T (left) & 3.0T (right)

#### MR Echo

*Image the heart in real time—without gating.*

Excellent for imaging cardiac patients who have arrhythmias or difficulty holding their breath, GE MR Echo generates excellent real-time images without the need for ECG gating or breath-holds. Interactive user-interface allows you to identify primary cardiac planes with ease.



MR Echo routinely produces non-gated free-breathing images like these.

*Images courtesy of Advanced Cardiovascular Imaging, New York City, USA*

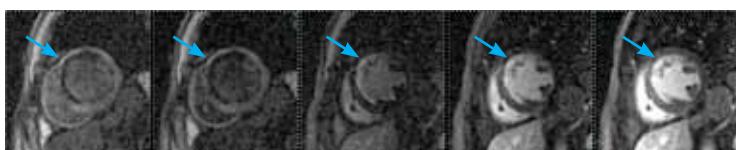
Robust cardiac function assessment for your patients, even the most challenging ones.

## Tissue

### Cine IR

*Optimal TI time, every time.*

A simple, fast, easy-to-use multiphase FGRE-Cine acquisition done in a single breath-hold, Cine IR captures image contrast evolution at different TI times to quickly determine the optimal TI time for myocardial-delayed enhancement (MDE). It can also detect amyloid, vasculitis, and other tissue abnormalities through the TI evolution.



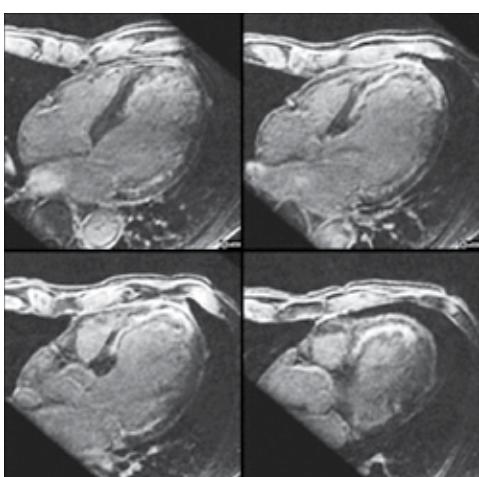
Cine IR showing TI evolution of normal and infarcted myocardium.

*Image courtesy of St. Mary Hospital, London, UK*

### 2D/3D Myocardial Delayed Enhancement (MDE)

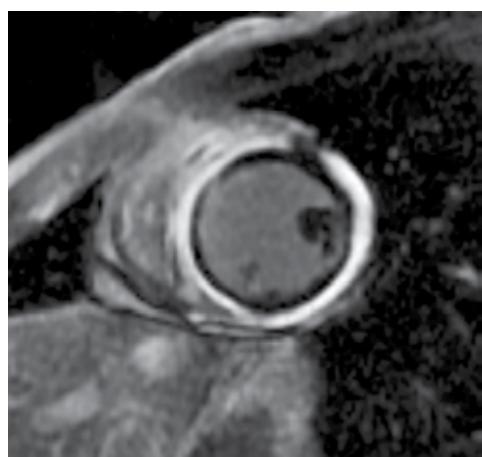
*Determine myocardial tissue viability simply and reliably.*

Performed in a single breath-hold, 2D/3D Myocardial Delayed Enhancement (MDE) provides fast, simple, reliable assessment of myocardial tissue viability or fibrosis by improving the contrast-to-noise ratio between infarcted and normal myocardium.



High-resolution free-breathing 3D MDE enables flexible reformat into any desired plane.

*Image courtesy of Asahikawa City Hospital, Japan*



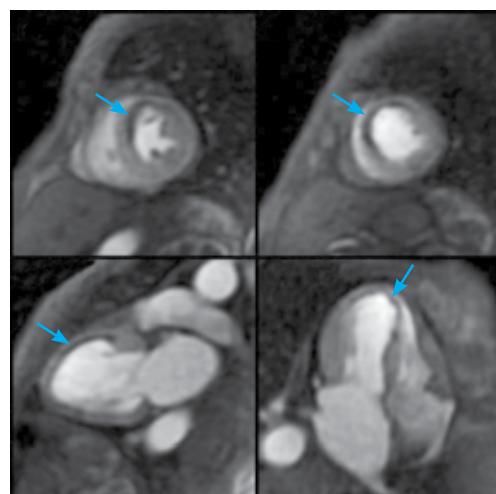
2D MDE showing myocarditis with LV pericardium involvement.

*Image courtesy of Centre Cardiologique du Nord, Paris, France*

### Time Course (FGRE TC/FGRE-ET/FIESTA TC)

*Perform fast, robust cardiac time-course studies with clinical confidence.*

The first choice for stress studies on stunned versus infarcted myocardium, FGRE TC delivers excellent temporal and spatial resolution and T1 contrast to aid more confident diagnosis of the myocardium. Fast Gradient Echo Time Course displays superb contrast-to-noise ratio and is less sensitive to off-resonance and eddy current effects.



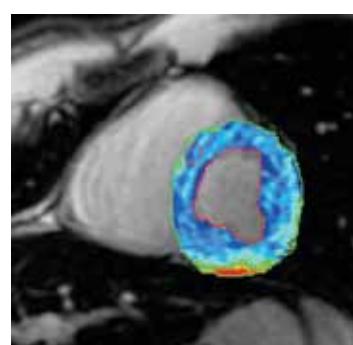
Multi-plane FGRE Time Course showing myocardial infarction in both short-axis and long-axis views.

*Image courtesy of GIE – IRM de Creil, France*

### T2\*

*Measure cardiac iron levels noninvasively.*

A useful technique for evaluating cardiac iron overload, T2\* enables iron assessment in the cardiac tissue, so that chelation treatment can be adjusted appropriately to help prevent complications. MR is the only noninvasive modality in clinical use that can detect cardiac iron deposits.



T2\* assessment for iron overload.

*Image courtesy of Advanced Cardiovascular Imaging, New York, USA*

### T2w Blackblood Imaging

*Identify inflammation, edema, and visualize masses and valves.*

This double and triple IR fast-spin-echo (FSE) technique provides T1w or T2w images with excellent blood suppression to visualize edema, cardiac masses, or valve leaflets.



Edema with T2 elevation observed in patients with acute myocarditis.

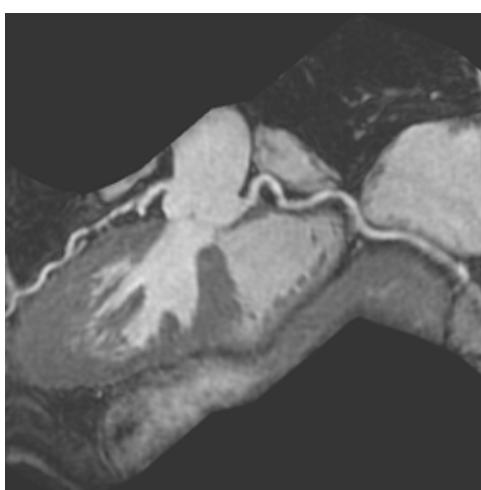
*Image courtesy of Weill Cornell Medical Center, New York City, USA*



### 3D Heart Coronary Artery Imaging with Cardiac Navigator

See whole-heart morphology in clear detail.

This free-breathing, navigator-assisted technique shows you the entire heart in exquisite anatomical detail. With 3D Heart, you can image the coronary arteries, evaluate vascular structures, and assess congenital heart disease (CHD) noninvasively in adult and pediatric patients<sup>†</sup> without sedation, anesthesia, radiation, contrast media, or the limitations of ultrasound. Navigator echo tracks the diaphragm motion to synchronize the acquisition to the patient's end-expiration respiratory phase, enabling free-breathing acquisition. Real-time motion correction further minimizes respiratory ghosting artifacts while improving the scanning efficiency.



With 3D Heart, coronary arteries can be visualized even at high heart rates (HR=90 bpm, 6-year-old patient with post-AV canal repair).<sup>†</sup>

Image courtesy of Stanford University, Palo Alto, USA

Image courtesy of Funabashi Municipal Medical Center, Japan

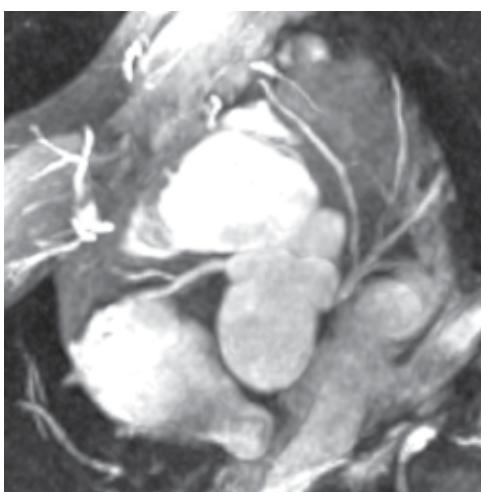
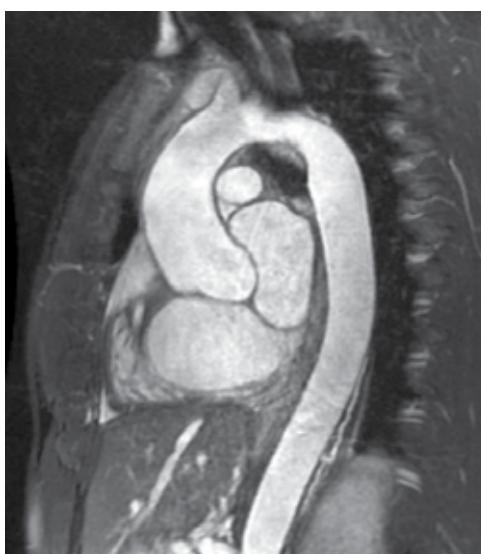


Image courtesy of National Naval Medical Center, Bethesda, USA



Non-contrast aorta MRA using 3D Heart.

Image courtesy of Stanford University, Palo Alto, USA

<sup>†</sup> MR Scanning has not been established as safe for imaging fetuses or infants. Carefully compare the benefits of MR versus alternative procedures before scanning to control risk to the patient. A physician needs to decide to scan pregnant or infant patients.

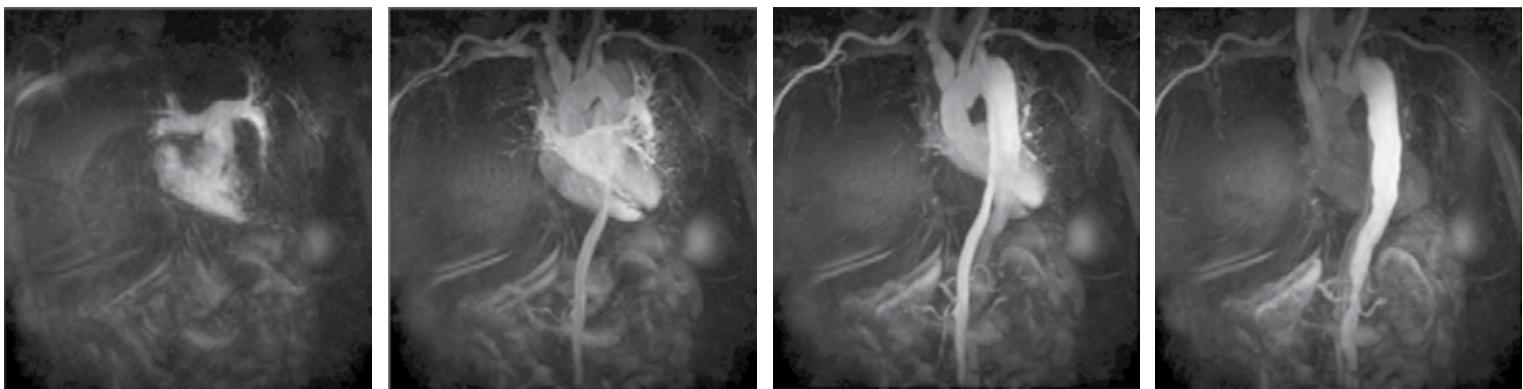


## TRICKS

Perform simple, no-miss MRA high in spatial and temporal resolution.

An excellent imaging technique for challenging, contrast-enhanced MRA where timing is critical, TRICKS enables high-resolution, time-resolved vascular imaging without the need for timing or trade-off between detail and speed.

Providing both vessel detail and dynamic information TRICKS is a very feasible, noninvasive technique for assessing vascular disease—without the use of ionizing radiation.



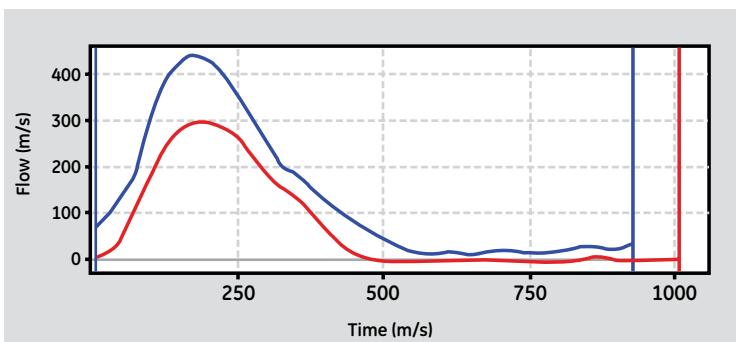
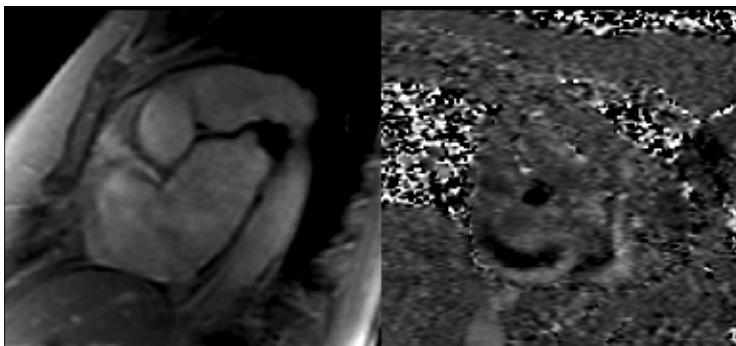
TRICKS showing dynamic filling in an aortic dissection.

Images courtesy of Dresden University Hospital, Dresden, Germany

## High-definition Phase Contrast

Quantify blood flow noninvasively.

Thanks to high-definition Phase Contrast imaging, GE Cardiac MR makes short work of all aspects of blood-flow assessment. Complete measurements quantify blood flow and evaluate flow volumes and velocities—all noninvasively.

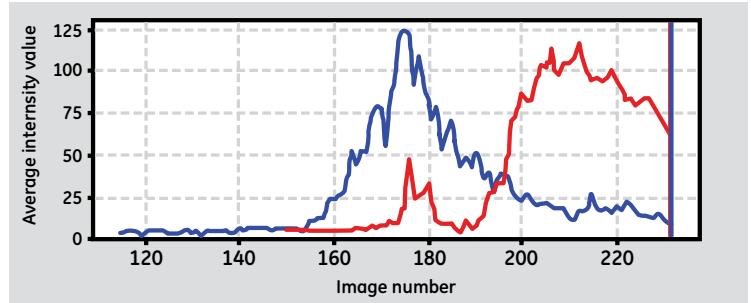


These MR images demonstrate aortic insufficiency. ReportCARD 4.0 quantifies and charts severe AI.

## PFO

Detect PFO's with ease.

A leading cause of stroke in patients under age 55, patent foramen ovale (PFO) can be accurately diagnosed with GE Cardiac MR, comfortably and noninvasively. A non-gated IR FGRE pulse sequence clearly detects PFO's, while ReportCARD 4.0's image interpretation and shunt identification streamline the entire process.



With images generated by our IR-FGRE pulse sequence, detecting PFO's is as easy on your patients as it is for you.

Image courtesy of Advanced Cardiovascular Imaging, New York City, USA

# Powerful. From innovation to insight.

## 3.0T platforms

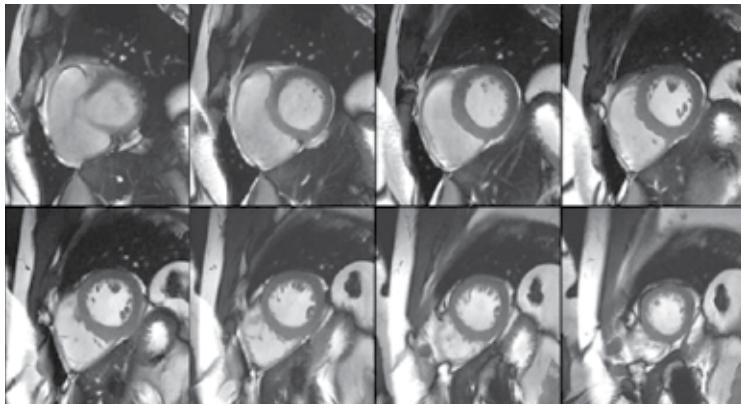
### Discovery MR750 3.0T System

*The power, resolution, speed, and stability you need for confident cardiac imaging.*

The Discovery™ MR750 3.0T system is built around our third-generation, short-bore, superconducting 3.0T magnet—proven to deliver high homogeneity for excellent results even in high-performance applications such as cardiac.

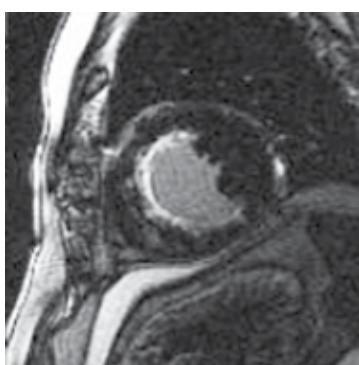
In the Discovery MR750, the industry's most powerful gradients deliver greater accuracy, more reproducible scans, and higher temporal resolution to make possible imaging techniques such as FIESTA.

OpTix, GE's innovative optical RF technology, boosts signal intensity and clarity for up to 27% higher signal-to-noise ratio (SNR) and cleaner, crisper images compared to non-optical receivers.



Superb FIESTA image quality in 3.0T due to unparalleled gradient performance and robust localized shimming (250 lb. male).

*Images courtesy of Robarts Research Institute, Canada*



SNR gain in 3.0T enables higher-resolution 2D MDE to enhance infarct visualization.  
3.0T at 5 mm slice thickness (left) vs. 1.5T at 8 mm slice thickness (right).

*Images courtesy of UW Madison, USA*

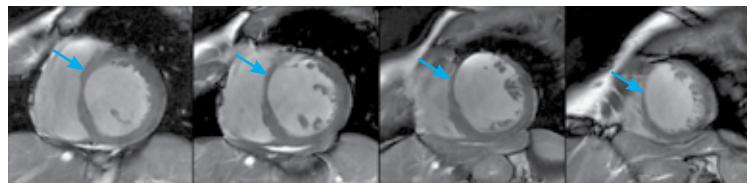
### Signa HDxt 3.0T MR System

*More confident diagnoses in your most challenging exams.*

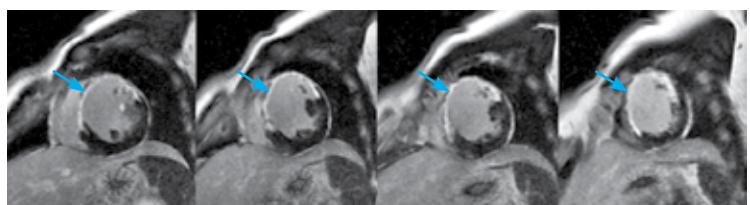
Built on the High Definition platform you know and trust, the Signa® HDxt 3.0T MR system delivers clinical applications that offer excellent performance in cardiac imaging and take accuracy and certainty to a new level.

Designed for consistency and simplicity to enhance your productivity, the Signa HDxt 3.0T MR system uses GE intelligent system tools and one of the industry's best-known and easiest-to-use MR user interfaces to produce rapid, "can't-miss" exams. An innovative docking table lets you comfortably prepare your next MR patient while you're still scanning the current one.

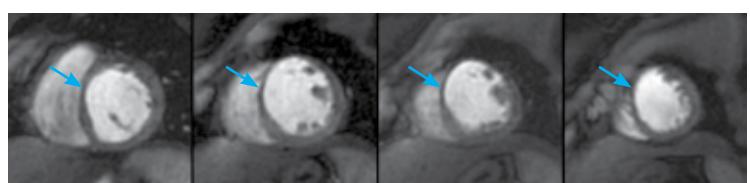
Combination of MDE, Time Course and functional imaging provides important viability and functional information that enables physicians to diagnose with confidence.



2D FIESTA Cine showing wall motion abnormality.



2D MDE showing transmural infarction.



Time Course imaging showing myocardial defects.

*Images courtesy of Centre Cardiologique du Nord, Paris, France*

A powerful lineup of MR imaging platforms. And advanced, innovative coils that make the most of each platform's capabilities. With GE Cardiac MR, you gain the technological edge to image and diagnose with the utmost speed and confidence.

## 1.5T platforms

### Discovery MR450/Optima MR450w 1.5T Systems

*Comprehensive cardiac capabilities in a 1.5T package.*

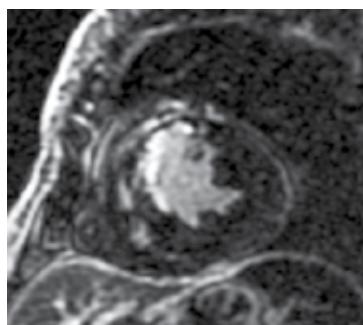
The strongest gradients for accurate, reproducible, high-resolution scans. High SNR for sharp, clear images. Accelerated parallel imaging for quicker, cleaner acquisitions. Fast, efficient volume reconstructions and image generation in real time.

The Discovery MR450 and Optima MR450w share many of the same remarkable technology and imaging performance features you'll find on our flagship Discovery MR750 scanner. Along with the same application packages and techniques that make Cardiac MR on the Discovery MR750 so exceptionally easy.



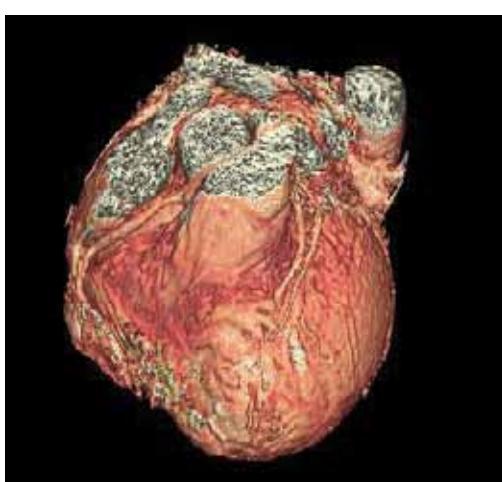
Exquisite details with Double IR T1w black blood imaging on the Discovery MR450.

*Image courtesy of Centre Cardiologique du Nord, Paris, France*



Viability imaging with MDE on the Optima MR450w.

*Image courtesy of GIE - IRM de Creil, France*



3D Heart with 32-channel coil on the Discovery MR450.

### Signa HDxt 1.5T MR System

*High-definition cardiac MR imaging. Simplified.*

No matter how basic or difficult the cardiac exam, or how easy or challenging the patient, the Signa HDxt 1.5T MR system delivers exceptional imaging accuracy, aiding diagnostic confidence across applications.

The Signa HDxt 1.5T's consistency and simplicity help enhance your productivity. To further speed your workflow, you can comfortably prepare your next MR patient for his or her scan on the system's innovative docking table, even while your current patient is still in the scanner.



32-channel Cardiovascular Coil

Highly accelerated imaging shortens breath holds and exam times.



32-channel Torso Coil

The 32-channel Torso Coil is ideal for imaging a larger SI field of view such as the aorta.



From faster exam set-up to flow analysis at your fingertips, Discovery MR simplifies every step of the cardiac exam to help boost productivity and improve workflow.

# Simple. From



#### 32-channel Cardiovascular Coil improves comfort and productivity.

With its padding and lightweight design, the dedicated 32-channel Cardiovascular Coil is comfortable for patients and easy for technologists to handle. Its high SNR and acceleration capability reduce breath-hold and scan times, and help enhance patient compliance, and minimize repeat scans due to errors or poor image quality.



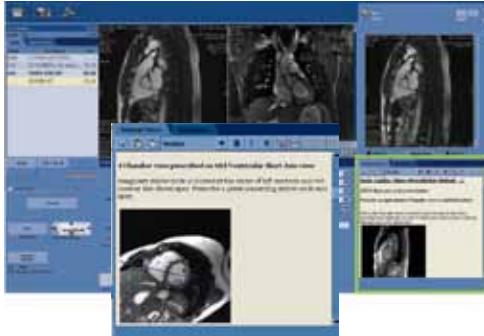
#### Integrated arm boards ease patient prep.

With a simple, one-handed motion, the integrated arm boards can be optimally positioned to support the patient for transport, injections, and attaching ECG leads.



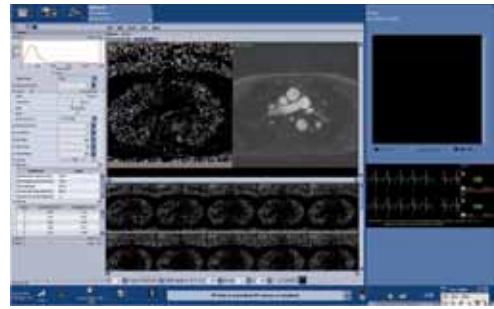
#### Detachable Express Patient Table speeds throughput.

Fully prepare patients for exams outside the scan room on the detachable Express Patient Table, and transfer them once to reduce their anxiety, save valuable time, and boost scanner productivity. And prep the next patient while one is in the scanner. Providing a 500-pound-capacity, the Express Table is easily docked and undocked by a single technologist.



#### Protocol Notes simplify Cardiac MR.

Preloaded Protocol Notes accessible right on the console describe how to prescribe a cardiac exam to help reduce any uncertainty over performing Cardiac MR. See on the spot how to obtain a short-axis view, for example, or how to acquire a two-chamber or four-chamber view.



#### On-console flow analysis provides a quick, first look.

Process and analyze flow data right on the console in the scan room—without transferring data to the workstation—to see if you need to obtain another scan while your patient is still on the table.

# heart to finish.



#### IntelliTouch strips pinpoint patient positioning.

Easy-to-use IntelliTouch strips enable fast, accurate landmarking and patient positioning. Simply press the IntelliTouch strip on either side of the patient table at the landmark location, then press the Advance to Scan button to move the patient safely into the bore.

#### Set up 70% faster.

Together, the detachable Express Table and IntelliTouch patient positioning shorten in-room set-up time by as much as 70% over fixed-table designs.



#### Scan in just two steps.

Set up is so automated, you can position patients and start scanning in just two simple steps, in as little as 30 seconds.



#### In-room control with ECG gating streamlines studies.

The iROC (In-Room Operator's Console) consolidates patient, system, and scan information and operator controls in one scanner-mounted display that's easy to see from both sides of the table. Apply vector ECG gating, select parameters, change scanner configurations, complete exam set-up, and start scans—all in real time right in the scan room—and never leave the patient's side.

# Review. Analyze. Measure. Report.



Customizable protocol on the Cardiac Viewer enables instantaneous cross-reference review of multi-slice FIESTA Cine images.

## AW Cardiac Viewer

A quick, easy shortcut speeds slice-by-slice review.

Click on one protocol, and AW Cardiac Viewer automatically reorganizes images from all series to match the same slice orientation, so you see them all at once.

With a single click, you can easily view myocardial-delayed enhancement, anatomy, perfusion, and function images for the same slice side by side. Or directly compare time-course images with and without a stress agent, to identify reversible ischemic defects.

## ReportCARD 4.0 Cardiac MR Analysis & Reporting Tool

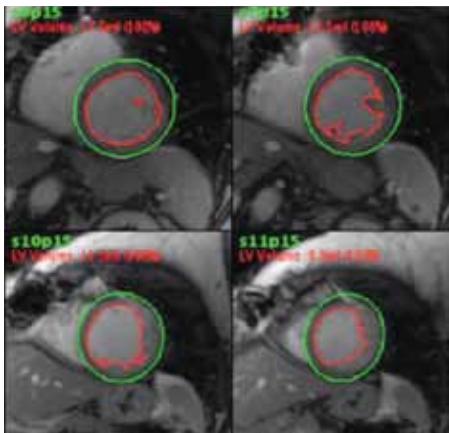
Generate comprehensive reports without missing a beat.

Assess images. Evaluate ejection fractions. Quantify flow. Calculate Qp/Qs ratios. Assess T2\*. Measure infarct size. Perform time-course analysis with motion correction. Generate reports. Save time. Easily, intuitively, and automatically. GE's exclusive ReportCARD 4.0 simplifies your cardiac MR reporting with a comprehensive calculation and research package.

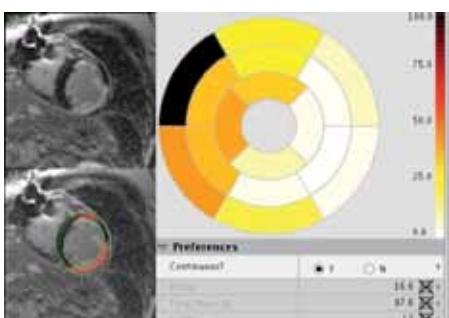
Designed for easy, intuitive workflow, ReportCARD 4.0 lets you simultaneously review and analyze your cardiac MR images—and generate complete cardiovascular reports in just minutes. Reports can be saved as DICOM and be shared with referring physicians easily via PACS or CD.

# ort. Simple.

GE Cardiac MR puts critical information, easy analysis, and faster reports right at your fingertips.



Automated LV segmentation with exclusion of the papillary muscles.



Automated segmentation and resulting bull's-eye plot of myocardial evaluation images.



DICOM secondary capture of report that may be viewed in the PACS system.





Getting into Cardiac MR is a lot simpler than you may think. From training to tips, from service to an upgrade continuum, GE has the information and insight to help you succeed every step of the way.

# From plan to

## Comprehensive training to get you going.

### The GE Healthcare Institute.

Receive hands-on training on a GE Cardiac MR system in a state-of-the-art clinical setting at our dedicated educational facility.

### TiP Virtual Assist.

Combining expertise and convenience, live, interactive applications training with remote GE trainers helps you get the most from your GE Cardiac MR scanner.

### Master Series Physicians Training.

Through GE Healthcare's MR Masters Series Physicians Training, you learn the latest MR applications and techniques directly from world-renowned radiologists.

### Global applications specialists.

GE applications specialists are available worldwide to train you on GE Cardiac MR applications, techniques, and protocols.

### Extensive online resources.

From case studies and clinical notes, to protocols and software downloads, our online MR community at [gehealthcare.com/mr](http://gehealthcare.com/mr) puts a wealth of resources at your fingertips.

## Service and support to keep you scanning.

### Industry-leading service.

GE supports your system with one of the industry's largest, most highly trained service forces. Rated #1 in Overall Service Performance by IMV ServiceTrak\*, our field engineers are rigorously trained to help ensure proactive monitoring, reliability, and uptime.

### InSite remote diagnostics and repair.

Thanks to our InSite™, a constant data connection to your GE Cardiac MR system lets us monitor, diagnose, and repair your system remotely.

### On-demand digital service support.

Push the iLinq™ button and instantly contact a live GE applications specialist or service engineer. Right answers. Right now. Right from your console.

### Remote magnet monitoring.

Our exclusive, remote monitoring of your magnet's overall health helps you avoid unnecessary downtime.

### Parts distribution centers worldwide.

Located in numerous countries around the globe, GE spare parts distribution centers streamline part delivery to minimize downtime.

### Outrun obsolescence.

Our exclusive MR Continuum™ is the promise that your system won't become obsolete—thanks to the ability to upgrade your scanner to future technology without replacing your magnet.

\*IMV ServiceTrak™ is a leading independent third-party research firm and owner of AuntMinnie.com

# scan, we make it simple.

## Tips to help you build a successful Cardiac MR practice.

1. Educate the referring physician—allow him or her to see and assess the images online.
2. Interface directly with the referring physician.
3. Examine the patient population and referral base.  
Can Cardiac MR answer the key clinical questions in your community?
4. Train MR technologists to be comfortable with the exam, including the software and system speed when using parallel imaging.
5. Tailor the exam to answer the clinical question.

Courtesy of Dr. Jonathan Weinsaft  
Director of Cardiac MRI program  
Division of Cardiology  
New York Presbyterian Hospital  
Weill Cornell Medical Center  
New York City, New York





Innova™ 3100 All-Digital Cardiovascular  
and Interventional Imaging System



CardioLab™ Electrophysiology  
Recording System



Discovery™ CT750 HD System



Discovery™ NM 530c System



Vivid™ E9 Cardiac  
Ultrasound System

One source.

The GE Healthcare logo, featuring the iconic "GE" monogram inside a circular frame with a stylized "Healthcare" ribbon.

Pocket

When it comes to cardiology, GE's leadership is more than just an image. That's because so many customers choose GE for cardiology as well as for MR. With our broad portfolio of cardiology solutions, we've won the hearts of cardiologists everywhere.

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GE Healthcare, a division of General Electric Company.

## 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 helps 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](http://www.gehealthcare.com).

GE Healthcare  
3200 N. Grandview Blvd.  
Waukesha, WI 53188  
U.S.A.  
[www.gehealthcare.com](http://www.gehealthcare.com)



imagination at work