Radiation Therapist Scope of Practice

Introduction

In late 2015 the Board of the Australian Society for Medical Imaging and Radiation Therapy (ASMIRT) requested the Radiation Therapy Advisory Panel (RTAP) review the Scope of Practice (SoP) for Radiation Therapists.

The broad SoP for Radiation Therapists has been defined in the Professional Practice Standards (PPS)[1] by ASMIRT. The PPS describe the performance benchmarks for the Accredited Practitioner in Radiation Therapy and Radiography eligible for a Validated Statement of Accreditation / Statement of Compliance and mirrors the professional standards set by the Medical Radiation Practitioners Board of Australia (MRPBA)[2,3] for all registered radiation therapists. The PPS provides a framework for professional, patient and community expectations. The PPS aim to integrate the skills, knowledge and understanding that underpin the profession of Radiation Therapy

The PPS states the scope of practice of the Radiation Therapist (Accredited Practitioner level) shall include:

- Patient assessment including psychosocial issues,
- Patient positioning and immobilisation,
- Patient education and advocacy,
- Manufacture/construction of ancillary equipment,
- Simulation, including tumour localisation, treatment planning and dosimetry,
- Treatment by superficial to megavoltage external beams and verification,
- Imaging for planning and treatment verification purposes,
- Mentoring, clinical reasoning and research.
- Quality assurance and quality improvement

The purpose of this review was not to replace the PPS but to describe a broader set of competencies and tasks undertaken by radiation therapists to supplement the PPS principles and reflect contemporary practice and the role radiation therapists undertake in the delivery of Radiation Oncology services in Australia. The focus is on articulating the daily tasks, responsibility and accountability of Radiation Therapists who hold a unique place in the Radiation Oncology multidisciplinary team.

The RT role spans a diverse range of technical expertise, complex clinical expertise, clinical patient management, psychosocial patient supportive care, clinical informatics, radiation biology, coupled with radiation safety considerations[4].

Radiation therapists are registered practitioners and may also be licensed to use radioactive sources[2, 5]. They are aware of and comply with legislative requirements and have a culture of implementing checking procedures and quality assurance processes as well incident reporting and review to ensure that the public and patients are safe.

Radiation Therapists are responsible for the safe and accurate delivery of therapeutic doses of radiation to patients. In order to achieve this radiation therapists are trained in principles of

radiation physics, cancer biology and pathology, anatomy and physiology, radiation biology and general patient care issues such as infection control and workplace health and safety. Radiation safety principles and practice are also an essential part of a radiation therapist's education[4].

RTs have responsibility for the simulation of the treatment, the set-up and ongoing delivery of the prescribed treatment, and have, therefore, an essential function in noticing any abnormal reaction of the patient or the machine.

The evolution of treatment requires absolute accuracy, with this in mind the radiation therapist needs to appreciate the complexity of treatment and the impact on the patient of variations from planned treatment delivery.

There are core clinical responsibilities identifiable within the modern day contemporary radiation therapist role. These span a unique and diverse range of responsibilities in their daily role, including;

- Inter and Intra professional communication
- Professionalism
- Patient Care and Advocacy
- Patient Positioning and Immobilisation
- Radiation Biology and Physics
- Image Acquisition and Interpretation
- Simulation / Localisation
- Treatment Planning
- On treatment Verification
- External Beam Treatment Delivery
- Brachytherapy
- Quality Assurance
- Research and clinical practice improvement
- Education

These responsibilities have been distilled into the sections below that represent broad areas of practice. The details are not meant to be prescriptive or limit the scope of practice in any way. RTAP acknowledge that Radiation Oncology is a continually evolving field that requires an adaptable and flexible workforce. We also acknowledge that there will be some overlap with other groups within the multidisciplinary team and those responsibilities / tasks will vary between jurisdictions, but optimal service delivery occurs in a collegial environment where all members of the team are respected and their contributions valued. Whilst the Radiation Oncologist has overall responsibility for the radiation prescription, Radiation Therapists being regulated and licensed practitioners carry a critical responsibility for planning and treatment delivery in accordance with that prescription and are essential to quality care[6].

Comments on the Scope of Practice for Radiation Therapists are invited from ASMIRT members.

Localisation/Simulation

Radiation therapists are responsible for treatment simulation and planning, which requires them to have expert knowledge of treatment principles including patient positioning, fixation techniques, dosimetry calculation and the capabilities and constraints of available technology.[4, 6]

Simulation is a term that dates back to when a diagnostic x-ray unit was used to simulate the patients' treatment and localisation of the tumour was obtained by taking radiographs. Localisation may be performed using a CT or MRI scanner, diagnostic x-ray unit, linear accelerator or by simply drawing on the patients' skin. The majority of patients will have a CT scan to aid in the localisation of the site to be treated.

The key principles of localisation / simulation are stabilisation or immobilisation of the patient to allow accurate and consistent reproduction of this initial set-up at time of treatment. Comprehensive documentation is required to support reproducibility throughout the treatment course. Patient specific factors that influence reproducibility must be taken into account.

Localisation requires the radiation therapist to firstly assess the patients' medical history, clinical notes, imaging and treatment request to ascertain the most appropriate method for localising the site to be treated and the most stable and reproducible position for the patient.

Simulation / localisation is often the first time a patient has direct contact with the radiation therapy service. The RT is responsible for informing the patient of the process involved with localisation and how this relates to their treatment[4]. They will determine the most appropriate treatment position, manufacture any immobilisation devices required, document the position and using CT, radiographs or skin marks localise the body site to be treated. This will vary for each patient. As part of localisation the RT may tattoo the patient to assist with accurately reproducing the treatment position.

The ability to reassure the patient, answer questions and allay their fears is paramount to relaxing the patient. If a patient is tense during localisation then there may be a difference in the treatment position, making daily treatment setup more difficult and time consuming. The patient needs to have confidence in the RTs to feel safe and relaxed throughout the process to make reproducing the treatment position on the linac straightforward. It is therefore essential that the RT has a broad understanding of radiation therapy (e.g. radiobiology, how a linac works, radiation physics, side effects associated with all tumour sites and their remedies etc.) in order to answer patients' questions, and direct the patient to the most appropriate person if the RT is unable to answer the question [4, 7]. Good verbal and nonverbal communication is required to help put patients at ease.

Documentation of the patient's treatment position, immobilisation devices, ECOG status and any other patient specific details are the responsibility of the RT. The RT must be able to problem solve quickly when faced with a patient or situation that is non-standard. They will use clinical reasoning to recommend a treatment position or immobilisation device based on the particular patient and treatment required that will ensure the patient remains in a stable, comfortable and reproducible position. The manufacture of bespoke immobilisation devices such as thermoplastic masks, vacuum formed cradles and head rests is also the remit of the radiation therapist.

Their knowledge of radiation dosimetry and physics assists them when they manufacture ancillary equipment that will produce an optimal treatment plan. Bolus, wax blocks and compensators are just a few of the beam modifiers RTs manufacture to meet the RO prescription. As beam modifiers alter dosimetry, the accuracy of these devices must be high and the production and checking of these is the responsibility of the RTs.

All RTs are trained in the use and workings of a CT scanner and image interpretation in order to perform localisation. Radiation physics and radiobiology knowledge enable them to select the most appropriate protocol for the particular procedure and adhere to the ALARA principle. CT protocols for each different body site and for adults and paediatrics are developed and peer reviewed by the RTs, in collaboration with ROMPs and ROs. Ensuring accurate procedural documentation is recorded for each body site is also the domain of the RT. Daily quality assurance of the CT scanner is the responsibility of the RT; any deviations will be reported to the medical physicist for further investigation.

Where contrast media is used the RT must have knowledge of its function to better localise a tumour[1]. Contrast may be given orally or intravenously and include different types of contrast and different amounts. The RT must be able to recognise an anaphylactic reaction and the appropriate emergency response i.e. cardiopulmonary resuscitation etc.

The RT must be able to use gating software to produce a 4DCT that will demonstrate the position of the tumour at various points of, or for the entire breathing cycle so that respiratory motion of the tumour can be taken into account when producing the dosimetry. Manipulation of the 4DCT and selection of the appropriate series for export to the planning system is also required.

For superficial skin lesions the site may be localised by the RO drawing on the patients' skin. The RT then accurately documents this in several ways including clinical photographs, tracing of the treatment site and surrounding anatomical features, measurements from anatomical features, with the aim to give adequate and accurate information to the RTs who will calculate the dosimetry and deliver the treatment. The RT provides advice on immobilisation and shielding to the RO and manufactures this and any bolus required. Patient comfort, stability and reproducibility of the treatment position are integral to the RTs decision making as are the resultant dosimetry and feasibility of treatment. The RT has knowledge of radiation physics and understands the requirement for bolus and the optimal thickness to produce the desired dosimetry. They also are aware of the physical limitations of the treatment unit and consider this when positioning the patient. The manufacture of custom cut-outs is also the responsibility of the RT and ensuring they are produced accurately.

RTs are responsible for the management and supervision of the Localisation / Simulation section and associated procedures and protocols. They make decisions on a daily basis that ensure the accurate and safe localisation of all patients undergoing radiation therapy, consulting with the RO and/or ROMP when necessary. The increased reliance on imaging to delineate the target volumes means knowledge of CT protocols, manipulation of images and use of contrast is continuously developing. RTs are responsible for the safe implementation of changes in practice, optimising imaging protocols, workflow and immobilization devices, and providing the patient with reassurance and information on the radiation therapy process.

Treatment Planning and Dosimetry

Treatment planning and dosimetry is the process of determining the treatment parameters considered optimal to meet the requirements of the radiation prescription as prescribed by a radiation oncologist [1, 4, 8, 11]. Treatment planning is a core task of the radiation therapist whose role is primarily centred on the design and implementation of the treatment plan[4,6]. Collaboration with the RO is required, as well as consideration of numerous aspects related to the patient state, treatment intent and modality used.

Radiation therapists acquire a fundamental understanding of the principles of treatment planning and dosimetry during their academic training and build on this through professional practice.

This includes

- understanding of the radiation physics for different treatment modalities / types of radiation,
- radiobiology,
- anatomy (including appearance and delineation on multiple image modalities),
- physiology and pathology,
- organ at risk tolerances,
- image manipulation (e.g. fusion of different imaging modalities),
- use of treatment planning software and associated tools for contouring, treatment plan design, plan assessment and quality assurance,
- the physical limitations of the equipment used,
- practical considerations for treatment delivery and patient set-up limitations
- radiation safety (e.g. ALARA),
- independent checks and patients' compliance issues.
- ensuring that all data and imaging to support treatment delivery is transferred safely and accurately to the treatment delivery / record and verify system

Treatment planning is a specialised domain which requires high level clinical reasoning skills and professional judgement to develop individualised ('bespoke') treatment plans. Continuous education and training, along with mentoring of colleagues and students (new learners) is an ongoing requirement for radiation therapists in the planning sphere due to treatment regimen changes and frequent implementation of new technology.

Core principles of planning include designing plans to deliver adequate dose to achieve tumour control or other goal of care (e.g. palliation of symptoms). This generally requires a homogeneous dose to be delivered to the tumour/target volume, whilst minimising dose to surrounding tissues / organs at risk. Plans are developed under the guidance of international standards such as ICRU guidelines for prescribing & reporting of radiation dose[9,10] and other relevant protocols. Consultation with Radiation Oncology Medical Physicists may be required during plan development and quality assurance.

Radiation therapists have an understanding of different treatment modalities and techniques that can be employed to meet the radiation prescription. Examples include, but are not limited to, external beam megavoltage treatment using photons or electrons, brachytherapy with a variety of radiation sources and delivery techniques and superficial / orthovoltage treatments[4]. Treatment

plans can be simple 2 dimensional designs and more commonly are highly conformal, developed using 3 & 4 dimensional imaging & planning techniques including intensity modulated radiation therapy, volumetric modulated arc therapy and other complex treatment techniques such as radiosurgery/stereotactic radiation therapy.

Radiation therapists are responsible for producing a deliverable RT plan that complies with the RO prescription, meets OAR constraints, as per departmental protocols, published clinical practice guidelines and/or clinical trial requirements[4,11]. The RTs are responsible for performing quality assurance checks on the plan including an independent monitor unit check. They also generate verification images and ensure that plan information has been transferred correctly into the record and verify system for accurate treatment delivery.

Treatment Delivery

Radiation Therapists are responsible for the safe and accurate delivery of therapeutic doses of radiation to patients[1,4,6,7]. In order to achieve this radiation therapists are trained in principles of radiation physics, cancer biology and pathology, anatomy and physiology, radiation biology and general patient care issues such as infection control and workplace health and safety. Radiation safety principles and practice are also an essential part of a radiation therapist's education.

Radiation therapists work in teams to provide care for their patients. Good teamwork and communication practices are vital for the efficient and effective operation of a treatment unit. The radiation therapist is also part of the wider multidisciplinary team, providing care for the oncology patient and need an understanding of roles of all members of the MDT so that they are aware of services available for their patients and appropriate referral/care pathways for patients undergoing radiation therapy treatment[1,4,6,7].

Radiation therapists are responsible for the safe and accurate treatment delivery for external beam and brachytherapy treatments.

The treatment radiation therapist is a patient advocate and is in a key position to monitor the patient throughout their treatment journey as they will have daily contact with the patient[1]. The radiation therapist will have good understanding of patient rights, interpersonal communication and training in conflict resolution processes.

A radiation therapist also needs to have good understanding on how specific treatment units operate[1,4]. This complex machinery needs to be monitored to ensure it operates safely and correctly. The radiation therapist will have some skills in overcoming mechanical/software issues which arise on the treatment unit and patient information systems associated with the treatment unit. A radiation therapist may work with a range of units including linear accelerators, orthovoltage treatment units and brachytherapy treatment unit.

In order to safely deliver radiation treatment the radiation therapist must have an understanding of treatment protocols, aims of treatment and patient anatomy. They also need to have an understanding of appropriate daily doses which should be delivered and assess that the dose which they are delivering falls within these boundaries.

The use of image guidance enables the radiation therapist to accurately position the treatment beams and make decisions daily on the appropriateness of beam position. Image guidance is an integral part of modern radiation therapy techniques and the radiation therapist must be aware of online correction guidelines as well as offline review processes[1]. The RTs, as a treatment team, are responsible for making decisions, which have a major impact of the efficacy of the patient's treatment. They need to be able to efficiently and accurately interpret multi-modality verification imaging in order to ensure accurate delivery of treatment to the patient.

A radiation therapist's education includes knowledge of effects which a patient may experience and RTs are therefore able to monitor these side effects and refer the patient to appropriate care when needed. They will recognize unusual side effects and use appropriate reporting pathways and investigations if these occur. The radiation therapist can also advise patients on care to minimize the impact of side effects and advise patients if what they are experiencing is normal.

Radiation therapists monitor changes to the patient (e.g. contour change, treatment side-effects) throughout the course of treatment to determine if these changes will have any dosimetric impact. They will notify appropriate colleagues and follow through when changes to the patient treatment plan need to be made[1,4,11].

Radiation therapists are responsible for the daily assessment of patients and all aspects of the treatment plan as part of its delivery. RTs are responsible for initiating plan assessment and adaptation due to changes in anatomy, patient contour, weight change and side effects.

The radiation therapist will collaborate with and provide information to the ROMP group with regards to in vivo dosimetry on patients.

The radiation therapist undertakes a range of quality assurance practices, both in respect to ensuring the treatment unit is operating correctly and the patients' treatment is being delivered according to the radiation oncologist's prescription. The radiation therapist is responsible for performing QA on the linac daily, identifying out of tolerance parameters prior to patient treatment and ensuring appropriate action is taken.

A radiation therapist works in a stressful environment where machine breakdowns, logistical problems, transport and psychosocial issues as well as conflicts with other appointments may significantly impact on the daily appointment list. They immediately respond to these issues and compensate to continue with efficient operation of the treatment units and treatment of patients. It is their responsibility for the efficient running of the linac or brachytherapy unit as they are accountable for the safe and accurate delivery of radiation therapy to every patient, every day.

Radiation therapists are registered practitioners and may also be licensed to use radioactive sources[2,5]. They are aware of and comply with legislative requirements and have a culture of implementing checking procedures and quality assurance processes as well incident reporting and review to ensure that the public and patients are safe.

Patient Care

Radiation therapists have a fundamental role in patient care and well-being.[1, 4, 6] Radiation therapists are trained in the recognition and treatment of acute radiation toxicities for all body sites. The radiation therapist is the main point of contact for patients undergoing a course of radiation therapy as they are the health professionals who see these patients at their initial planning appointment and then daily (sometimes bi-daily) during the treatment course. Radiation therapists undertake daily assessments of patients and often provide intervention advice on areas such as:

- Clinical care coordination and toxicity management.
- Psychosocial needs
- Patient and family welfare considering socio-cultural factors of individual patients and their family.
- Depression/anxiety
- Survivorship and supportive care

Radiation therapists liaise with the multidisciplinary team to ensure the holistic care of the patient is considered7. Communication about individual patients is vital in these referrals. Following up outcomes of these referrals is an important part of the role to ensure that the patient information loop is closed.

Radiation therapists take part in multidisciplinary meetings to provide input, both technical and clinical in order to plan a patient's journey through the department. This ensures that each patient's individual needs are met in a holistic way both for the cancer treatment and their other personal needs. A radiation therapist will advocate for patients during these meetings as well as throughout their journey through the service to ensure the suitability of the proposed medical radiation procedure.[3,7,12]

Radiation therapists provide education to patients about their specific planning and treatment requirements. This information is specific to the radiation treatment and expands on the information given by the Radiation Oncologist. The radiation therapist will respond to questions from the patient or their family about their procedure (either planning or treatment) to ensure the patient has a full understanding of the process.

The co-ordination of care for patients both during and after treatments is often managed by radiation therapists. This includes managing patient radiation therapy appointments around other treatments or investigations where appropriate. Ensuring patients have the correct follow-up schedule for the ongoing management of their side effects and disease is completed by radiation therapists during the patients' final visits to the department.

Quality and Safety

The planning and delivery of radiation therapy is complex, and the radiation therapist is essential to ensure high quality and safe practice. Quality assurance processes in radiation therapy must have a multidisciplinary approach, working within the bounds of both the Australian Radiation Oncology Practice Standards[11] and the National Safety and Quality Health Service Standards[13]. The radiation therapists perform their duties in parallel with others, responsible for a multitude of quality assurance elements on a daily basis. Quality control processes are performed on treatment and CT simulation equipment daily, measuring performance and specifications against expected standards. The radiation therapist is responsible for ensuring the quality standards have been met, or alternatively making decisions on appropriate actions for out-of-tolerance parameters.

For radiation therapists rostered to planning, stringent quality assurance processes are applied to each treatment plan produced, with a redundant check of all technical aspects of the plan and documentation, including an independent monitor unit check to ensure accurate doses will be delivered[11]. When rostered to treatment, radiation therapists similarly perform careful cross checks of the plan, ensuring that all treatment parameters have been accurately translated from the planning computer systems to the treatment system prior to the start of new treatment courses. Additionally, the radiation therapist is responsible for ensuring throughout the treatment course that the correct parameters have been set and correct dose delivered, complying with 'time-out' requirements prior to simulation and daily treatment [14,15] and regular data checks before and after treatment including confirmation of accurate treatment through the careful review treatment images.

Radiation therapists make a leading contribution in the introduction of any new technology, participating in risk assessments and the development of quality processes to ensure that new equipment or techniques are safely integrated into a department[11].

There are many areas where the radiation therapist demonstrates their commitment to continuous quality improvement including:

- The development and maintenance of department protocols and procedures that document quality standards
- Participation in audits and other tools to verify compliance with protocols, and measure department quality
- Contributing to incident monitoring and process risk management
- Maintenance of performance and competency standards
- Undertaking quality improvement activities that are evidenced based and follow recognised processes

Radiation therapists provide a continual quality improvement approach to daily work in clinical care. This quality improvement analysis triggers technique developments, research efforts and drives a constant evolution of radiation therapy practice.

As a regulated and licensed practitioner the radiation therapist complies with radiation safety legislation and its application in daily practice[1,2].

Research and Development

Radiation therapy is a continually evolving field, and the radiation therapist is integral to ensuring that new and emerging techniques and treatment regimens are introduced with sound evidence-based practices. With a collaborative research and development approach, the radiation therapist is responsible for ensuring good clinical practice principles are utilised in research involving:

- The introduction of new technologies
- The development of new treatment techniques
- Clinical trials investigating the efficacy of new treatment regimes[11]

The radiation therapist is integrated with different levels of research within Radiation Oncology. Research can be large scale clinical trial type research or smaller scale implementation research. RTs are involved at all levels; as an integral contributor and/or at the periphery of these research efforts.

The radiation therapist's involvement in research may include the following roles:

- principle investigator, with primary responsibility for the study including protocol development, ethics submissions and ensuring protocol compliance
- co-investigator, participating in data collection and results analysis
- radiation therapist planning or treating a study patient, ensuring clinical trial credentialing and protocol compliance is met at each stage of the process
- recruitment officer, responsible for the consenting and enrolling of trial participants

Radiation therapists involved in research have opportunities (and an expectation/obligation) to contribute to the ongoing development of radiation oncology both nationally and internationally, through presentation and publication of research results and conclusions.[1,3,4,7]

Education

Radiation therapists participate in many aspects of education including;

- Continuous development of own skills and professional knowledge
- Training of students and graduate practitioners
- Guiding the learning of other professionals in a multidisciplinary environment, including RO and ROMP
- Contributing to guidelines and protocols such as those of the Tripartite Committee and Trans-Tasman Radiation Oncology Group (TROG)

Continuing professional development (CPD)

Radiation therapists are licensed and regulated practitioners who are required to demonstrate recency of practice and undertake CPD on a continual basis to maintain registration with the MRPBA.[3,16]

Educational opportunities for Radiation therapists are many, with greatest benefit derived when recorded and reflected upon thoroughly in a continuing professional development (CPD) portfolio. These educational opportunities can be categorised as per the list below[17]

1. Skill-development / Workplace learning
2. Self-directed learning
3. Professional Activity / Organised program
4. Conference and Meetings
5. Audit and QA
6. Writing
7. Formal Education
8. Research and Publication
9. Other

Radiation therapists are responsible to commit to, and partake in, lifelong learning relevant to the profession throughout their careers. [1,3,7] Continually reflecting on own practices and identifying and acknowledging limitations in their professional knowledge is an essential step to ensure the maintenance of the highest standard of knowledge, skill and attitude required in a radiation therapist position.

To keep current with new department procedures, trends and evolving technologies in contemporary practice, radiation therapists may employ various strategies for continually developing knowledge and skills to meet department and personal goals. Radiation therapists regularly participate in professional development learning by attending mandatory training courses (first aid, CPR and manual handling), department in- services, patient case review sessions and completing activities which advance the profession. When new equipment is installed the radiation therapists receive applications training and become credentialed to meet department standards.

Education and training of students and graduate practitioners

Radiation therapists play a vital role in the education and training of students and graduate practitioners. They continually support and mentor students and graduates to work appropriately to gain maximum experiences from procedures they undertake. Radiation therapists provide experiential learning opportunities which are relevant to the stage of education and experience and give students and graduates valuable time and practice to build upon their problem solving skills.[1,3]

The coordination of radiation therapy student's learning is managed by a radiation therapist who may be in a dedicated clinical educator role. This includes rostering students to a variety of areas, such as CT simulation, planning and treatment suites and ensuring constructive and timely feedback is given regularly throughout the process. Helping students set specific achievable goals and educational outcomes for their placements which meet university expectations, is another task that radiation therapists are involved in.

In clinical practice, radiation therapists recognise the importance of role modelling expected behaviours and attitudes when delivering quality patient care services. This radiation therapist trait is paramount especially when developing the next generation of radiation therapy professionals for the future.[7]

Guiding the learning of others

Radiation therapists contribute to learning experiences and professional development of others, most frequently their RT colleagues, radiation oncologists, radiation oncology medical physicists and nursing staff. The role of the registered radiation therapist is to disseminate their knowledge, experience and expertise to their colleagues, health professionals from other disciplines and promotion of the profession to the wider community.[1,4,7]

Contributions can be formal and informal educational opportunities involving colleagues and peers, and inclusive of patients. Radiation therapists regularly take part in multidisciplinary patient education sessions which are often delivered after hours to show case radiation therapy to the medical profession.

Radiation therapists are involved in the creation of a variety of educational materials (e.g. online training material/resources, journal articles, text books and other publications) which can be utilised by their colleagues to gain additional knowledge directly from the profession.

Oncology Information Systems Management

Radiation oncology utilises information systems for the recording of patient demographics, disease information and radiation therapy data. Data from the OIS informs audit, research and statistical data as well as assisting in ensuring that key performance indicators are met. This electronic health record is integral to radiation therapy delivery. Radiation therapists are responsible for importing, entering and recording radiation therapy data completely and accurately in the OIS.[1,11]

These systems are very sophisticated and often link with other computer systems. RTs are required to have knowledge and understanding of the OIS to use it for not only recording and reporting treatments but also for billing, activity based funding, national wait times reporting and other clinical indicators[18], link to cancer registries etc. Radiation therapists are frequently engaged in key applications roles to manage, support and develop the OIS. In many organisations a radiation therapist is the system administrator for the OIS.

Advanced Practice / Role Expansion – Extending the Scope of Practice

The roles and responsibilities outlined above represent the core duties for Radiation Therapists. The scope of practice is not limited to these tasks however, and there are numerous areas where the scope is extended to include tasks that overlap the boundaries with other Radiation Oncology professions. This may be in response to clinical needs or a gap in service provision as a result of staff shortages or other demands, or a natural progression where radiation therapists training and expertise allows them to take on extra duties to expand and/or improve efficient delivery of patient care. Examples include RT led patient treatment review and follow-up, site/tumour stream specific specialisation (e.g. paediatrics, GU), limited prescribing rights for certain cases (e.g. palliative intent) or clinical mark-up of treatment areas (e.g. breast), leading the introduction of new techniques / technology and other research. As the largest of the key Radiation Oncology staffing groups these 'extra' tasks often fall to Radiation Therapists and are considered areas of role expansion and/or depending on the specific responsibilities, advanced practice.

ASMIRT defines an Advanced Practitioner "as a professional who fulfils all aspects of the expectations for the ASMIRT Certified Practitioner and, additionally, demonstrates expertise across seven dimensions of practice, and is able to provide evidence of their advanced capability in each dimension. While the dimensions of practice are described individually, the Advanced Practitioner recognises their practice as holistic and is able to draw appropriately upon all aspects of their expertise to provide optimal, expert, contextual patient care."[19]

The seven dimensions of practice are;

- Clinical Leadership
- Evidenced-based judgement
- Clinical Expertise
- Scholarship & Teaching
- Professionalism
- Communication &
- Collaboration

Advanced Practice should be supported by comprehensive training, educational underpinning and be evidence based. Education providers have recognised this need and developed tertiary level courses to support Advanced Practitioners. The responsibilities associated with the advanced practice role should be clearly defined, described, formalised and documented in the individual's workplace. Advanced practice roles should be supported with the necessary time, resources and recognition from local management to ensure that the Advanced Practitioner is able to fulfil their clinical responsibilities. The Advanced Practitioner should also be supported by a readily accessible Clinical Mentor in the workplace, who is an appropriate/relevant leader in the advanced scope of practice, often a Medical Specialist or Physics Specialist.[20]

Glossary / Abbreviations

AHPRA	Australian Health Practitioner Regulation Agency
ASMIRT	Australian Society of Medical Imaging and Radiation Therapy
CPD	Continuing Professional Development
MDT	Multidisciplinary Team
MRPBA	Medical Radiation Practitioners Board of Australia
OIS	Oncology Information System
PPS	Professional Practice Standards
RT	Radiation Therapist / Radiation Therapy
RTAP	Radiation Therapy Advisory Panel
RO	Radiation Oncologist
ROMP	Radiation Oncology Medical Physicist
SoP	Scope of Practice

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