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Diagnostikum Berlin

Siemens International Reference Center MAGNETOM Skyra

Answers for life.



Cooperation for superb image quality and excellent cardiac patient care



*Dr. Christoph Tillmanns,
Cardiologist,
Head of Cardiology,
Diagnostikum Berlin*

"Being a Siemens MAGNETOM Skyra CMR reference center allows us to keep up-to-date with the latest innovative developments. We also think that it is important for MRI system providers to not only receive feedback from experts in big research centers, but also from users like us, working in routine care."¹

Diagnostikum Berlin

Diagnostikum Berlin is one of the largest diagnostic outpatient clinics in Germany. There, 18 radiologists, one cardiologist and one general practitioner perform well over 100,000 examinations a year; among these, more than 25,000 MRI examinations, and around 17,000 CT scans: "The idea of radiologists and cardiologists offering joint cardiac diagnostics goes back to 2001," explains Dr. Tillmanns.

Cardiac MRI has evolved from a complex research methodology to an easy to use diagnostic tool, indispensable to modern cardiology. Besides helping to assess a patient's suitability for cardiac intervention, it gives the most detailed anatomical information. It is therefore considered standard care in describing cardiac function. Although there are still issues with reimbursement in many countries, Diagnostikum Berlin demonstrates that cardiologists and radiologists in private practice can

successfully offer 3T Cardiac MRI (CRM) as part of their daily routines.

The infrastructure at Diagnostikum Berlin provides a unique environment for high-quality imaging and outstanding service. Equipped with Siemens MAGNETOM Skyra, Diagnostikum Berlin represents a trendsetting example of a successful private practice, where cutting-edge 3T MRI technology is solely used in the clinical routine. Since its installation in 2012, the vast majority of Diagnostikum Berlin's cardiac examinations are performed on MAGNETOM Skyra.

Today, the cardiology team at the Berlin clinic comprises one radiologist, Dr. Tillmanns as the cardiologist, plus several technical assistants: Dr. Tillmanns sees the interdisciplinary approach to cardiac MRI as the way to go: "The questions we try to answer with cardiac MRI can be highly complex, and often require cardiology know-how. On the other hand, radiologists have a far better understanding of the technology, the

Diagnostikum Berlin



"Diagnostikum Berlin represents a great example of how the benefits of 3T MRI can be successfully implemented in private practice, on clinical routine CMR examinations, with benefits that go from higher image quality, workflow and improving cardiac diagnosis."



MRI protocols and the pitfalls of MR imaging." That's why the well-succeeded concept of Diagnostikum Berlin can in part be attributed to its optimal business model, where synergy achieved through pooling of radiological and cardiological know-how happens in a daily basis as an inherent part of Diagnostikum Berlin's routine.

Siemens Healthcare, Magnetic Resonance

Siemens Healthcare is one of the world's largest suppliers to the healthcare industry and a trendsetter in medical imaging, laboratory diagnostics, and medical information technology. Siemens offers its customers products and solutions for the entire range of patient care from a single source – from prevention and early detection to diagnosis, and on to treatment and aftercare. By optimizing clinical workflows for the most common diseases, Siemens helps make healthcare faster, better and more cost-effective.

As a Business Unit of Siemens Healthcare, Magnetic Resonance offers one of the most innovative and comprehensive imaging portfolios for users around the world – powered by Tim® 4G (Total imaging matrix) technology and Dot® (Day optimizing throughput). Together, these technologies redefine productivity in MRI. Furthermore, Siemens was the first to deliver 70 cm Open Bore systems for 1.5T and 3T field strength, and also offers one of the broadest ranges of clinical applications in the industry.

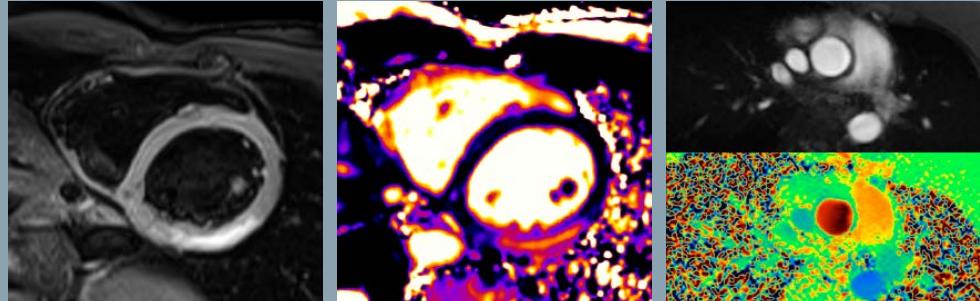
*Nikolaus Bolle,
Vice President,
MR Marketing & Sales,
Siemens Healthcare
Erlangen, Germany*



One-stop examination¹

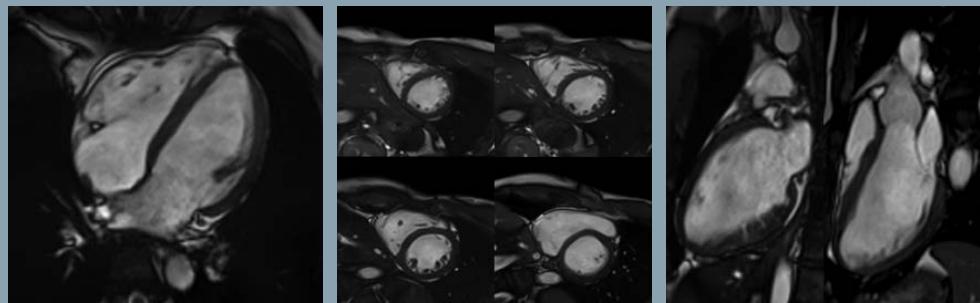
Morphology / Flow

A short axis view utilizing a TIRM Dark Blood sequence clearly delineated an area of elevated signal intensity suggesting edema (1). This finding was confirmed with elevated T2 values visualized on a color coded short axis T2 map² from the same slice position (2). Aortic flow evaluation added further information on myocardial blood flow dynamics (3).



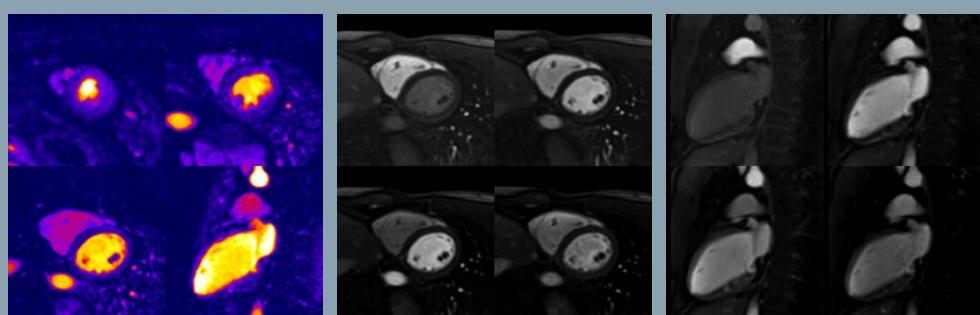
Function

TrueFISP cine sequences were used to assess myocardial wall motion abnormalities. The 4 chamber view (4), a stack of short axis views with 4 different slice positions (5) and two further long axis views were analysed (6). (TrueFISP cine retro, GRAPPA 3)



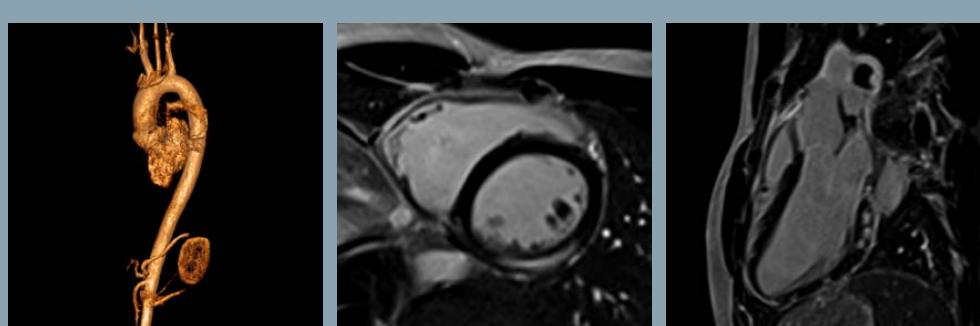
Perfusion

Acquiring images of different slice positions (7; color coded Up-Slope Map visualizing the speed of contrast arrival) during first pass perfusion and time resolved on short (8) and long axis (9) views (Turbo FLASH; GRAPPA 2) helped evaluate myocardial perfusion deficits.



Angiography / Viability

The second bolus of contrast agent was used to generate an aortic MR Angiography (3D FLASH ce-MRA, VRT) to assess larger myocardial vessel anatomy (10). To complete the one-stop examination cardiac viability was evaluated. Thereby FLASH IR imaging revealed an area with elevated signal intensity on short axis (11) as well as on long axis view (12). The spotty pattern of signal elevation is highly suggestive to myocarditis.



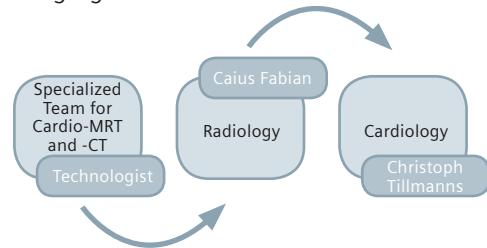


3T Cardiovascular MRI's routine, in practice.

Advances in MRI have opened up unique diagnostic opportunities for a wide range of cardiovascular diseases. Dr. Tillmanns reinforces that statement: "In the Berlin region alone, there are now more than 400 doctors in private practice who refer patients to cardiac MRI regularly, 100 of these are cardiologists." The main reason is that CMR imaging provides information about heart muscle tissue much superior to any current existing modality and with an excellent safety record. Some of the advantages of the technique are non-invasiveness, freedom from ionizing radiation, ability to acquire images in any plane and superior contrast media safety profile compared to the iodine-containing contrast media. A key advantage of CMR lies in its unique ability to provide high-resolution myocardial tissue characterization.

Using modern equipment is a matter of course for Tillmanns and his colleagues, that is why MAGNETOM Skyra has already become Diagnostikum's workhorse for cardiac MRI. Dr. Tillmanns believes that switching to 3T MRI was the right decision: "The image quality is significantly superior. It allows us, for example, to depict myocardial perfusion at an even higher spatial and temporal resolution." Furthermore, MAGNETOM Skyra is their first choice, for example, in conditions such as:

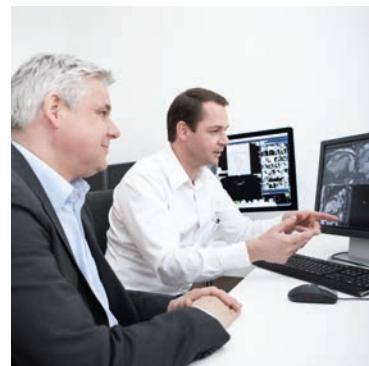
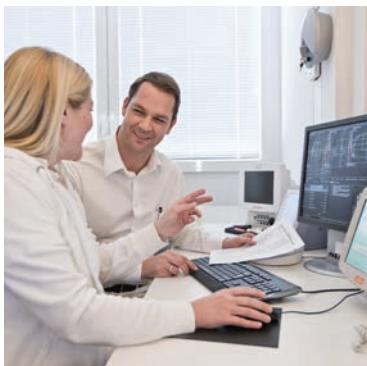
- Assessing myocardial perfusion and therefore detecting myocardial ischemia
- Detecting myocardial inflammation
- Detecting and quantifying even the very small myocardial scars
- Assessing cardiac and para-cardiac masses
- Quantifying blood flow in the great vessels
- Assessing cardiac valves stenosis and regurgitation



Consistent, high-quality images

Dr. Tillmanns expresses great satisfaction with the image quality achieved on MAGNETOM Skyra. "Every day, we experience the progress in diagnostic we can achieve with MAGNETOM Skyra. It's a pleasure working with this system. MAGNETOM Skyra is a robust, efficient and reliable system."

MR angiography examinations are also being performed more and more frequently at Diagnostikum Berlin. With *syngo TWIST*, the MRI team performs time-resolved 3D MR angiography with very high temporal and spatial resolution.



Diagnostikum Berlin counts with Siemens diagnostic imaging systems including SOMATOM Definition Dual-Source CT, MAGNETOM Avanto 1.5T MRI, and MAGNETOM Skyra 3T MRI.

At the heart of the matter

Through our long term radiologist-cardiologist collaboration at Diagnostikum Berlin, we benefit from each other's expertise which later translates into a more comprehensive and better diagnostics for our patients.¹

Improved patient acceptance

In today's healthcare market, systems designed with the patients in mind are of utmost importance. Dr. Tillmanns reports that "with the 70cm open bore system, the number of claustrophobic panic-attacks among patients fell by 50 per cent." A further help has been the architectural decision to have a window in the MRI room, letting in some daylight. In addition, the MAGNETOM Skyra's Illumination MoodLight® feature makes the atmosphere even more comfortable: "Some patients honestly say that they like their examinations."

Helpful tools for daily routine

Various MAGNETOM Skyra features improve efficiency during the daily routines at Diagnostikum Berlin. The Cardiac Dot Engine with AutoAlign Heart, for example, allows fully automatic planning of the 2, 3 and 4 chamber views. "The Cardiac Dot Engine can be very helpful - particularly for less-experienced technologists. They find the correct axes faster, without having to know the entire anatomy by heart," says Dr. Tillmanns.

The post-processing stage is no less crucial. According to Tillmanns, the clinic's

goal is to tell the patient immediately about any pathologies; additionally, calling the referring physicians with an update, directly following the examination: "This is only possible if post-processing workflows are intuitive and fast," he says. "MAGNETOM Skyra very much supports the immediate completion of reports, and thus helps to us provide the standard of service that we want."

Need for speed

The productivity advantages built into MAGNETOM Skyra prove to be of great benefit for Diagnostikum Berlin and its patients, as higher productivity also means shorter scanning times.

In terms of patient positioning, Tim 4G DirectConnect® and SlideConnect® coils are easier and faster to handle, not to mention lightweight, which speeds up set-up time. Additionally, there is no need for patient repositioning.

Dr. Tillmanns exemplifies: "Within half an hour, we can quantify the ejection fraction, describe wall motion abnormalities, identify perfusion deficits and localize myocardium that is no longer vital. No other modality can provide all this information in one go."



Dr. Caius Fabian, MD
Diagnostic Radiologist
Cardiovascular MRI and CT,
Diagnostikum Berlin

* Maximum patient weight for table movement
250 kg (550 lbs).



Exchanging knowledge and experience

As a Siemens International Reference Center, Diagnostikum Berlin has the opportunity to share its clinical achievements in CMR with radiologists and cardiologists from around the globe. Interested customers can visit the center to experience at first-hand how MAGNETOM Skyra is being put into clinical use for CMR examinations.

Visits from around the world

The team at Diagnostikum Berlin is looking forward to greeting international customers and sharing their experience with the system. They are convinced their insights gained with MAGNETOM Skyra can also be of benefit for further radiology and cardiology departments, as well as other private clinics. In addition to sharing its experience, the team is also looking forward to hearing from its visitors from around the world about their CMR experience and interests.

In addition to sharing clinical insights, visitors will also have the chance to experience Diagnostikum Berlin's efficient MR workflow, which helps address the demanding requirements in healthcare, whether of a large academic hospital or of a private practice. They will also be able to experience first-hand how the Cardiac Dot Engine helps optimize MR workflow very quickly and further increase productivity.

Courses and Fellowships

Besides being a leading diagnostic imaging centre, Diagnostikum Berlin also offers training programs intended for cardiologists and radiologists wishing to gain basic or in depth CMR knowledge.

Teaching is done on 'one to one' basis enabling excellent supervision and guidance. Participants can expect high throughput (about 60 cases/week) and high-quality clinical CMR service for both in and outpatients with indications covering a wide range of clinical settings.

Honored partners

Siemens is committed to providing its customers with high-quality medical imaging. As one of the first private clinics in the world to install MAGNETOM Skyra, the team at Diagnostikum Berlin was proud to integrate the cutting-edge system into their clinical routine.

As a partner for achieving high efficiency, quality, and cutting-edge innovation, clinical and performance excellence, Siemens strives to meet the demands of its world-class customers in today's research and healthcare environment.

Dr. Tillmanns and his team see the partnership with Siemens as a true advantage not only for their clinic, but also for taking a step forward and bringing the advantages of 3T CMR examinations, through their MAGNETOM Skyra, to a broader scope of patients.

Further information

MAGNETOM Skyra

The 3T MAGNETOM Skyra system with integrated Tim 4G and Dot technologies deliver a new standard of efficiency and productivity, helping take the complexity out of MRI exams. With a high patient load and many follow-up examinations required by CMR exams at Diagnostikum Berlin, workflow is extremely important. Productivity advantages include:

- Faster and easier exam set-up with Tim 4G
- Automated workflows with optimal timing as a result of Dot
- Faster acquisition times thanks to the guidance of Dot
- Patient-friendly design aspects help increase acceptance and decrease scan time

With MAGNETOM Skyra, Siemens further strives to offer cutting-edge technology with high clinical standards.



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solutions for Cardiovascular MRI:



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¹The statements by Siemens' customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

²The product is under development and not commercially available yet. Its future availability cannot be ensured.

Global Business Unit

Siemens AG
Healthcare Sector
Magnetic Resonance
Henkestr. 127
91052 Erlangen
Germany
Phone: +49 9131 84-0

Local Contact Information

In China

Siemens Medical Park, Shanghai
278, Zhouzhu Road
SIMZ, Nanhui District
Shanghai, 201318, P.R. China
Phone: +86-21-38895000
Fax: +86-10-28895001

In Japan

Siemens Japan K.K.
Gate City Osaki West Tower
1-11-1 Osaki
Shinagawa-ku
Tokyo 141-8644
Phone: +81 3 5423 8411

In Asia

Siemens Pte Ltd
Healthcare Sector
Regional Headquarters
The Siemens Center
60 MacPherson Road,
Singapore 348615
Phone: +65 6490-6000
Fax: +65 6490-6001

Global Siemens Headquarters

Siemens AG
Wittelsbacherplatz 2
80333 Muenchen
Germany

Global Siemens Healthcare Headquarters

Siemens AG
Healthcare Sector
Henkestrasse 127
91052 Erlangen
Germany
Phone: +49 9131 84-0
www.siemens.com/healthcare

Legal Manufacturer

Siemens AG
Wittelsbacherplatz 2
DE-80333 Muenchen
Germany