

The new concept for education

Concepts from abroad

Description

Code

3211.2

Description

Radiation therapists are responsible for the accurate delivery of radiotherapy to cancer patients and, as part of the multidisciplinary team, for elements of treatment preparation and patient care. This encompasses the safe and accurate delivery of the radiation dose prescribed and the clinical care and support of the patient throughout the treatment preparation, treatment delivery and immediate post treatment phases.

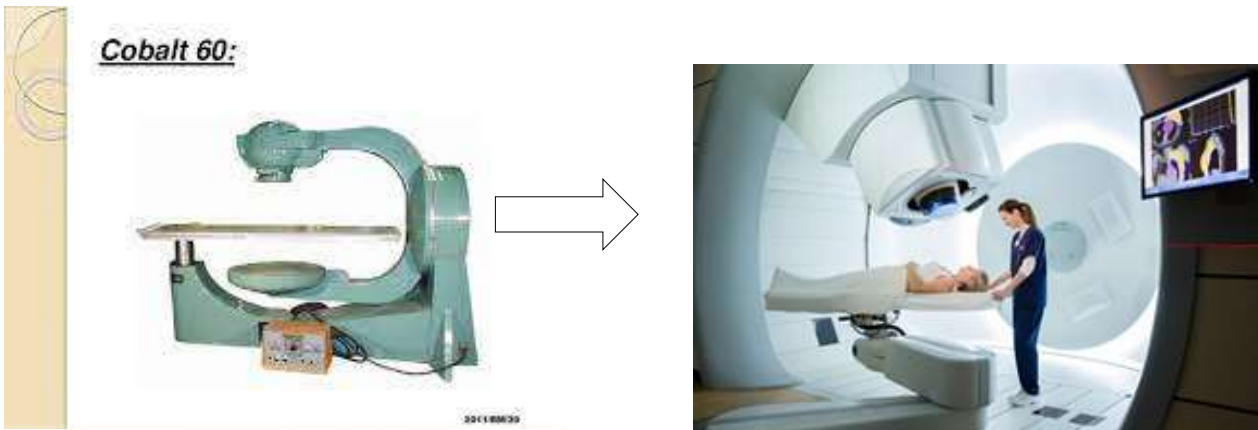
Current status across Europe

The disparity in available technology between countries is increasing

- Important to remember that technology is a tool we use to treat our patients

What is important is that whatever the tools available to them the RTT is competent to technically and clinically treat, manage and support their patients and regularly review their own practice

- Dependent on the education programme in place



Current status across Europe

Countries	Course type	Course duration	% of radiation therapy specific content
Ireland, Canada, Australia, New Zealand, UK, Cyprus	Radiation Therapy specific	3-4 years	100%
Malta, The Netherlands, Bosnia, Greece and Hungary	Combined diagnostic, nuclear medicine and radiotherapy	4 years	10%, 30%, 50%
Albania, Austria, Bosnia, Croatia, Estonia, France, Hungary, Macedonia, Serbia, Slovenia, South Korea Bulgaria, Italy, Poland, Switzerland, Croatia	Combined diagnostic, nuclear medicine and radiotherapy	3 years	10 – 50%

Majority of countries are at the lower end of the radiation therapy specific content
 Significant emphasis on diagnostic imaging

Current status across Europe

- Radiation Therapists are involved in only 14 of the 28 countries who responded to the survey
- Majority of the radiation therapy specific content was clinically related
 - Positioning and immobilization
 - IGRT
 - Simulation
 - Treatment techniques
 - Communication skills

Current status across Europe

- Several countries had no or minimal requirement for clinical placement
- In six countries RTs had no input to clinical education
- Formal assessment of clinical practice only in 5 countries
- 3 countries only had standards for clinical placement
- Limited collaboration between the academic and clinically settings in the majority of countries
- In most combined programmes the programme leader for radiation therapy was not a radiation therapist

Current status across Europe

What has changed?

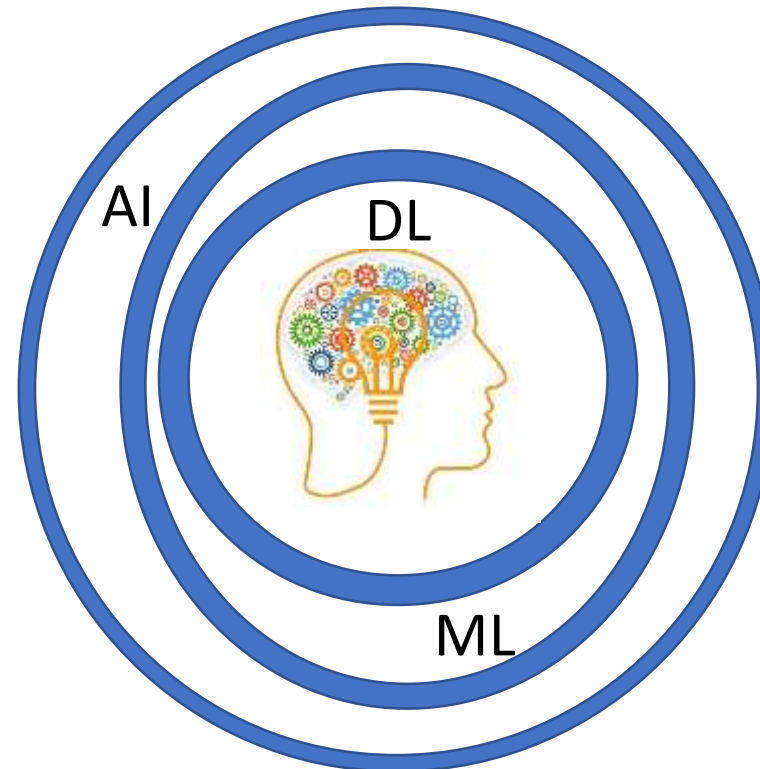
- Technology
- Technique
- Roles and responsibilities

What hasn't changed?

- Professional recognition
 - Education

What will drive the future?

- Artificial Intelligence
- Are we prepared?
 - Clinically
 - academically



Artificial Intelligence and the future for RTTs

- Huynh E. et al Nature Reviews 2020
 - AI will predominantly affect staff who perform back-of-house activities (Tumour and OAR delineation, planning and QA)
 - Medical Physicists to move to a more clinical patient facing role
 - Improving quality of information
 - Enhancing patient experiences and satisfaction with their care

Artificial Intelligence and the future for RTTs

- Huynh E. et al Nature Reviews 2020
 - Less effect on front-of-house activities involving direct interaction with patients
 - Radiation therapists – final gatekeeper of treatment delivery
 - Ensure patient safety and avoid mistreatment
 - Continue to have an important role in monitoring performance of automated systems and the patient

Artificial Intelligence and the future for RTTs

- Roles and responsibilities will change as AI is more fully integrated
 - Redefinition or expansion of roles
 - Eg. Routine planning, dosimetry and image review are likely to be replaced by AI technologies
 - MR replacing CT
- Future curricula must prepare graduates for this environment

The RTT of the future – embracing changing roles and responsibilities

- Do you really want to?
- Do your RTT colleagues want to?
- Do other professionals in the department want you to?
 - will it impact on their practice, roles and responsibilities?

Do the educators of RTTs want to support this

- are they prepared to change what they do?

Do Governments and representing societies support RTT development

- are they prepared to support RTT development?

AI and the Radiation Therapist Curricula

AI is already embedded into many radiation therapist practices

- Increasing reliance on human-machine interfaces
- It is neither new nor to be feared
- It is an enabling technology for well-educated radiation therapists to use
 - In decision making
 - Supporting crucial analysis skills in personalised treatment approaches
- How should it be reflected in future curricula?

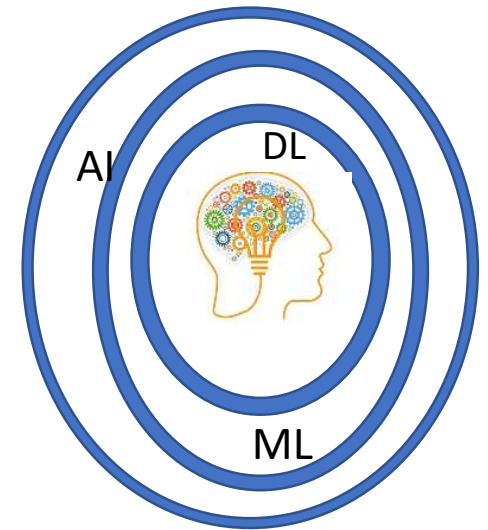
AI and Radiation Therapist Curricula

Building on the foundation component the application in practice in the academic and clinical settings

- Identify the core elements of existing curricula that are essential to understanding the application of AI
- Remove obsolete topics!
- Redefine the curricula to enable graduates to reflect, think critically and how to integrate and interpret information from technical and clinical sources

AI and Radiation Therapist Curricula

- Essential to become AI literate before adopting AI technologies (Brinker 2016)
- At the beginning of the education programme:
 - Terminology
 - Fundamental concepts
 - Basic algorithms
 - Introductory statistics
- Integration throughout the rest of the programme relating to application in the various steps of the radiotherapy process



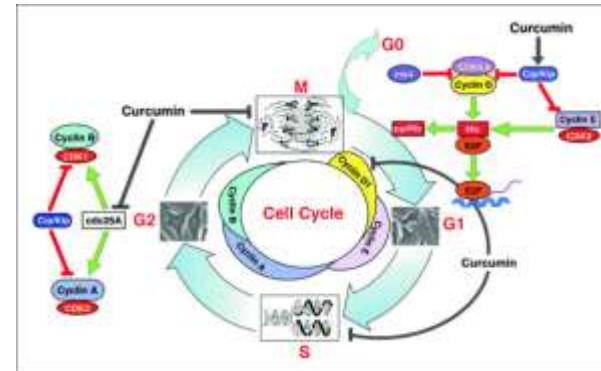
AI and Radiation Therapist Curricula

- Integration throughout the rest of the programme relating to application in the various steps of the radiotherapy process
 - Digital literacy
 - Keeping abreast of developments
 - Supporting patients
 - High quality data
 - Shift from conventional imaging to PET and MR



AI and Radiation Therapist Curricula

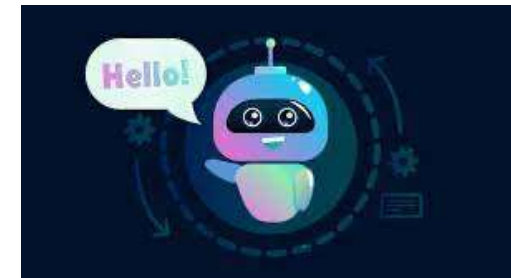
- Integration throughout the rest of the programme relating to application in the various steps of the radiotherapy process
 - Risk Management
 - From Radiobiology to Radiobiology and Molecular Oncology
 - Immunology
 - Signaling pathways
 - Side effects and management



<https://www.researchgate.net/figure/The-cell-division-cycle-and-its-control>

AI and Radiation Therapist Curricula

- Integration throughout the rest of the programme relating to application in the various steps of the radiotherapy process
 - Plan evaluation and selection of plan of the day
 - Monitoring and advising on side effects
 - Using chatbots/Grace for routine administrative tasks
 - Time for therapeutic interaction with patients
 - Data processing
 - Increased efficiency – managed workflow
 - Staff empowerment
 - Increased job satisfaction
 - Career potential



<http://www.infme.com/ime-chatbots-automated-artificial/>

AI and Radiation Therapist Curricula

- Integration throughout the rest of the programme relating to application in the various steps of the radiotherapy process
 - Research
 - Methodologies
 - Statistics
 - Managing clinical trials
 - Identification of areas of radiation therapist practice for research and evaluation

The RTT of the future – embracing changing roles and responsibilities

- The RTT must review and reconsider the way they practice
- Be prepared to move from the traditional to the innovative
- Become drivers of their own practice
- Our future is in our own hands