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Opinion Article

The Role of Radiation Therapists in Establishing a New Radiotherapy Centre Abdul Latif Aljaber Oncology Centre, King Fahad Hospital Al- Ahsa, Ministry of Health, Kingdom of Saudi Arabia

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Abstract

When our new radiotherapy centre at Abdul Latif Aljaber Oncology Centre, King Fahad Hospital Hofuf, under the Ministry of Health in the Kingdom of Saudi Arabia was constructed, the physical infrastructure was fully built, but the facility had not yet started functioning. Together with our consultant radiation oncologist and physicists we took on the challenge of establishing the department from scratch — transforming empty rooms and equipment into a fully functioning, safe, and patient-focused radiotherapy service. This article outlines the role of the radiation therapist in getting the department off the ground to the fully established center it is today.

Keywords: *Radiotherapy, Radiation Therapist, Oncology Centre, Department Establishment*

Background

Prior to 2024- any patient from Al-Ahsa region requiring radiotherapy had to travel at least two hours to King Fahad Specialist Hospital Dammam KFSHD–this was the closest centre. KFSHD accepted patients from the entire Eastern region; serving a population of over 5.1 million. Patients from Al-Ahsa alone comprised 30-40% of patients of referrals to the centre. The need for radiotherapy in Al-Ahsa was clear.

The Abdul Latif Aljaber Oncology Centre is a state of the art standalone cancer centre built by a charitable donation from the Aljaber family and inaugurated in 2023. The radiotherapy centre located on the ground floor has three bunkers, two of which house Varian VitalBeam linear accelerators. In addition, the department has one CT simulator, one mould room, various clinical and administrative rooms and a recovery area.

The role of the Radiation therapist

Radiation therapists are specialized healthcare professionals responsible for delivering precise and safe radiotherapy treatments to cancer patients. They operate advanced radiation equipment, position patients accurately, and ensure treatment plans prescribed by oncologists and physicists are executed with precision. Beyond technical expertise, they provide patient support, monitor side effects, perform quality assurance checks, and maintain meticulous treatment records. By collaborating closely with the wider oncology team and staying current with emerging technologies, radiation therapists play a vital role in optimizing treatment outcomes, patient safety, and overall care quality.

The education and training of Radiation therapist in Kingdom of Saudi Arabia

Currently in the Kingdom of Saudi Arabia, three institutions—Al-Majmaah University, Princess Nourah University and Imam Abdulrahman bin Faisal University—offer academic programs that support a career in Radiation therapy. The Saudi commission for Health Specialties then oversees the registration and licensing aspects.

While these programs provide strong theoretical foundations, they remain limited by the absence of specialized, accredited clinical training pathways required for day-to-day practice in radiation oncology. As the number of oncology centres increases and radiotherapy services expand rapidly across the country, the demand for experienced radiation therapists has become even more urgent. Consequently, recruitment often relies heavily on professionals trained abroad. In many radiotherapy departments across the Kingdom, senior radiation therapists play a vital role in bridging this gap by delivering hands-on training, mentoring junior staff, and supporting the safe adoption of advanced technologies.

Developing Protocols, Policies, and Safety Standards

One of our first priorities was developing clear policies and protocols for how we were to operate the department. We started with safety and quality assurance systems, departmental SOPs, inventories of stock, reporting of errors and escalation of emergencies. All of this was with collaboration with management, nursing, audit and quality control experts.

We then moved to on to the development of imaging protocols, immobilization standardization and setup protocols and verification imaging processes- each developed uniquely for specific tumour sites. This was done in line with our clinicians and physicists –tailored to our inventory, infrastructure and patient population.

All protocols were accessible to the entire radiotherapy team and stored digitally to ensure that treatments were delivered safely, consistently, and efficiently.

We then moved on to educational aspects by producing patient information leaflets to educate patients on treatment processes, potential side effects, and safety precautions, providing reassurance and improving overall patient experience. This was in collaboration with other established radiotherapy centres in KSA.

Our department established regular teaching sessions, regular governance meetings and peer review sessions.We learned from errors and near misses by conducting root cause analyses, and implementing corrective measures. This culture of transparency and continuous improvement allowed us to refine workflows, reduce errors, and strengthen patient safety practices. Each challenge became an opportunity to improve processes and empower staff to take ownership of quality care.

Designing Clinical Workflows and Patient Pathways

Together with our consultant, we developed our own system for managing patient referrals, scheduling CT simulations, and determining the timing for starting treatment. We designed workflows on Aria (Radiotherapy software system) that ensured patients received timely care while optimizing the use of our limited resources.

Managing the workflow of patients and departmental resources — including staff schedules, machine allocation, and treatment slots — became central to our role.

We created step-by-step procedures for simulation, immobilization, imaging, and treatment delivery to maintain consistency and safety. These workflows were continuously refined as we gained experience and identified areas for improvement. Through this process, we established a foundation for a patient-centered system that could grow as the department expanded.

Overcoming Staffing Challenges

At the outset, our department had four radiation therapists, but often only three were available on shift. Despite this, we quickly learned to work efficiently, multitasking across various roles while ensuring quality and safety standards were never compromised. Learning to manage our own human resources was key to keeping the department operational, coordinating shifts, and ensuring that all critical tasks — from patient setup to treatment delivery and inventory management — were covered.

To supplement our skills and build confidence, we undertook self-directed learning by undertaking additional training at King Fahad Hospital in Dammam, where we gained hands-on experience with similar equipment, observed workflows, and learned practical techniques that we later adapted to our own centre. This proactive approach helped us overcome the initial challenges of limited staffing while maintaining high standards of patient care.

Leadership and Mentorship

We were fortunate to have strong leadership from our consultant and head of department, who brought UK-based expertise and international guidance. Their mentorship was invaluable in helping us navigate complex challenges and implement evidence-based best practices.

Together, we trained more junior colleagues including radiotherapy nurses and administrative staff, sharing practical skills, workflows, and departmental protocols to ensure continuity and consistency in patient care. Through mentorship and collaboration, we cultivated a cohesive team that could operate effectively despite the limited staffing during the initial months of the department's operation.

Patient Treatment Progression

Treating our first patient was an unforgettable experience. At last, all our preparation and efforts came into practical fruition. His name carried the meaning of 'good news' as if fate intended to bless the beginning of our department.

We intentionally started with single-fraction palliative cases, allowing the team to become familiar with equipment, workflows, and patient interaction without the complexity of longer treatment courses. Once we were confident, we progressed quite promptly to multiple-fraction treatments, gradually building experience and efficiency.

Encouraged by the success of early treatments, we quickly moved to curative treatments, beginning with breast, prostate, and brain cancers. Since then, we have expanded to treat most disease sites, including breast, prostate, bladder, brain, rectum, anal and even craniospinal radiotherapy.

We provide emergency radiotherapy within 24 hours of referral and ensure that all palliative treatments are initiated within a maximum of 3–5 days, demonstrating our commitment to timely patient care.

Additionally, we have established a paediatric radiotherapy service in collaboration with paediatric oncology, nursing, and anaesthesia specialists, allowing us to safely treat children requiring radiotherapy within a multidisciplinary framework.

This staged and structured approach has allowed the team to build expertise progressively, ensuring that patients across all disease sites receive high-quality, safe, and timely radiotherapy.

Resource Management and Collaboration

Managing inventory and resources was another crucial aspect of our work. We regularly checked supplies, liaised with the purchasing department for items needed, and ensured that consumables and treatment accessories were always available. For equipment that was unavailable in our centre, we established agreements with King Fahad Specialist Hospital Dammam (KFSHD) and private centres to exchange or borrow equipment, ensuring uninterrupted service delivery.

These collaborations extended beyond equipment sharing. We leveraged relationships to exchange knowledge, gain insights into best practices, and troubleshoot technical challenges, fostering a network that supported the growth of our department.

Varian Support and Training

A key factor in the successful establishment of the centre was the support from Varian. Their engineering, technical, educational and administrative staff and services were essential in optimizing machine functionality, troubleshooting technical issues, and ensuring smooth operation of our linear accelerators.

Varian's training courses played a critical role in helping us understand the full capabilities of the equipment, safely implement complex treatment techniques, and build confidence in day-to-day operations. The availability of their support staff throughout the early months was invaluable, allowing us to resolve technical challenges quickly and focus on patient care. This combination of training and ongoing technical support provided a solid foundation for the safe delivery of advanced radiotherapy treatments.

Continuous Learning and Teamwork

Throughout the establishment process, we worked closely with our consultant radiation oncologist, learning from every challenge and celebrating successes as a team. Our proactive approach, combined with self-directed learning, collaboration, and mentorship, allowed us to overcome staffing limitations, manage resources efficiently, and deliver high-quality patient care from the very beginning. Each step of the process strengthened our skills, confidence, and teamwork, laying the foundation for a sustainable, high-performing radiotherapy service.

We are proud of the achievements of the staff and the centre and continue to work towards excellence in providing the best possible treatments for our patients.

Conflicts of Interest

The authors declare no conflicts of interest.

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