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## Benefits of Advances in MRI Technology

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### ABSTRACT

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MRI technology has exponentially improved patient care worldwide. And with the recent advances in the field, that level of healthcare is bound to reach new heights.

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### Introduction

The exceptional MRI technology was first introduced to the clinical world in the early 1980s. Ever since its introduction to the field of medicine, MRI has been instrumental in improving and speeding up the process of diagnosis. The use of electromagnetic waves to scan the human body has enabled clinicians to look deep inside a patient without much effort. Only a single run through the massive magnetic contraption, known as the MRI machine, and healthcare experts have a complete picture of a patient's supposedly diseased organ. Not only is this swift scanning system beneficial to medical professionals but also sick patients waiting for a diagnosis.

While the primitive MRI technology has been vital for the medical sector from the start, the recent advances in the field promise even better prospects for patient care. To understand what the said developments in MRI technology are and how they offer to help the healthcare sector, a quick yet thorough run-through seems necessary.

### LUNG MRI

Magnetic resonance imaging develops scans by polarizing hydrogen atoms and knocking them off the electromagnetic axis. This means a high density of hydrogen is necessary to create magnetic images. Doing so with the human lungs was previously challenging due to the low density of hydrogen molecules present. As a result, medical professionals used CT (computerized tomography) to view lungs. But now, thanks to Toshiba's Ultra short Echo Time (UTE) sequence, getting a pulmonary MRI is possible. The said advancement allows healthcare experts to examine the tissue with little relaxation times.



**Figure 1.**

A man sitting on an MRI machine while another stands beside it.

### New Software Reduces Scanning Time

A little while back, the renowned IT Company Siemens introduced a highly advanced application, Simultaneous Multi-Slice, which pictures the brain simultaneously rather than sequentially, reducing the time to carry out a brain scan significantly. The frequency of brain imaging is quite high; studies show that 1 out of every 4 MRI scans is of a brain. This means that reducing the time of a brain scan can tremendously benefit both patients and the healthcare facility. Therefore, Siemens's GO Brain is a pertinent development in the MRI department.

Organized to show scans quickly, enabling doctors to run tests and diagnose patients at a faster rate.

### **Faster and Better Cardiac Scans**

Cardiac scans are not the most readily conducted in the United States because of the complicated procedure, high costs, and lengthy exam durations. But with the new ViosWorks cardiac MRI software, developing heart scans is much faster and better in terms of results. The said innovative technology automates the image sequencing during a cardiac scan, creating incredibly accurate 3-D chest images with a clear report of myocardium movements during the cardiac cycle and blood flow.

### **Multi-Contrast MRI Images From a Single Acquisition**

Previously, an MRI scan meant securing limited imagery of the body. This means if a broader picture was needed, radiologists had to carry out multiple scans. But with General Electric Healthcare's MAGiC- Magnetic Resonance Image Compilation software, medical experts can procure eight contrasts in just a single run of MR imagining. With the new time-saving technology, a much clearer interpretation of the body is possible.

### **Improved Prostate MRI Exams**

An endorectal coil was used for prostate exams in the past, which is rather discomfoting for patients. But with the innovative noninvasive SEE it by Siemens, now medical professionals can do prostate exams in only 10 minutes without using any discomfoting tool.

It is undeniable that advancements in the field have made (and continues to do so) MR imagining much more efficient. And by the looks of things, it's safe to say that the ongoing developments in MR technology will benefit patients and healthcare professionals a lot more in the future.