WHAT DOES A CLINICAL MRI PHYSICIST DO?

MRI Equipment Quality Management

MRI physicists design and oversee quality assurance programs, which track system performance to ensure safe, high quality patient care. They also ensure that accreditation and clinical trial performance criteria are met. The continual development of new MRI technologies makes their role both challenging and rewarding. With their extensive knowledge of MRI equipment and software, physicists are deeply involved in equipment specification and siting processes. This is particularly true for the growing number of hybrid MRI suites, which require consideration of many additional factors that greatly increase installation complexity.

Image Quality Management

MRI physicists are indispensable members of the quality management team. An essential part of their role is to ensure that the image data provide reliable diagnostic information for use in patient management decisions. Physicists also work closely with equipment manufacturers to make sure that image quality concerns are promptly resolved. Their expertise is required to develop and optimize exam protocols and to facilitate protocol standardization across multiple different scanner models. The onsite physicist provides technical education for imaging personnel, which is necessary for them to safely perform high quality imaging procedures. Finally, MRI physicists work closely with the manufacturer's application specialists to customize exam parameters for the needs of their specific practice.

Safety Management

The onsite MRI physicist serves as an expert resource for MRI safety and may be asked to join or lead the MRI safety committee. They develop policies and procedures, address siting safety issues, review the MRI safety program, evaluate objects that may need to be used in the MRI environment, and provide annual safety training courses. A critical function is participating in the care of patients who have MR Conditional devices or implants. In these situations, the MRI physicist must perform a risk assessment, select safe technical parameters and equipment, modify the imaging protocol as needed, and oversee the imaging procedure. Such expertise is invaluable to these patients, who might otherwise be unable to undergo medically necessary MRI exams or procedures.

The delivery of safe, high quality MRI services requires close cooperation between a multi-disciplinary team. Physicians, physicists, technologists, nurses, clinical assistants, and service engineers work together in a unique, challenging, and rewarding environment, each contributing his or her expertise to ensure that patients receive the best medical care possible.

For information on how to become a clinical MRI physicist, visit www.aapm.org and search for *Clinical MRI Physicist*.