Education & Training for Radiation Dosimetry

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Round Table 3

Panel Members:
H. Amols, S. Christofides, F. Nuesslin, H. Khoury, D. Thwaites
F.D.A. Urges Two Steps for Safer CT Scans
By WALT BOGDANICH

The Food and Drug Administration has concluded that manufacturers of CT scanners should do a better job of training and educating those who use their equipment, and that the machines themselves could be made safer by warning operators that a dangerously high radiation dose is about to be administered.
Dosimetry is a major component of the roles and responsibilities of the Clinical Medical Physicist.

Some examples are:

- Direct patient dosimetry
- Indirect patient dosimetry
- Foetus dose calculations for pregnant women requiring an examination or in the case of accidental exposure.
- Organ dose estimation from external and internal exposures
- Dose rate output measurements during equipment quality control testing
- Dose rate output from patients that have undergone therapeutic treatment with unsealed sources
E&T: Key issues and requirements

• Radiation Dosimetry encompasses a wide range of activities (physics, clinical application, QA, safety, RP)

• Cooperation & Interaction of all Stakeholders
  – Medical physicist, medical doctors, dosimetrists, technicians
  – Professional organizations (IOMP, AAPM, ALFIM, EFOMP, ESTRO, etc)
  – Manufacturers
  – Employers, Regulators, Health authorities
  – International bodies (WHO, IAEA, ILO, IEC, IRPA)
Classification of ‘Medical Physicist’ by ILO

Physicists and astronomers
Physicists and astronomers conduct research, improve or develop concepts, theories and operational methods concerning matter, space, time, energy, forces and fields and the interrelationship between these physical phenomena.
They apply scientific knowledge relating to physics and astronomy in industrial, medical, military or other fields.
E&T: Key issues and requirements (ctd.)

- Manufactures and Users (technical advancements, interaction M/U, sustainable training, QA)
- Risks/Safety (QA, risk assessment, documentation/reporting, responsibilities of stakeholders)
- Developing Education & Training Schemes (standards, certification, accreditation, residency programs, life-long learning (CPD/MOC))
- Emphasizing regional/global harmonization of E&T (networking models, partnerships, infrastructures (web access), role of professional organizations)
- Adequate Staffing (Clinical – Research – Education)
The North American model for medical physics training and credentialing

- Masters Degree or PhD in physics, medical physics, or related field (such as engineering, computer science, chemistry, etc.)
  - For candidates not having degree in physics or medical physics evidence of academic training in basic physics, atomic and nuclear physics, etc. Plus college level courses in Anatomy and Physiology, and Radiation Biology.
- Residency training in medical physics of at least two years in an accredited residency program
- Certification exam in medical physics (one or more specialties)
- Continuing Education and Maintenance of Certification (MOC); Certification is time limited
- Licensing or credentialling by appropriate state or federal authority
IOMP Proposal: Regional Networks for Education & Training

- Core Unit: Reference site of a company in a hospital
- Link to a local University
- Preferably local & few foreign Trainers
- Sustainability through repeated courses
- Course
  - Fundamental MP
  - Practicing
  - Front maintenance

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**Hospital**

**University**

**Company**

**WHO**

**IAEA**

**IOMP**

**Travel Grants**

**Course Materials**

**Selection of Experts**

**Accreditation**
Conclusion

- The education and training should include theoretical and practical aspects.

- The provision of regular training courses and knowledge dissemination of dosimetry systems and methodologies are key elements to ensure expertise in the field of medical physics and to improve health care.

- Good teaching provides understanding and produces competent medical physicists.

Safety & High Quality Clinical Outcome