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Advancing Radiotherapy Treatment: Implementing MRI-Linac and Developing a Skilled Workforce

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Commentary

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DESCRIPTION

RTP-MRI (Radiotherapy Planning Imaging Utilising Magnetic Resonance Imaging) can be performed in an MR-Simulator, MR-linac, or diagnostic radiology department. The technologists who take the pictures will depend on the workforce configuration of each department and the MRI technology being used.

Radiation technologists, radiation therapy technologists, or a combination of both may perform imaging inside the radiology department. Members of each profession should be aware of the unique requirements of RTP-MRI sessions. When starting and running a service, cooperation between the two professions is crucial.

In order to work in the MRI setting, radiation treatment techs would need to undergo specific safety training because they might not regularly be familiar with MRI safety. Radiation treatment techs can receive training to obtain MR pictures while working in the MRI environment, as well as experience the safest approach to practise, and understand the principles of post-processing particular sequences along with efficiency in image acquisition.

While using radiotherapy immobilization devices, radiation therapy techs' skills and experience are very helpful in positioning patients for treatment. The standards for precise patient placement or the appropriate use of radiotherapy immobilization devices may be unknown to radiation technologists. Therefore, it is crucial that they receive training on the rationale behind and foundations of precise reproducible positioning of radiotherapy patients.

Radiation treatment technologists may supervise the training of radiation technologists. Speed and efficiency are essential while placing patients for scanning to make up for the lengthy scanning session. The RTP-MRI sessions would then be able to use this information.

The radiology imaging and radiotherapy departments must communicate well. To guarantee setup correctness and appropriate equipment selection, the patient setup instructions should be transmitted electronically or on paper between each department. This can include any customized directions that may depart from the recommended practices, such as altering the bladder filling instructions to better suit the patient. When ordering RTP-MRI scans, any setup modifications needed for a patient should be discussed with the radiation CT technologists.

It is advised that departments create a set of "Guidelines for MRI in Radiotherapy" regardless of the RTP-MRI equipment being used to guarantee uniform image quality. Radiation technologists should be able to use this without the assistance of radiation therapy technicians since it should be easily accessible, clear, and unambiguous. To ensure consistency of technique when using the MR-linac as an MR-Simulator, radiation therapy technologists would also benefit from guidelines for RTP-MRI using an MR-linac.

A "paradigm shift" has been labelled for MRgRT and the capabilities it introduces for the treatment of cancer. Such a technique requires a lot of work to implement. Even more so than with the adoption of earlier modern radiation techniques like IMRT and VMAT, MRgRT implementation demands attention to cost-effectiveness, patient selection, and departmental logistics in addition to technological hurdles. The process needs to be handled, and individuals of the treatment team need to be given duties and responsibilities. Normally, such an implementation is started by a small multidisciplinary team made up of the relevant professions (such as, but not limited to, RTTs, ROs, and MPEs), and in a subsequent phase, this team is enlarged to the size required for daily operations.

Once MRgRT is integrated into the department, a similar multidisciplinary introduction team may be present for the introduction of a new treatment approach and/or the treatment of an additional tumour site. This team may, however, be present in a scaled-back form. A multidisciplinary team is very helpful because designing a new workflow necessitates familiarity with every stage of the therapeutic process. When jobs begin to change and possibly overlap, this becomes even more crucial. Each discipline needs to be aware of the duties and purview of the others in order to continue working together effectively. MRgRT can differ significantly from other approaches in this regard.