

SiemensSays

Viewpoints from Siemens Medical Solutions Executives

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Siemens MRI Moves Into Uncharted Territory

Nancy Gillen, Vice President,
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What are the most exciting uses for magnetic resonance imaging (MRI) today?

MRI is being used in ways I could barely even imagine years ago. Because of innovations in the technology – such as increases in channels, resolution and speed – we can identify disease with superb accuracy. Simply put, today, MRI helps healthcare providers save lives and avoid potentially unnecessary and costly surgical procedures.

One of the most rapidly growing areas in all of imaging is the use of MRI for breast cancer detection and assessment. A few years ago, women's health practitioners weren't even thinking of MRI, but today it is a prevalent option for detection and follow-up. In fact, a recent study in the *Journal of the National Cancer Institute* found breast MRI superior to screening mammography in detecting breast cancer in young women at high risk.

In addition, the powerful combination of Siemens Tim® (Total imaging matrix) technology and *syngo*® software applications is enriching how we deliver



care and manage disease. *syngo* Neuro applications are addressing the growing demands for MRI's increasingly advanced neuro assessment role with *syngo* DTI (diffusion tensor imaging), *syngo* SWI (susceptibility weighted imaging) and Inline functional MRI with motion correction. In addition, *syngo* BLADE motion correction application enables quick and stress-free patient exams by obtaining clear images regardless of the patient's movement.

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Siemens MRI Moves Into Uncharted Territory (cont.)

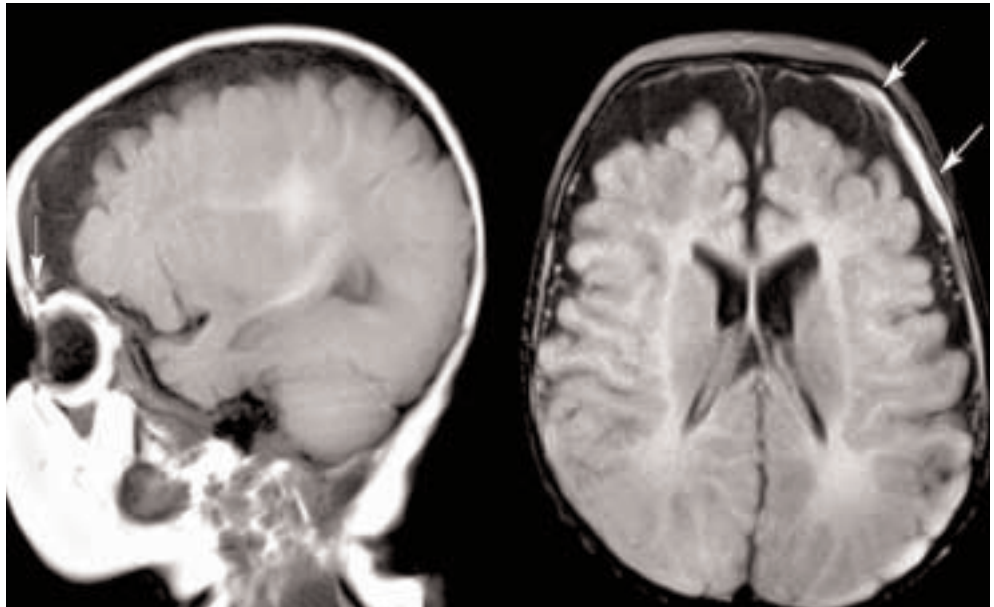
What role will MRI play in women's health moving forward?

MRI has an undeniably important role in women's health, particularly in breast imaging, because it provides increased visualization of lesions. It is often used to investigate concerns first detected with mammography, a physical exam or other imaging exams. With an estimated 211,240 new breast cancer cases expected to occur in the U.S. this year, earlier detection is key.

Specifically, MRI is excellent at imaging the augmented breast, including breast implants and tissue surrounding the implants. Signs of cancer can be obscured by implants with traditional tests, but Siemens MAGNETOM® MRI systems can achieve views in any angle, eliminating the need for reorientation of the breast. Siemens Tim technology is useful in determining whether breast cancer has spread into the chest wall and for evaluation of lymph nodes during the same patient study. In all, the innovation in our MRI systems and software make the process of imaging and evaluation in women's health easy, fast and reliable.

What do you see next for Tim technology?

With more than 1,000 installations, Tim technology has redefined MRI, eliminating the need for patients to be repositioned during scans while providing significantly enhanced image quality. Looking toward the future, research is being conducted to increase the overall channel availability, based on the Tim technology architecture. Also, Siemens is focused on advancing workflow and improving analysis tools, such as syngo Expert-i, which helps medical professionals focus more on diagnosis and allows them to be in more than one place at a time, reducing the need for return patient visits.



syngo® BLADE, the newest Tim® (Total imaging matrix) technology-powered magnetic resonance imaging (MRI) software, is capable of robust imaging in neurological and orthopedic procedures even in cases of severe movement. Ideal for pediatric and difficult-to-manage patients, syngo BLADE is not affected by flow and motion. By continuously acquiring low resolution images, this application measures and corrects any motion, providing clear images.*

** The safety of imaging infants/fetuses has not been established.*

MRI is becoming more closely integrated with treatment, therapy and intervention. Creative solutions with IMRIS, Inc. allow shared solutions between surgery and imaging for more effective patient outcomes.

How is Siemens meeting the demands of imaging departments?

Siemens has been in the MRI market since its inception with one goal in mind: to help address the day-to-day challenges and demands of our customers. This means offering affordable MRI systems that increase throughput, ease workflow, and drive improved clinical and financial

outcomes. It also means having the foresight to understand tomorrow's challenges.

For example, with obesity affecting an estimated 30 percent of American adults, medical imaging technologies that address this growing population are not just needed – they're required. Imagine the humiliation of being placed on a tiny stretcher, the embarrassment of squeezing into a standard waiting room chair, or the difficulty of fitting into today's standard imaging scanner. Obese patients need as much, if not more, medical attention than everyone else. The ground-breaking open

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bore technology of Siemens MAGNETOM Espree™ is just one case in point of how we anticipate and address imaging trends and demands.

From the introduction of the MAGNETOM Avanto™, the first Tim system, to the MAGNETOM Espree, the only open bore system, Tim is delivering clinical capabilities and efficiencies that set Siemens apart from the competition. Over the past year, we have seen a change in the typical 3 Tesla (3T) customer, as diagnostic imaging centers and smaller hospitals embrace 3T technology. With the introduction of Tim at 3T, we are able to better meet the demands of clinical customers for higher field strengths. Tim powers many unique capabilities, including GRAPPA, a Parallel Imaging Technique that provides robust image quality and is capable of being used with a small field-of-view with high spatial resolution for higher diagnostic confidence – even smaller than the subject's anatomy.

Also of note is that select Siemens MRI technologies are now offered through Siemens' Proven Excellence Program. Reconditioned MRI systems are available at a reduced price point, providing advanced medical imaging to any customer – from community hospitals to large medical institutions. This all ties back to our goal of making the benefits of MRI available to all patients, regardless of the facility's location or budget.

What will tomorrow bring in the world of MRI?*

In the academic segment there is a push for even higher field strengths, of 7T* and above. Siemens has the largest number of operational 7T* systems, with systems already installed at several leading facilities, including NYU Medical Center, Massachusetts General Hospital (MGH) and University of Minnesota. In addition to the pursuit of higher field strengths, as announced at this year's ISMRM, increasing the numbers of channels within an MRI system is taking center stage.

Siemens and MGH have developed a prototype 128-channel MRI system* based on Tim technology. The principles and potential applications of 128-channel MRI scanning are being evaluated at MGH, with initial findings showing the potential to improve image clarity with up to a 25-fold increase in speed, ultimately decreasing exam times for patients.

Also, the combination of positron emission tomography (PET) and MRI has the ability to see the human body like never before in oncology, cardiology and neurology procedures. Today's innovations are enabling MRI to grow into other areas of medical diagnosis and therapy to bring better healthcare to the marketplace, and Siemens will continue that trend.

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** Works in progress: The information about this product is preliminary. The product is under development and not commercially available in the U.S. and its future availability cannot be ensured.*

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