2020 Map of Radiation Therapy Student Learning Experiences

Novice student: Students commence with very limited clinical experience, but have an understanding of privacy, confidentiality, radiation protection and professionalism.
No previous clinical experience.
Students may be asked to perform simple tasks which are not required to be technical in nature. It may be their first experience in communicating with patients, giving instructions, maintaining a neat and tidy workplace, understanding radiation protection procedures, viewing images, and understanding the workflow at clinical sites.

Yr 1

Students are introduced to :

- roles and responsibilities of Health Professionals with particular reference to the consumer's position and perspective (includes OHS, working and communicating in teams, reasoning in the health setting)
- gross and sectional surface anatomy and Physiology
- research
- pathology
- **radiation physics:** radiation and its use in medical radiation science, electricity, magnetism, electromagnetism. Production and characteristics or radiation, interaction with matter, imaging with radiation Image quality and methods used to improve image quality, radiobiology and biological effects, radiation protection, dose quantities, limits and levels, detectors and radiation monitoring.

Novice Student

Prior clinical: 1 day preclinical workshop + 2 days observation – Novice Student.
Recommended learning experiences: Experience in basic procedures, less complex patients, support learning to develop thorough knowledge of radiation protection and infection control.

Yr 2

Students undertake continuing academic studies in anatomy and psychology.
Radiation physics: Quality Assurance and Control, MRI, sonography, bone density measurement, tomography, fluoroscopy, interventional radiography, angiography.

RT Studies1: Practical skill development (thorax, pelvis, whole brain), identification of patient, introduction of self as a UniSA student, basic introductions for bed and wheelchair transfers, Introduction to CT simulation, divergence, magnification and simulator film isocentre measurements, therapeutic dose beam characteristics, intro to pinnacle computer dosimetry (2D), point dose manual calculations, treatment sheet interpretation and documentation of simple treatments, palliative treatments, breast treatments.

4 day pre-clinical workshop

Primary student (Clinical practice 1a) Pre-clinical workshop Introductory treatment and planning skills

RT Studies2: Cervix, prostate, bladder, rectum & seminoma treatments. Practical sessions: image matching & verification principles (EPI/CBCT), spine, para aortic, supine and prone pelvis simulation. Treatment charts, immobilisation mask manufacture and tattooing practicals. Pinnacle CT image based planning, calculating dose, beam modifiers, normalisation & dose points, virtual sim, ICRU guidelines shielding, ROI contouring.

Primary Student (Clinical practice 1b) Introductory clinical skills

Yr 3

RT Studies3: Skin, Brain, GI tract, Lung &Pancreas sites. Non-malignant conditions and care of radiation injury. Continued planning development, Brain, Lung, Oesophagus, Pancreas, Breast baseline & step/shoot techniques. SABR and SRS techniques Practical sessions: SXR land marking, calculations, cut-out manufacture and set-up; cast making for different baselines, brain and oesophagus simulation, treatment charts, intro to image matching (pelvis, brain) CBCT on VERT

Primary Student (Clinical practice 2a)
Prior clinical: 6 weeks

Recommended Learning experiences: Experience in basic planning and treatment procedures, less complex patients. Student increasing breadth of clinical experiences.

CT/PET includes: image evaluation, procedural protocols principles of co-registration, image quality, artefacts post processing and QA. CT/sim protocols, basic procedures and QA, image manipulation for planning prep, image fusion and contrast.

Swot vac Exams

RT Studies 4: H&N techniques. Blood-borne disease sites, lymphomas paediatric malignancies. Particle therapy. Practical sessions: electron data and mark ups, H&N sim and treatment Image matching (thorax and H& N). QA program development, TBI and CSI setup. Planning includes: ICRU 62&71, electron breast boosts, step and shoot IMRT H&N, bolus and TCP/NTCP evaluation. **Specialised Studies:** US, MRI, Prostate IMRT planning, MRI/CT fusion and brachytherapy

4 day pre-clinical workshop

Intermediate Student (Clinical practice 2b)
Prior clinical: 9 weeks
Pre-Clinical workshop: Brain planning, SXR treatment competency, Electron setups & CBCT (VERT) and clinical reasoning.
Recommended Learning experiences: More complex examinations and procedures, introduce speciality modalities, including CT.

Swot vac Exams

Yr 4

4 day pre-clinical workshop

Autonomous Student (Clinical Practice 3)
Prior clinical: 16 weeks
Pre- Clinical workshop Electron setups (VERT), beaming on & machine interlocks/ errors, venous cannulation, difficult situations, Lung, breast, whole brain, IMRT prostate planning concepts. planning QA

4 day pre-clinical workshop

Autonomous Student (Clinical Practice 4)
Prior clinical: 26 weeks
Pre- Clinical workshop CV writing, job interview skill development, mentoring, breast electron boost & IMRT head and neck planning & image anatomy review

4 day pre-clinical workshop

Proficient student (Prof Entry Practice 1)
Prior clinical: 35 weeks
Pre- Clinical workshop Mentoring, clinical decision scenarios, SABR planning, side effect management

4 day pre-clinical workshop

Entry level practitioner (Prof Entry Practice 2)
Prior clinical: 42 weeks
Pre- Clinical workshop Career pathways Self-management, planning case reviews, create student conference abstract

Students graduate

Recommended Learning experiences 4th year: Broad range across all levels of difficulty and disease sites, and specialist RT areas including Stereotactic RT/radiosurgery and brachytherapy, superficial radiation therapy treatment and planning, and participate in early and late shifts.

Use this map, to aid in your understanding of prior knowledge and clinical experience for students undertaking the UniSA Bachelor of Medical Radiations Degree in 2020. This will assist in planning workplace learning experiences. Use the Supervision Levels and Student expectations guide in the 2020 Guide for Clinical Supervisors and Mentors to inform expected levels of performance for students and guidance for appropriate student supervision styles. Updated Jan 2020