TOMORROW TODAY

2018 MRI Buyer's Guide

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Introduction

MR is a complex evolutionary technology; buying one does not have to be complex. Because anticipating needs of the future can be difficult, this guide is focused on key learnings to help evaluate the right MRI to meet your needs.

Why you need the latest in MRI technology

Innovation in the field of medical imaging technology continues to bring solutions and services to the market that provide new tools for healthcare professionals to expand the breadth and capabilities of healthcare systems.

This increases the possible efficiency gains to be achieved by examining patients faster, enabling improved image collection and quality, increasing patient comfort, supporting decision making, all of which allow improved patient throughput.

Every year, advances in engineering provide incremental and occasionally major breakthroughs which are capable of revolutionizing image capture and quality.

These gains deliver better accuracy, specificity and patient benefits that extend the utility of medical imaging equipment.

Clearly, the age of electro-medical equipment within a healthcare system can be considered a significant factor in attaining these benefits.

Unsurprisingly, as technology ages it becomes less suited to, and often incapable of, performing at the levels demanded by the increasing pressures afforded by the cumulative growth in patient throughput, and the requirements of progressive medical environments.

Indeed the growth in healthcare demand and progression of clinical expectation fuels investment in medical technology R&D focused on providing clinicians with unprecedented visual and functional information on their patients, and faster more intelligent diagnostic imaging systems that support decision making, reduce complexity, and increase productivity.

Since advances in technology are often incremental, the industry offers upgrades that can help extend the life of equipment over a defined period of time. However as technologies become obsolete a variety of technical incompatibilities e.g., in equipment control, and the redesign of components, renders continued updating of equipment uneconomical, if not impossible.

Older equipment also involves a higher risk of failures or breakdowns. This may endanger the health and safety of patients and medical staff , and could also lead to considerable delays for essential medical interventions while the equipment is out of service.

Although this situation can partially be avoided through timely and regular maintenance, the operating cost of such equipment tends to be higher than that of up-to-date electro-medical equipment, leading to higher net costs for the provision of similar medical services using older equipment.

What is the expected lifetime of an MRI system?

Each owner will have different needs for their MRI and setting which leads to variability in asset retention. However, there are some trends that help when asking yourself if you are in the “window” for a replacement.

On average, 50% of the installed MRI base will be replaced within 11 years of their installation with an average replacement cycle of 11.5 years, ranging from three to 22+ years. The general feeling is that one out of every five MRI systems is older than 10 years.

While manufacturers release upgrades that can help extend the life of equipment over a defined period of time, only you can determine if that is suitable for your practice environment, including quality and quantity demands.

How to decide if you need to upgrade your MRI machine

Upgrading your MRI machine is a big decision but it can also solve some of the challenges of your older machine.

While there never seems to be a perfect time to make a significant change in your current day-to-day operations, there are a few areas to consider when asking if an MRI upgrade is right for your organization.

Five areas tend to arise during the typical advancement discussion:

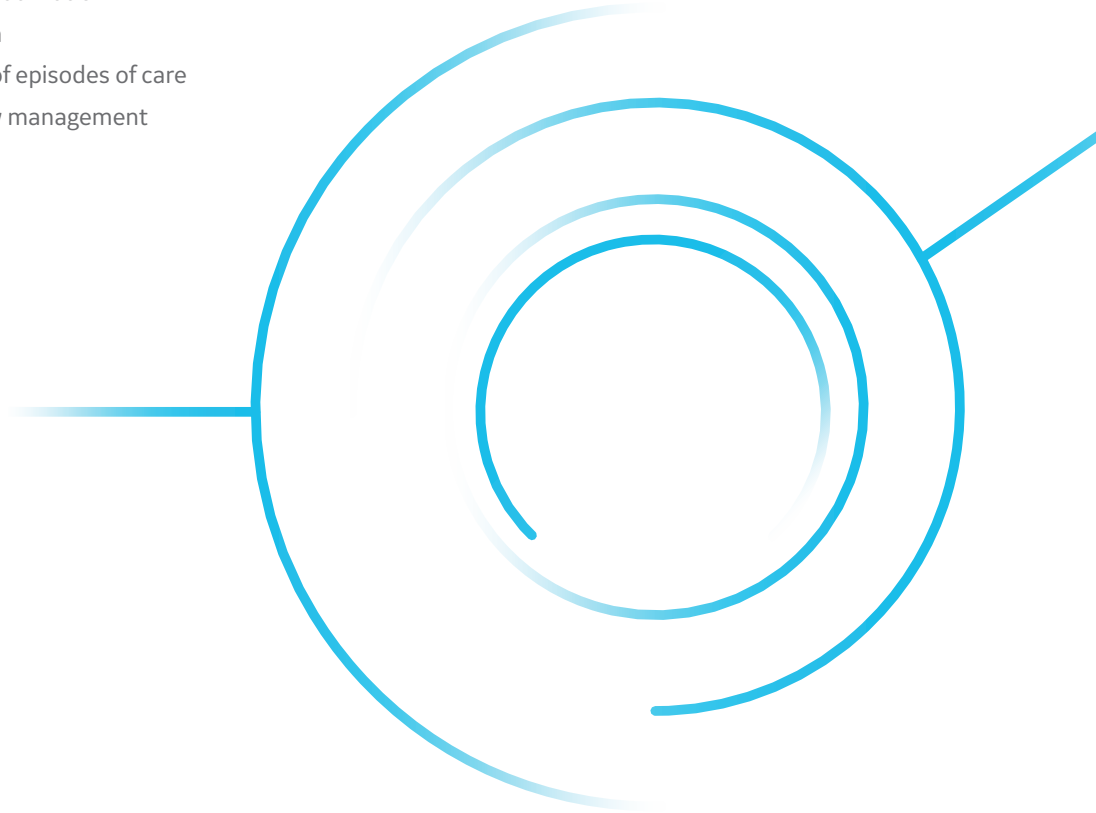
1. **Improved clinical outcomes**
   - Improvement in patient experience
   - Improvement in patient safety
   - Achieve best possible clinical outcomes relative to benchmark
   - Improvement in hospital performance metrics/core measure targets
   - Improve physician alignment and consistency of practice

2. **Greater operational efficiency**
   - Optimize clinical and non-clinical labor spend
   - Improve efficiency of support functions
   - Reduce supply spend and optimize utilization
   - Improve cross-facility collaboration
   - Ensure the efficient management of episodes of care
   - Improve workflow and patient flow management

3. **Staff management and retention**
   - Improve staff and physician engagement
   - Drive staff and physician development
   - Improve staff and physician satisfaction

4. **Increased patient volume**
   - Resource allocation on priority services
   - Improve alignments with referring MDs
   - Improve capacity management
   - Expand number of payor contracts and improve the quality of portfolio contracts

5. **Better financial performance**
   - Increase reimbursement fees, payor rates, and collections
   - Increase capital efficiency
   - Increase contribution margin
   - Expand portfolio of revenue generating assets
   - Improve revenue cycle management



Practice area applications from an MRI upgrade

After determining that an upgrade might be the best fit for your practice, understanding the technological advances and their practice advantages is extremely important.

Applications across the industry are designed to address the specific needs of your practice area, such as the areas below:

Neuro imaging

- Motion-free 2D/3D imaging
- Isotropic 3D volumetric imaging
- Increased tissue contrast sensitivity
- Improved diffusion-weighted imaging
- Non-contrast perfusion imaging
- Acoustic noise reduction imaging
- Imaging multiple contrasts with single acquisition

Body imaging

- Motion-free imaging
- Free-breathing sequences
- Fat and water separation techniques for improved FatSat
- Improved diffusion-weighted imaging
- Quantitative imaging techniques
- Advances in permeability imaging

Breast imaging

- Improved speed and resolution of dynamic contrast imaging
- Fat saturation techniques
- Medial and lateral biopsy capability

Cardiac imaging

- Viability imaging
- Free-breathing imaging
- 4D Flow imaging
- Quantitative mapping

Vascular imaging

- Non-contrast imaging
- Accelerated table movement for run-on imaging
- Eliminated timing bolus imaging

MSK imaging

- Improved cartilage delineation
- Motion-free imaging
- Isotropic 3D volumetric imaging
- Improved metal implant imaging
- Acoustic noise reduction imaging

Pediatric imaging

- Motion-free imaging
- Free-breathing sequences
- Non-contrast techniques
- Acoustic noise reduction imaging

What MRI equipment options are available?

After exploring the advances in technology, it can feel like an overwhelming task to determine what is right for you.

Finite would best describe your options when you consider the upgrade process. There are fewer methods for attaining a new system, but still important considerations in the process:

On-site upgrades

Offering various levels of significance in work, some upgrade paths will have software only, limited hardware, or extensive of both.

Deciding to retain your existing magnet is a great option for customers who want a quick upgrade timeframe, limited construction costs, and all the advances of a new production system.

Pre-owned market

This channel can be attractive for those customers with limited budget while still looking for great technology.

Make sure that you take the time to understand what process takes place between de-installation at the original site and installation at yours. Varying terms will have different meanings such as “used, pre-owned, refurbished, reconditioned,” and more.

New market

Systems arriving direct from production to your location are likely to have some of the most advanced features to provide world-class care. With the high level of sophistication comes a larger price tag.

While all the options above will be available, understanding the warranty, service, support, and total cost of ownership variables will be the best way to determine your option.

MRI manufacturers

There are numerous manufacturers and sellers of MRI equipment, both new and used. Below are considered the most dominant in the market and who you will likely consider for your needs:

GE Healthcare

Headquarters: Chicago, IL, US

Website

Siemens

Headquarters: Erlangen, Germany

Website

Philips

Headquarters: Amsterdam, Netherlands

Website

Toshiba

Headquarters: Tokyo, Japan

Website

How to evaluate an MRI system

For a state-of-the-art 3 Tesla MRI machine, the price tag to buy one new can reach $3 million+. That however, may not be the option that best suits your needs.

Uncovering the full project cost in contrast to the budget is an exploratory process that includes many variables.

What variables lead to the overall cost?

While the list will be dependent on variables like a new system vs. upgrade, etc., some of the common costs to be considered with a project will include:

- MRI system (including software and other options)
- Installation
- Training
- Mobile rental
- Energy consumption
- MRI suite packages
- Downtime
- Service packages
- Construction
- Helium

How to further evaluate a system?

A site visit can be a very useful experience when deciding which MRI system is right for you. Understanding what is important to observe and why has typically provided the most impactful visits. See below five considerations for ensuring a successful experience.

1. Location

Clinical site: Depending on what you are looking to observe, you may be able to leverage a clinical site close to your location. Some of the benefits with this environment is the ability to observe a "normal" interaction. If seeing a technologist work with the system is an important criteria for your visit, this may be of substantial benefit to you.

HQ demo: If you want to interact with additional company functions such as product development, service and more, then a HQ demo is a great option. Most will have the ability to show you the system of interest and the types of scanning you would need to accomplish. Additionally, many of the resources who are best suited to answer questions will be on site.

2. Stakeholders

Determining who is best suited to evaluate a system during an experience visit is important. Not only will it help maintain efficiency in your decision making process, but it can also help have a consistent message transfer if the key personnel from the various functions making a selection and working with the system are involved.

3. Start at the finish

Successful visits start with a detailed understanding of what is important to you and why. Making a list of the critical items you want to leave the experience understanding can be helpful.

4. Duration

Knowing how much time you need for discussion and questions can be difficult to predict. Barring the business critical interruptions, the most successful experience visit starts with managing the allocated time. While there can always be follow-up after this time, setting a duration will help planning the scanning time vs. presentations, and more.

5. Topic weighting

Prioritizations of the discussion topics will ensure the right people and processes are in place. For example, if understanding how silent scanning will increase patient satisfaction is one of your top interests, a simple ranking of these items can make sure it is addressed appropriately.

Additional questions to ask

The best way to determine if you are selecting the right MRI system for your needs is to understand some of the most helpful questions to ask; both internally and to each vendor.

Selecting and asking questions in this section can help to provide clarity to your buying process so that you feel informed and confident.

For the growing involvement of different stakeholders in the process, this first section will cover three key internal questions in each of the five outcomes areas. The second section will focus more on technical areas in addition to after purchase considerations:

Clinical excellence:

- How will system “X” help me achieve an improvement in my diagnostic capabilities?
- Will I notice a positive change in my diagnostic confidence?? How?
- Is it possible to realize both quantity and quality improvements with system "X"?

Patient satisfaction:

- Will system “X” help me attain my current and future patient satisfaction goals?
- Will I be able to better serve the percentage of patients unhappy with MR exams?
- Does this system allow me to provide better patient comfort and care?

Operational efficiency:

- Can this system provide a path to overcome variation amongst technologists?
- Will I be able to increase patient throughput? How?
- Am I currently optimizing the capacity of existing assets? How can system “X” help?

Strategic growth:

- Will system “X” allow me to develop new diagnostic services?
- Can I expect to see an increase in my patient and physician attraction/retention rates?
- Is it possible for system “X” to enable maximum reimbursement? How will it help with this?

Capital planning:

- What do we anticipate our total cost of ownership to be and how does that fit our needs?
- How long do I expect to retain system “X” and how will it benefit evolving patients and imaging?
- Can I reduce my cost of capital with system “X” acquisition?

To stay on top of the latest technology, trends, applications, and patient materials on medical imaging, visit our new medical imaging Insights content at insights.gehealthcare.com/medicalimaging

To help you navigate your next MRI investment, visit our Legacy SIGNA™ Center for additional resources.

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