

ICRP TG108 Workshop: Part 1 Optimisation of Radiological Protection in Digital Radiology Techniques for Medical Imaging

Virtual Workshop
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Chapter 6: The Importance of Education and Training



No COI

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TG 108

Main Points relating to Education and Training



physics

RTT

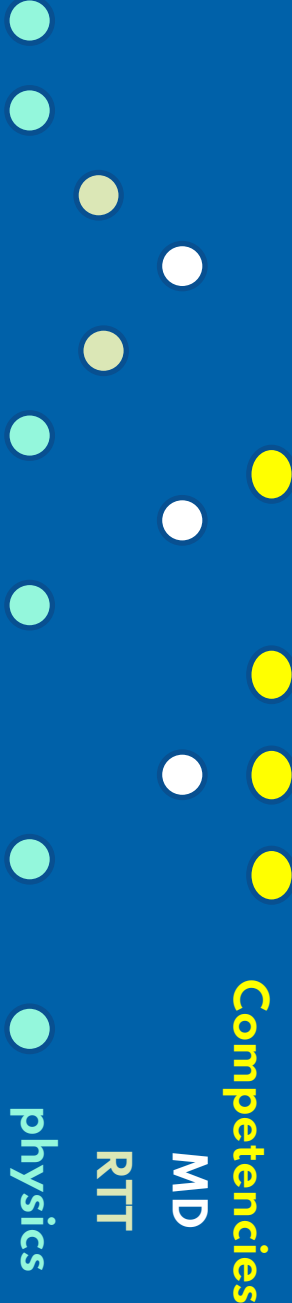
MD

Competencies

- **Optimisation will only occur if all staff are properly trained in their roles (and responsibilities), ...equipment operation is ensured through a comprehensive quality assurance programme**
- and there is ongoing monitoring, review, and analysis of performance that **feeds back into continual development of protocols. This regular review of every aspect of the imaging process is key to the successful achievement of optimization. (Culture of learning)**
- **Professionalism** (internalization of learning and values) with optimisation teams comprising radiologists, radiographers, and medical physicists each using their **unique sets of skills to improve imaging performance and address deficiencies; methodology and technology coupled with the necessary expertise to evaluate performance; and organisational processes to manage quality improvement within a structured framework, combining to steadily refine practice and performance.**

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More Main Points relating to Education and Training



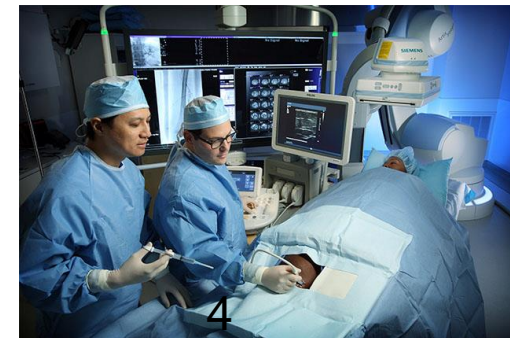
- **Optimisation will only occur if all staff are properly trained in their roles (and responsibilities), ...equipment operation is ensured through a comprehensive quality assurance programme.**
- Complex digital x-ray equipment requires **high levels of knowledge and skill** from clinicians, radiographers and medical physicists..., **all members** of the multi-professional team **must be given the necessary expertise through training and experience** that is regularly updated...

Education and Training

Chapter: 9 key points



- Investment in an adequate staffing level, with trained healthcare staff and a commitment to their continuous professional development (CPD) are essential when considering investment in new imaging equipment and software.
- Knowledge, skills and competencies—more recently termed attitudes and behaviors-- (KSCs or KSAs) should start at undergraduate level and continue throughout RP career
- KSCs should be supported by employers, audited by appropriate authorities, and focused for each RP group
- Establish national standard credentialing and accreditation for curriculum and feedback from students



Education Chapter: key points



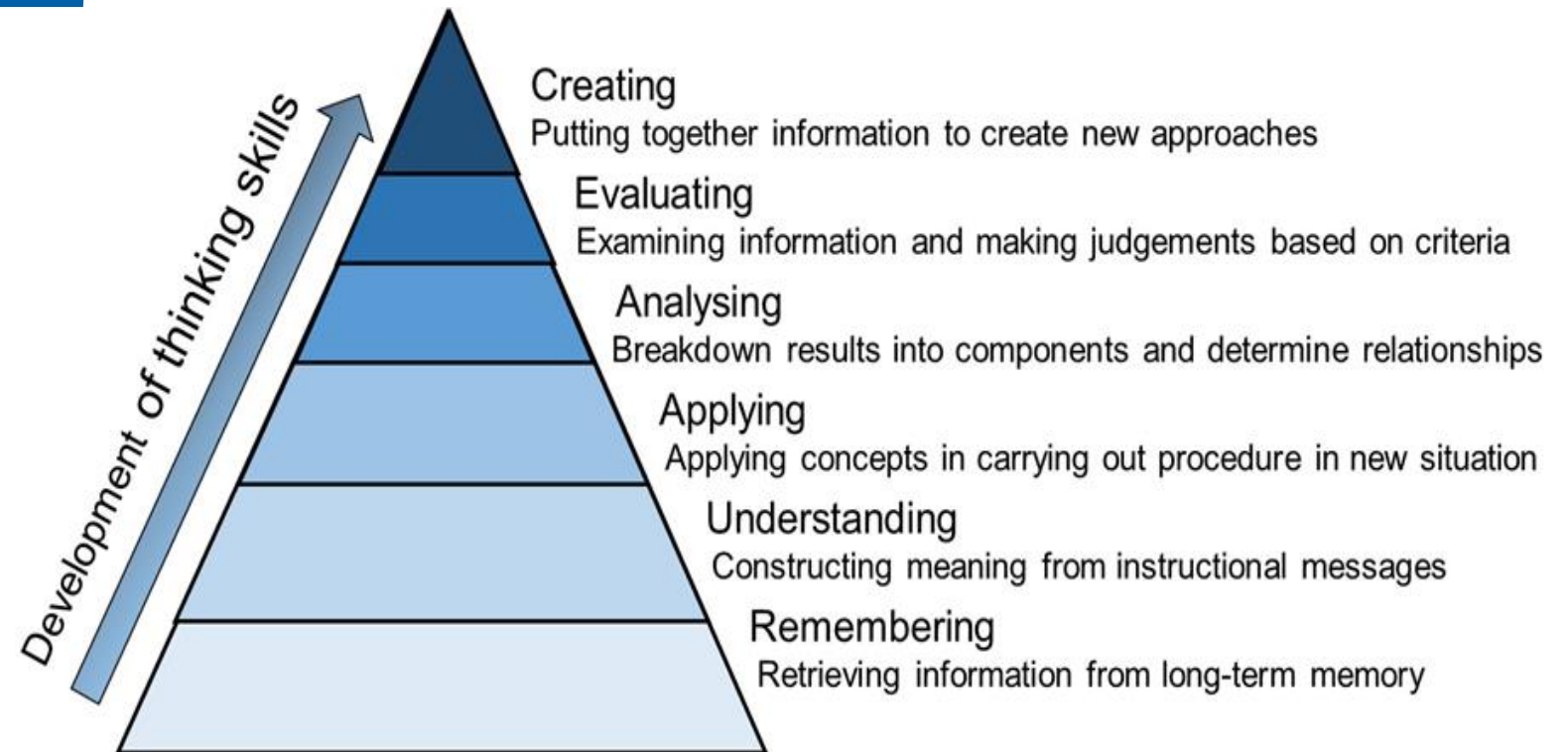
Table 6.1. Health care professionals with a role that affects patient doses.

- Share information and learning in blame free environment
- The Medical Physicist has a crucial role for ed/training of the medical RP community so must have adequate resources
- Vendors have a crucial role in optimization training
- Many free web-based resources increasingly available through RP community, professional societies, academic institutions

Education Chapter figures

Fig. 6.2 The forms and levels of learning identified in (revised) **Bloom's Taxonomy**, with brief description of the processes to which they might apply in the context of optimisation.

Annex F. Shows table example for application.



What has digital imaging allowed us to do? And at what cost?

- **Better dose tracking and modeling using MC and AI/ML, (e.g., CT organ segmentation)**
- **Improve optimization/image quality**
- **Improve workflow efficiency**
- **Radiomics to predict outcomes**
 - Chest CT lung cancer (2020)
 - Abdomen CT pancreatic cancer detection (2022)
- **Complexity of medicine today requires high level KSCs, integration, and communication systems**
- **And continuous review of equipment, protocols, and processes to ensure safe and optimal care.**

Many References

- ICRP Pub113 (2009), especially tables 3.1 and 3.2
- ICRP TG109: Ethics for RP in medical dx and therapy
- Vassileva et al. Strengthening radiation protection education and training of health professionals: conclusions from an IAEA meeting. JRP 2022
- Linet et al. A Multi-media Strategy to Integrate Introductory Broad-Based Radiation Science Education in U.S. Medical Schools. JACR 2022

Figure from Image Wisely
Free module; each step
measurable



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Thank you!



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