

Navigation, Treatment, and Care of Cancer Patients Undergoing Radiotherapy: A Radiotherapy Technologist's Perspective

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Abstract

Radiotherapy is a cornerstone of cancer management and is used with curative, palliative, or adjuvant intent across a wide range of malignancies. Radiotherapy technologists (RTTs) play a central role in the safe and accurate delivery of radiation treatment and interact with patients throughout the treatment pathway. Their responsibilities extend beyond the technical operation of radiotherapy equipment to include patient preparation, positioning, treatment delivery, education, symptom monitoring, and emotional support. This narrative review discusses the role of RTTs in navigating the radiotherapy pathway, with particular emphasis on treatment delivery, patient-centered care, communication, and multidisciplinary collaboration. RTTs contribute to treatment accuracy and patient safety by ensuring the appropriate implementation of treatment plans, maintaining consistent positioning, monitoring patients during treatment, and identifying treatment-related adverse effects that may require clinical assessment. Their frequent and sustained contact with patients also places them in a unique position to provide information, reassurance, and psychosocial support. In addition, advances in radiotherapy technology, including artificial intelligence, are changing clinical workflows and increasing the importance of integrating technological expertise with communication and interpersonal skills. The evolving role of RTTs highlights the need for appropriate education, professional support, and recognition of their contribution to multidisciplinary cancer care. A patient-centered approach that combines technical competence with effective communication and empathy may enhance the safety, quality, and overall experience of patients receiving radiotherapy.

Keywords: Radiotherapy, Radiotherapy Technologists, Radiation Therapists, Patient-Centered Care, Cancer Care

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Introduction

Radiotherapy, also known as radiation therapy, is one of the most widely used treatment modalities in cancer care. It uses ionizing radiation to control or eradicate malignant cells and may be administered as a primary treatment or in combination with surgery and systemic therapy. Depending on the clinical indication, radiotherapy may be delivered with curative, adjuvant, neoadjuvant, or palliative intent. The two principal modalities are external beam radiotherapy (EBRT), also referred to as teletherapy, and brachytherapy.

The increasing complexity of radiotherapy requires close collaboration among radiation oncologists, medical physicists, radiotherapy technologists (RTTs), radiation safety professionals, nurses, and other members of the multidisciplinary team. Within this framework, RTTs

have a particularly important role because of their direct and repeated interaction with patients throughout the treatment course. They are responsible for the accurate implementation of prescribed treatment plans while maintaining patient safety, comfort, and dignity.

RTTs have a unique perspective on the treatment journey of patients undergoing radiotherapy because they combine technical responsibilities with continuous patient interaction. Their duties may include patient identification and preparation, treatment positioning and immobilization, image-guided verification, radiation delivery, treatment documentation, monitoring for acute adverse effects, and communication with other members of the multidisciplinary team. These responsibilities place RTTs in a key position to identify patients' concerns and

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provide appropriate information, reassurance, and support.

The role of RTTs is particularly relevant in contemporary radiotherapy, where technological advances have increased the complexity of treatment delivery. Emerging technologies, including artificial intelligence (AI), are expected to further transform radiation oncology practice by supporting the detection, identification, processing, and integration of large amounts of clinical and technical information [1]. However, technological advances do not eliminate the need for human interaction. Rather, the integration of technological expertise with clinical knowledge, communication skills, and empathy may further strengthen patient-centered cancer care [2, 3].

This article reviews the role of RTTs in navigating the radiotherapy pathway, focusing on their technical and clinical responsibilities, patient education and communication, treatment-related monitoring, multidisciplinary collaboration, and the emotional challenges associated with caring for patients with cancer. Particular attention is given to the importance of balancing technical precision with compassionate, patient-centered care.

About Radiotherapy Technologists

Radiotherapy technologists, also known as radiation therapists in some healthcare systems, are specialized healthcare professionals involved in the planning, preparation, and delivery of radiation treatment. They work closely with radiation oncologists, medical physicists, radiation safety professionals, nurses, and other members of the multidisciplinary team to ensure that radiotherapy is delivered safely and according to the prescribed treatment plan.

The responsibilities of RTTs extend across several stages of the radiotherapy pathway. These include patient preparation, treatment simulation and positioning, implementation of treatment plans, radiation delivery, treatment verification, documentation, equipment operation, and monitoring of patients during the course of treatment. Depending on institutional practice and professional scope, RTTs may also contribute to the development and implementation of standard operating procedures (SOPs), treatment protocols, and quality-assurance processes.

The safe delivery of radiotherapy requires RTTs to maintain a high level of technical competence. Modern radiotherapy relies on sophisticated technologies, including linear accelerators, image-guided radiotherapy systems, treatment-planning and verification systems, and specialized immobilization devices. RTTs must therefore understand the principles and practical operation of these technologies while ensuring that treatment parameters are accurately implemented.

At the same time, the RTT's role cannot be reduced to the operation of radiotherapy equipment. Because RTTs often interact with patients on a daily basis over several weeks, they may develop a close understanding of patients' concerns, treatment-related symptoms, and practical difficulties. This sustained interaction creates

opportunities for patient education, early identification of problems, and emotional support.

Griffiths et al. [4] reported that radiation therapists require not only a high level of technical expertise but also effective communication and patient-care skills. Similarly, Martin and Hodgson [5] emphasized the importance of communication in enabling radiation therapists to assess individual patient needs, provide appropriate information, and offer reassurance and support. These findings reinforce the multidimensional nature of the RTT profession, in which technical accuracy and interpersonal competence are closely interconnected.

The RTT therefore occupies an important position between technology and patient care. While ensuring that the prescribed radiation treatment is delivered accurately and safely, RTTs also contribute to the patient's overall experience by creating a supportive clinical environment, communicating effectively, and responding appropriately to individual needs.

Understanding the Role of RTTs in Radiotherapy

Radiotherapy technologists (RTTs) are specialized healthcare professionals who contribute to the safe, accurate, and effective delivery of radiation treatment. Their responsibilities include patient preparation, positioning, treatment verification, radiation delivery, and monitoring patients during treatment sessions. Although the technical delivery of radiotherapy represents a central component of their professional role, RTTs also contribute to patient education, communication, emotional support, treatment-related monitoring, and multidisciplinary collaboration. Their frequent interaction with patients throughout the treatment course places them in a unique position to support patients and identify concerns that may require further clinical assessment.

The expanding use of advanced technologies in radiation oncology further emphasizes the importance of RTTs' clinical and technical expertise. Radiation therapists have detailed knowledge of patient-related, clinical, and technical information generated throughout the radiotherapy workflow. This knowledge may enable them to contribute to the implementation of emerging technologies by identifying clinically relevant data and recognizing opportunities to improve data quality. For example, RTTs may contribute to the optimization of imaging quality and, within their professional scope and institutional workflows, support the quality of contours and dosimetric information. High-quality input data are particularly important for the reliable performance of machine-learning systems [5, 6].

Because RTTs have direct knowledge of clinical workflows and the practical challenges associated with treatment delivery, they are also well positioned to identify areas in which technological innovation may provide meaningful clinical benefit. Prioritizing technological solutions according to actual clinical and workforce needs may facilitate their effective integration into routine radiotherapy practice [6]. Overall, the RTT's

role encompasses several interconnected stages of the radiotherapy pathway, including patient navigation, treatment preparation, treatment delivery, monitoring and supportive care during treatment, and communication with the multidisciplinary team.

Patient Navigation: A Holistic Approach

Initial Patient Interaction and Education:

The radiotherapy journey may be unfamiliar and stressful for many patients. RTTs frequently interact with patients at multiple stages of the treatment process and can therefore contribute substantially to patient education and navigation. Depending on institutional responsibilities and professional scope, RTTs may explain practical aspects of the treatment process, including what patients can expect during simulation, positioning, treatment delivery, and routine treatment sessions.

Effective communication should be adapted to the patient's level of understanding, clinical condition, and individual concerns. Patients may have questions about the duration of treatment, positioning, equipment, radiation exposure, or potential treatment-related effects. Providing clear and consistent information can reduce uncertainty and help patients participate more confidently in their care. When questions fall outside the RTT's professional scope, appropriate referral to the radiation oncologist, nurse, medical physicist, or another relevant professional is essential.

Treatment Planning, Simulation, and Positioning:

Accurate patient positioning and reproducibility are fundamental to the safe delivery of radiotherapy. RTTs contribute to simulation and treatment preparation by positioning patients according to the prescribed treatment approach and using appropriate immobilization and positioning devices. These may include thermoplastic masks, vacuum cushions, casts, or other customized devices, depending on the treatment site and technique.

During simulation, imaging, such as computed tomography (CT), is used to establish the anatomical information required for treatment planning. RTTs play an important role in acquiring appropriate simulation images and ensuring that the patient's position is reproducible between simulation and subsequent treatment sessions. Attention to positioning, immobilization, image quality, and patient comfort can contribute to treatment accuracy while reducing unnecessary variations during the treatment course.

The positioning process also provides an opportunity for RTTs to assess patient comfort and identify practical difficulties that could interfere with treatment delivery. Clear explanations before and during simulation can help patients understand why specific positions or immobilization devices are required and may improve cooperation during treatment.

Emotional and Psychological Support

Cancer diagnosis and radiotherapy can be associated with fear, uncertainty, distress, and concerns about treatment outcomes and adverse effects. Because RTTs

often see patients repeatedly throughout a course of radiotherapy, they may become familiar and trusted members of the patient's care team. Their regular contact provides opportunities to recognize changes in patients' emotional states and to respond with empathy and appropriate communication.

RTTs are not expected to replace specialized psychological or psychiatric care. However, active listening, respectful communication, reassurance, and recognition of distress can contribute to a supportive treatment environment. When significant psychological distress or other concerns are identified, RTTs should facilitate communication with the appropriate members of the multidisciplinary team.

A patient-centered approach is particularly important because individuals differ in their informational, emotional, cultural, and practical needs. Establishing trust and maintaining effective communication may help patients feel more comfortable expressing concerns and may facilitate timely referral when additional support is required.

Patient Assessment and Preparation

Patient assessment and preparation are important components of the RTT's responsibilities before and during radiotherapy. These activities help ensure that treatment can be delivered safely, accurately, and consistently.

Treatment Education

Patients may have misconceptions or concerns regarding radiation treatment, including whether treatment is painful, how radiation affects the body, and what adverse effects they may experience. RTTs can provide clear, evidence-based information within their professional scope and reinforce instructions provided by the wider treatment team. Communication should be understandable, consistent, and responsive to individual patient needs.

Accurate Patient Positioning

Precise positioning is essential for reproducing the treatment geometry established during simulation and for ensuring that the prescribed radiation dose is delivered to the intended target while minimizing unnecessary exposure to surrounding tissues. RTTs verify patient positioning before treatment and use appropriate immobilization and image-guidance procedures according to the treatment protocol.

Simulation and Imaging

Before treatment begins, patients generally undergo a simulation procedure to establish the anatomical and geometric information required for treatment planning. CT simulation is widely used in contemporary external beam radiotherapy, although additional imaging modalities may be incorporated depending on the treatment technique and clinical indication.

RTTs contribute to simulation by preparing and

positioning the patient, applying immobilization devices when required, acquiring appropriate images, and documenting relevant technical information. The quality and reproducibility of simulation are important because subsequent treatment delivery depends on the accuracy of the information obtained during this stage.

Together, patient education, preparation, positioning, and simulation form an important foundation for safe radiotherapy delivery. The RTT's combination of technical competence and direct patient interaction allows these processes to be integrated with patient-centered care throughout the treatment pathway.

Treatment Planning and Collaboration

Monitoring, Marking, and Reproducibility

RTTs contribute to maintaining reproducible patient positioning throughout the radiotherapy course. Depending on the treatment technique and institutional protocol, this may include the application or verification of permanent tattoos, temporary skin marks, or other positioning references. These markers, together with immobilization devices and image-guidance procedures, help reproduce the treatment position established during simulation.

The use of appropriate positioning references is particularly important for treatment sites in which small changes in patient position can affect target coverage or the exposure of surrounding organs at risk. RTTs therefore play an important role in verifying that the patient is positioned consistently before treatment delivery and in identifying deviations that require correction or further assessment.

Treatment Planning and Multidisciplinary Collaboration

Following simulation, the radiation oncologist and medical physicist collaborate in developing an individualized radiotherapy plan based on the patient's diagnosis, anatomy, treatment intent, and prescribed dose. RTTs contribute to the implementation and verification of the approved treatment plan within their professional scope and institutional procedures.

This process may involve reviewing treatment parameters, patient identification, positioning requirements, immobilization, imaging protocols, and other technical aspects necessary for accurate treatment delivery. RTTs may also perform image-guided verification, including cone-beam computed tomography (CBCT), when indicated by the treatment protocol. These images can be used to assess patient positioning and anatomical changes before or during treatment and to determine whether predefined correction procedures or further clinical review are required.

Effective communication among RTTs, radiation oncologists, and medical physicists is essential when discrepancies, anatomical changes, or technical concerns are identified. Such multidisciplinary collaboration contributes to treatment accuracy, patient safety, and the timely management of issues that may affect treatment delivery.

Treatment Delivery: Precision and Accuracy in Radiotherapy

The delivery of prescribed radiation treatment is a central responsibility of RTTs. They implement the approved treatment plan using contemporary treatment and imaging technologies while maintaining patient identification, positioning, and safety procedures. Before treatment delivery, the required technical and safety checks are performed in accordance with institutional protocols and quality-assurance procedures, with appropriate involvement of medical physicists and other members of the radiation oncology team.

During each treatment session, RTTs position the patient according to the established treatment setup and use appropriate immobilization and image-guidance techniques. Image-guided radiotherapy (IGRT) has become an important component of modern radiation oncology, and RTTs require appropriate knowledge and training to acquire, assess, and act on verification images according to established clinical protocols. Accurate image verification can help identify setup variations and facilitate appropriate corrections before radiation delivery.

The RTT's professional knowledge encompasses relevant aspects of anatomy and physiology, radiation physics, radiation biology, radiation protection, treatment technology, patient care, and emergency procedures. This combination of technical and clinical knowledge allows RTTs to respond appropriately to routine and unexpected situations during treatment. They may also identify equipment or workflow problems and initiate established troubleshooting or escalation procedures when technical difficulties occur.

Throughout treatment delivery, RTTs monitor patients' comfort, positioning, and general condition. If clinically relevant anatomical or physiological changes are observed, such as substantial weight loss, changes in external anatomy, or other findings that may affect treatment reproducibility, these should be documented and communicated to the appropriate members of the multidisciplinary team. Decisions regarding adaptive radiotherapy or modification of a treatment plan remain the responsibility of the relevant clinical team and should be undertaken according to institutional protocols.

Effective communication with patients is an integral component of treatment delivery. RTTs routinely explain procedures, provide instructions, respond to questions within their scope of practice, and offer reassurance. Maintaining clear communication can help patients remain calm and cooperative during treatment and may contribute to a safer and more positive treatment experience.

Patient Care: Monitoring and Support During Treatment

The RTT's role extends beyond the technical delivery of radiation. Because patients may attend the radiotherapy department repeatedly over several weeks, RTTs are often

among the healthcare professionals who have the most frequent contact with them during treatment. This regular interaction provides opportunities to observe changes in patients' physical condition, emotional well-being, and ability to tolerate treatment.

RTTs may identify or report treatment-related changes such as skin reactions, mucositis, fatigue, nausea, vomiting, changes in body weight, or alterations in anatomy that may affect treatment positioning. In some treatment sites, changes such as variations in tumor or nodal dimensions, postoperative seroma, or other anatomical changes may be relevant to treatment reproducibility. RTTs should communicate clinically significant findings to the appropriate members of the multidisciplinary team so that further assessment and intervention can be undertaken when necessary.

Patients receiving radiotherapy under anesthesia or sedation require additional coordination and safety measures. Where such procedures are part of institutional practice, RTTs may assist with patient positioning and transfer according to established protocols and work in coordination with anesthesia and recovery personnel. Their responsibilities should remain clearly defined within the institutional scope of practice, with monitoring and management of anesthesia-related complications undertaken by appropriately qualified professionals.

Radiotherapy may be associated with adverse effects such as radiation dermatitis, mucositis, fatigue, nausea, and other site-specific symptoms. RTTs can reinforce education and supportive-care instructions provided by the clinical team and direct patients to appropriate healthcare professionals when symptoms require assessment or intervention. Depending on institutional protocols and professional scope, this may include reinforcing recommended skin-care practices, oral-care measures, nutritional advice, or other supportive strategies. RTTs should avoid providing individualized medical treatment recommendations outside their professional scope.

The psychosocial dimension of radiotherapy should also be recognized. Patients may experience anxiety, fear, fatigue, social difficulties, or uncertainty regarding treatment outcomes. Through attentive communication and empathetic interaction, RTTs can provide an important source of emotional support. When significant distress or psychosocial needs are identified, appropriate referral to nursing, medical, psychological, social-work, or other supportive-care services should be facilitated.

Multidisciplinary Collaboration

Safe and effective radiotherapy depends on coordinated multidisciplinary practice. RTTs work closely with radiation oncologists, medical physicists, nurses, dosimetrists where applicable, radiation safety professionals, anesthesia personnel, and other healthcare professionals. Their direct observation of patients and their involvement in day-to-day treatment delivery allow them to communicate clinically relevant information to the wider team.

RTTs may contribute to discussions regarding

treatment setup, image verification, technical issues, patient tolerance, workflow challenges, and changes that could affect treatment delivery. Their observations can complement the clinical assessment performed by other professionals and support timely communication when further evaluation is required.

Regular communication and multidisciplinary review are particularly important when patients develop significant treatment-related symptoms, experience changes in anatomy or functional status, or encounter logistical or technical difficulties. A collaborative approach helps ensure that patient concerns are recognized and addressed while maintaining the accuracy and safety of radiotherapy.

Overall, the RTT's role encompasses both technical and patient-centered responsibilities. Their contribution to positioning, image verification, treatment delivery, patient monitoring, education, and multidisciplinary communication makes them an essential component of contemporary radiation oncology practice.

Ensuring Quality and Safety in Treatment

Radiotherapy is a highly specialized treatment that requires precise implementation of prescribed treatment plans and strict adherence to established safety procedures. RTTs play an important role in maintaining treatment quality and patient safety through accurate patient identification, positioning, treatment verification, and adherence to institutional protocols. Routine verification procedures may include cross-checking patient information, treatment parameters, imaging results, and equipment settings before treatment delivery.

RTTs also contribute to the identification and prevention of treatment-related errors by following standardized workflows, participating in appropriate verification procedures, and promptly communicating discrepancies to the relevant members of the multidisciplinary team. These processes are particularly important in contemporary radiotherapy, where increasingly complex treatment techniques require multiple levels of verification.

Equipment safety is another essential component of radiotherapy practice. Although equipment calibration and formal quality assurance are primarily performed by qualified medical physicists and other appropriately trained personnel, RTTs contribute to day-to-day operational safety by performing prescribed pre-treatment checks, recognizing equipment abnormalities, and reporting technical problems according to institutional procedures. Radiotherapy treatment rooms should incorporate appropriate safety systems, including emergency stop mechanisms, door interlocks, beam-on/hold/off controls, audiovisual patient-monitoring systems, appropriate shielding, and other safety features required by applicable regulations and institutional standards.

RTTs also contribute to radiation protection by adhering to established safety procedures designed to protect patients, staff, and other individuals from unnecessary radiation exposure. Their responsibilities may include following controlled-area procedures, ensuring

appropriate use of safety systems, and promptly reporting safety incidents or equipment malfunctions. Radiation protection is a multidisciplinary responsibility, and effective collaboration among RTTs, medical physicists, radiation safety professionals, radiation oncologists, and other relevant personnel is essential for maintaining a safe treatment environment.

Patient advocacy is another important aspect of safety. Because RTTs interact directly with patients before and during treatment, they are well positioned to identify discomfort, anxiety, communication difficulties, or other concerns. When such issues arise, RTTs can respond within their scope of practice and communicate clinically significant findings to the appropriate healthcare professional.

Post-Treatment Care and Follow-Up

Following each treatment session, RTTs may briefly assess the patient's general condition, comfort, and ability to leave the treatment area safely. Patients receiving radiotherapy may develop acute effects during the course of treatment, including fatigue, skin reactions, mucosal changes, nausea, or site-specific symptoms. RTTs can reinforce information previously provided by the clinical team and direct patients to the appropriate healthcare professional when symptoms require further assessment.

Although RTTs do not generally provide independent medical management of treatment-related toxicities, their repeated contact with patients allows them to recognize changes at an early stage. Clear documentation and communication of relevant observations can facilitate timely clinical assessment and supportive intervention.

Post-treatment communication is also important for reinforcing practical instructions, clarifying when patients should seek assistance, and ensuring continuity of care. Depending on institutional practice, RTTs may direct patients to radiation oncologists, nurses, dietitians, psychologists, or other members of the multidisciplinary team when additional support is required.

Managing Treatment-Related Effects and Maintaining Patient Comfort

Radiotherapy may produce acute and late effects that vary according to the treatment site, radiation dose, treatment technique, concurrent therapies, and individual patient characteristics. Common acute effects include fatigue, radiation dermatitis, mucositis, nausea, and localized discomfort. RTTs may contribute to the early recognition of these effects and provide or reinforce patient education within their professional scope.

Skin Care

Radiation-induced skin reactions are particularly relevant when treatment involves superficial tissues, including some breast, head and neck, and skin-directed treatments. RTTs can reinforce institutional skin-care instructions and advise patients to follow the recommendations provided by the treating clinical team.

Patients should be informed about expected skin changes and encouraged to report worsening symptoms, significant pain, skin breakdown, or other concerning findings.

Specific topical products should be recommended according to institutional protocols and the advice of the treating clinical team rather than through informal or individualized recommendations by RTTs. This approach reduces the risk of inconsistent advice and ensures that skin management is appropriate for the treatment technique and the patient's clinical condition.

For patients receiving head and neck radiotherapy, oral care is particularly important because mucositis, xerostomia, and other oral complications may occur. RTTs can reinforce oral-care instructions established by the oncology team and encourage patients to report significant oral pain, difficulty swallowing, reduced oral intake, or other concerning symptoms. Recommendations concerning specific mouth rinses or therapeutic interventions should follow institutional protocols and the guidance of the relevant clinical professionals.

Fatigue Management

Fatigue is a common symptom during cancer treatment and may become more pronounced as the radiotherapy course progresses. RTTs can reinforce general recommendations provided by the healthcare team, such as maintaining appropriate activity according to individual tolerance, balancing activity with rest, maintaining adequate nutrition and hydration, and reporting persistent or severe fatigue. When fatigue significantly affects daily functioning, appropriate clinical assessment should be facilitated.

Emotional Support

Patients undergoing radiotherapy may experience emotional distress related to their diagnosis, treatment uncertainty, physical symptoms, body-image concerns, or fear of disease progression. RTTs frequently interact with patients throughout treatment and may therefore recognize signs of anxiety or distress.

Empathetic communication, active listening, and a supportive clinical environment can help patients feel more comfortable discussing their concerns. RTTs should also recognize the limits of their professional role and facilitate referral to appropriate psychological, social, nursing, or supportive-care services when more specialized intervention is required.

Pain and Discomfort

Some patients experience pain or discomfort related to their cancer, treatment position, treatment-related effects, or underlying disease. RTTs can help identify and communicate these concerns and may modify positioning within the limits of the approved treatment setup to improve patient comfort without compromising treatment accuracy.

Pain management itself should be coordinated with the appropriate healthcare professionals. RTTs may contribute by communicating the patient's reported pain, observing changes during treatment, and facilitating referral for

appropriate assessment and management. Medication-based interventions should remain under the responsibility of appropriately qualified clinicians.

The RTT as a Link Between Technical Safety and Patient-Centered Care

Quality and safety in radiotherapy depend not only on sophisticated technology but also on reliable human processes and effective communication. RTTs occupy an important position at the interface between these two dimensions. Their technical responsibilities require precision and adherence to established procedures, while their frequent interaction with patients requires communication, empathy, situational awareness, and responsiveness to individual needs.

By combining technical competence with patient-centered communication, RTTs can contribute to accurate treatment delivery while helping patients navigate the physical and emotional challenges associated with radiotherapy. Their role should therefore be understood as an integral component of multidisciplinary radiation oncology practice rather than being limited to the operation of treatment equipment.

In conclusion, radiotherapy technologists (RTTs) are integral members of the multidisciplinary radiation oncology team, contributing to both the technical delivery of radiotherapy and the patient experience throughout the treatment pathway. Their responsibilities extend from patient preparation, simulation, positioning, and treatment verification to treatment delivery, monitoring, communication, and coordination with other healthcare professionals.

The combination of technical competence and sustained patient interaction places RTTs in a unique position to support patient-centered care. Through clear communication, empathetic interaction, recognition of treatment-related concerns, and appropriate referral, RTTs can help patients better understand and navigate the radiotherapy process while maintaining appropriate professional boundaries.

The increasing complexity of radiotherapy, including advanced image-guided techniques, stereotactic treatments, MRI-guided workflows, proton therapy, and emerging artificial intelligence applications, further emphasizes the need for continuous professional education and competency development. Future RTT education and practice should therefore address both technological proficiency and competencies in communication, patient assessment, supportive care, and multidisciplinary collaboration.

Strengthening these competencies and clearly defining the evolving scope of RTT practice may enhance their contribution to safe, coordinated, and patient-centered radiotherapy. As radiation oncology continues to evolve, maintaining an appropriate balance between technological expertise and human-centered care will remain essential to the professional role of RTTs.

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Conflict of Interest

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Data Availability

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