IAEA Human Health Programme

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International Atomic Energy Agency

A UNIQUE MANDATE OF THE UN SYSTEM

"The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, **health** and prosperity throughout the world"

Article II of the Statutes of IAEA

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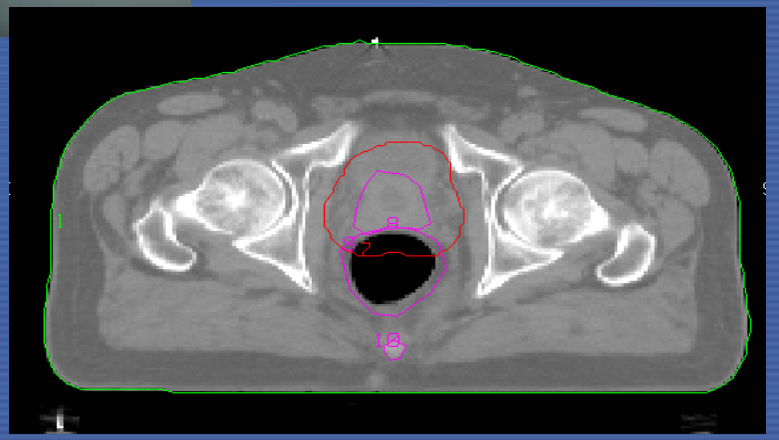
Atoms for Health

THE IAEA HUMAN HEALTH PROGRAMME

Four Sub-programmes

- Radiation Oncology & Applied Radiobiology **Eduardo Rosenblatt, SH**
- Nuclear Medicine & Diagnostic Imaging Section **Diana Paez, SH**
- Dosimetry & Medical Radiation Physics- **Ahmed Meghzifene SH**
- Nutrition & Health related Environmental Studies **Chrisine Slater A- SH**

Clinical Uses of Radiation



- Radiation Therapy
- Nuclear Scans

Steps in the implementation and use of Nuclear Techniques

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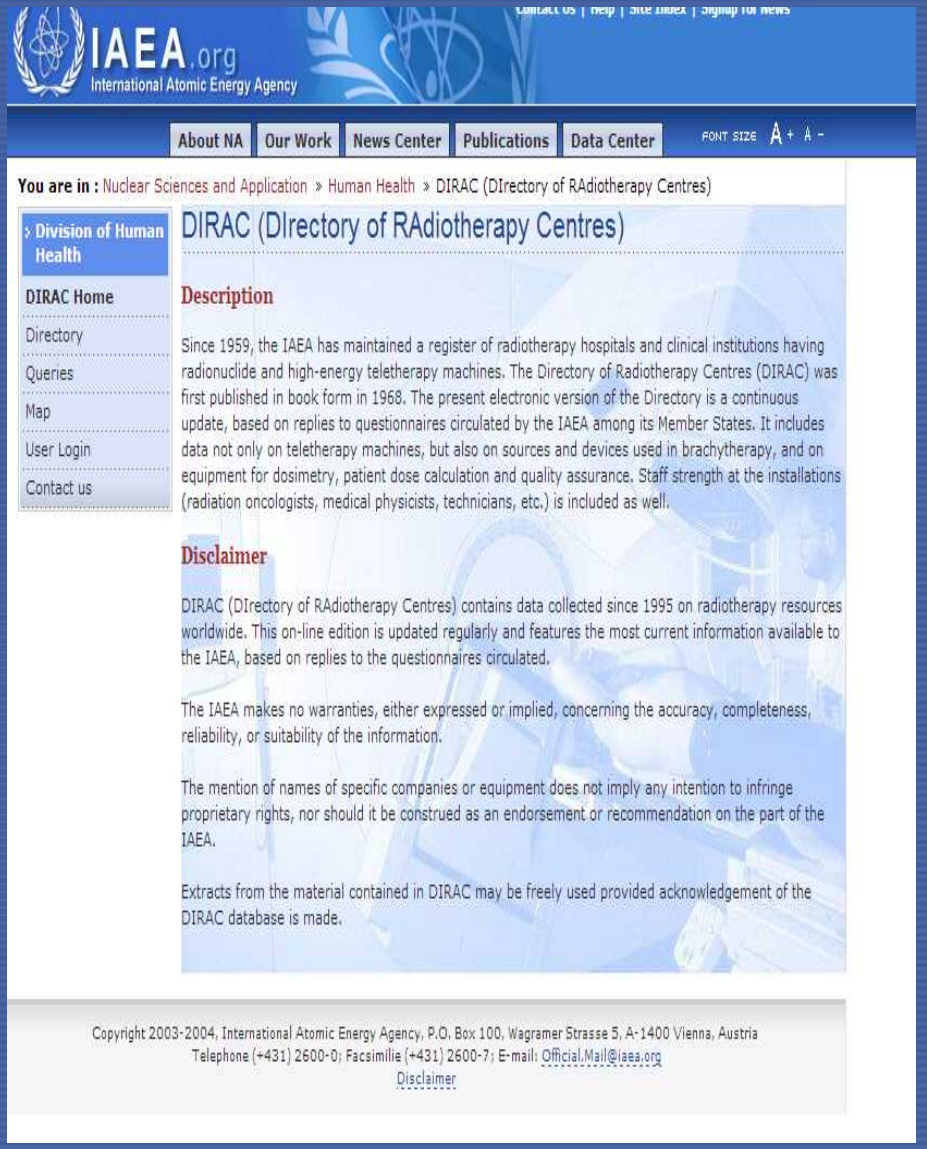
Assessing Treatment Needs

- DIRAC Data base
- imPACT Missions:
  - National authorities, IAEA, WHO, IARC, other partners.



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Distance Assisted Training (DATOL) Online

- Three year competency-based online program training Nuclear Medicine technologists.
  - 15 years + 800 trained technologists + 25 countries
  - >40 subjects delivered in 16 Modules, ~900 hrs of study.
  - Conventional nuclear medicine basic science, clinical imaging (Part 1)
  - Emission tomography SPECT (-CT) (Part 2)
- Certificate of achievement providing National recognition

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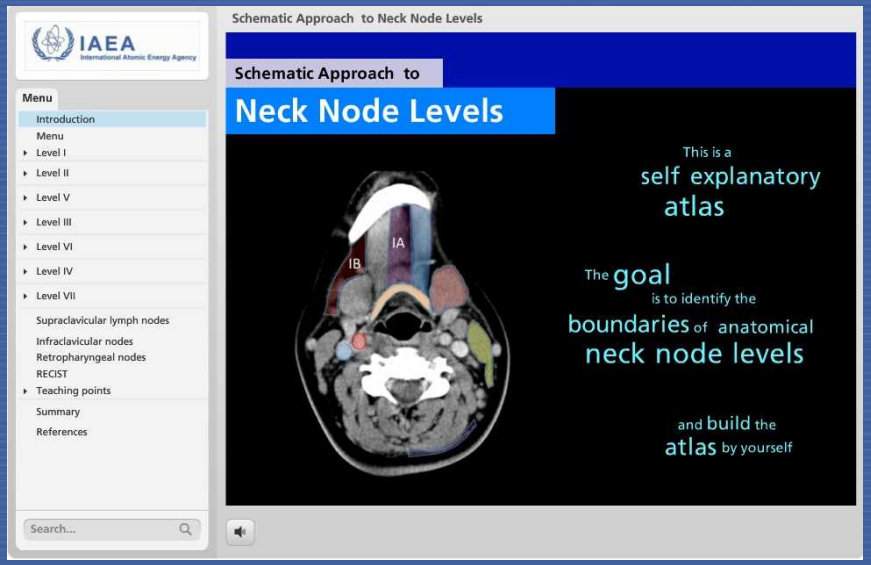
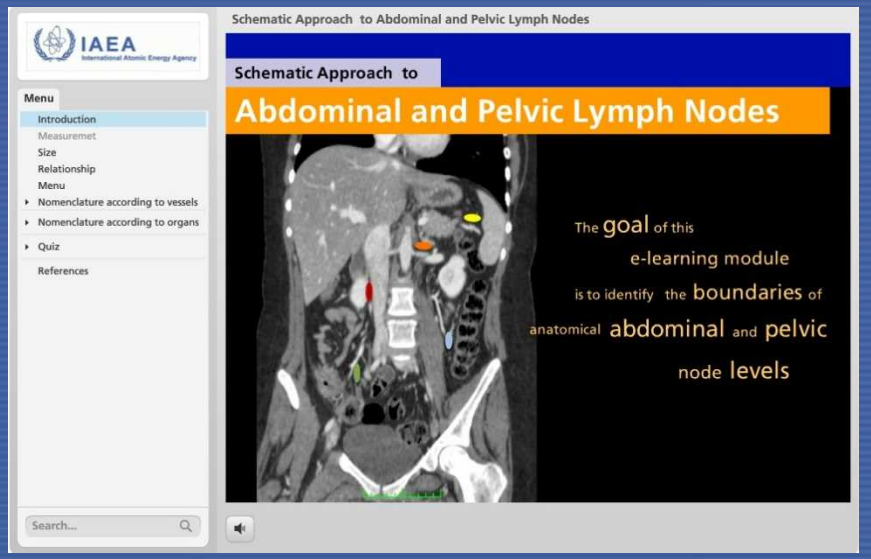
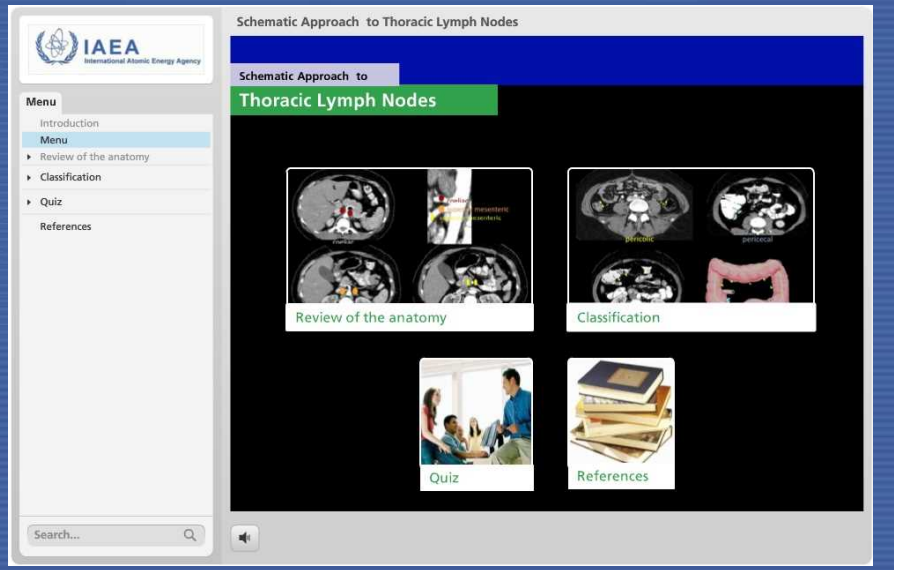
Interactive eLearning Modules

- Interactive E-learning modules that enhance the self-directed learning experience.
- Improved efficiency in education and expand educational opportunities in remote areas.







http://humanhealth.iaea.org

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Online CT & PET/CT Training

- Partnership with Professional organizations (SNMMI)
- Part of a Lifelong learning program
- Assistance in providing Online Training on CT and PET/CT for 600 nuclear medicine physicians and radiologists in IAEA Member States worldwide

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SNMMI SOCIETY OF NUCLEAR MEDICINE AND MOLECULAR IMAGING

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Applied Sciences of Oncology (ASO) distance learning course

- 2 CDs
- Downloadable from the Human Health Campus
- 8 chapters
- 80 modules
- Interactive questions and answers

Education of RTTs

- Update the Syllabus
- Courses in Latin America
- CD in Spanish
- Train-the-Trainers (ESTRO/IAEA)

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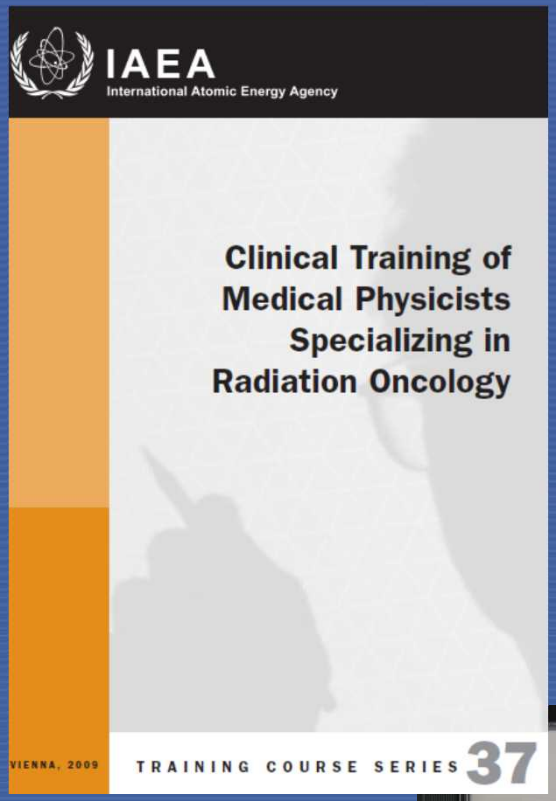
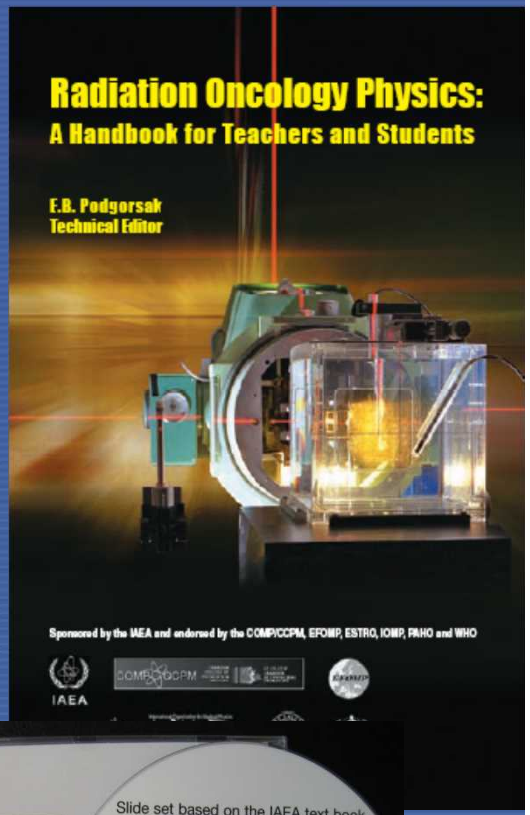
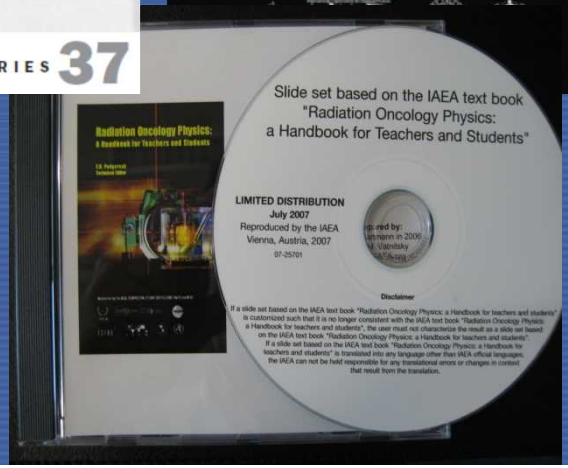
Education and Training of Medical Physicists

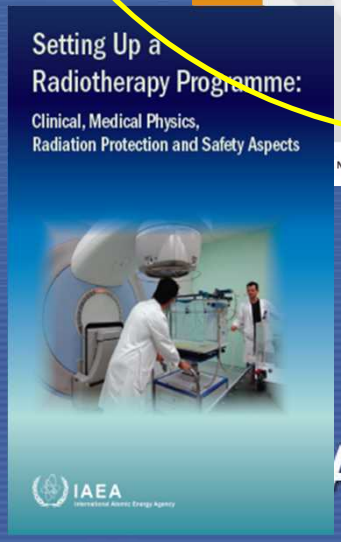
IAEA provides reference material to support education and clinical training for medical physicists

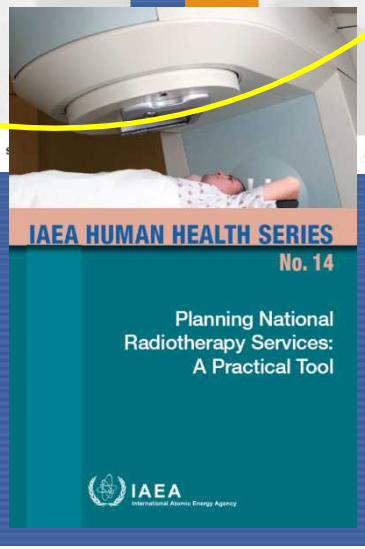


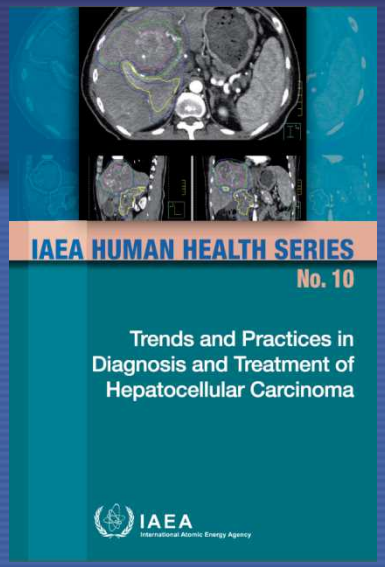


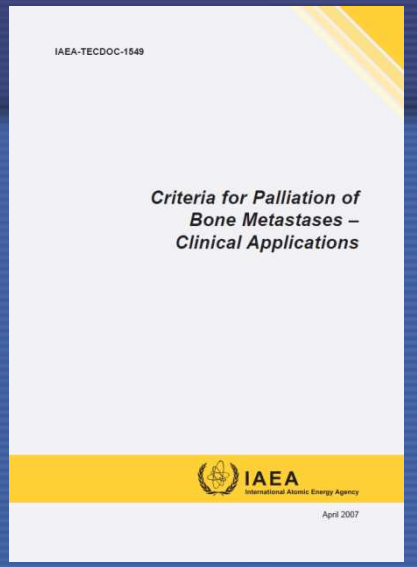


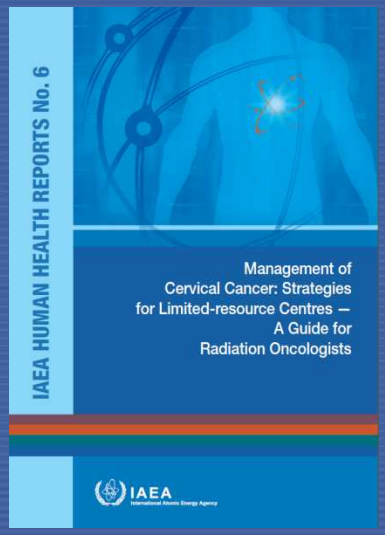
Publications

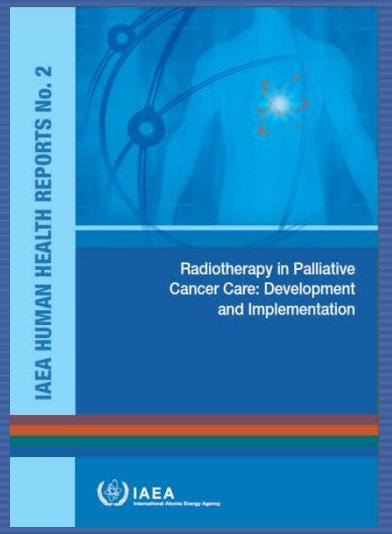








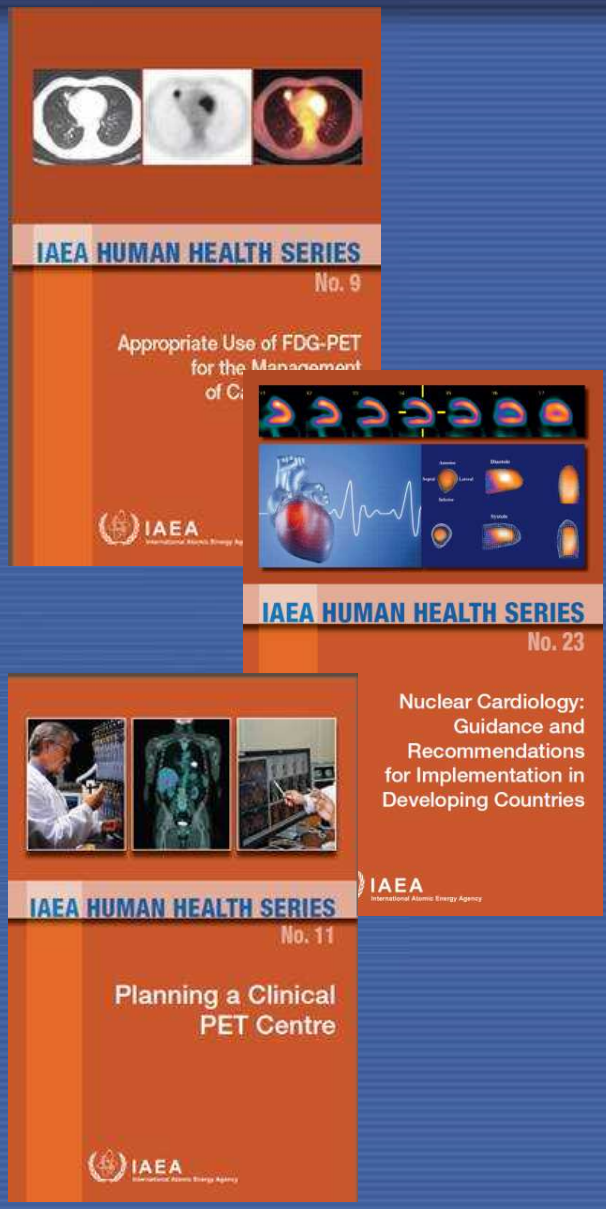




Available in Spanish

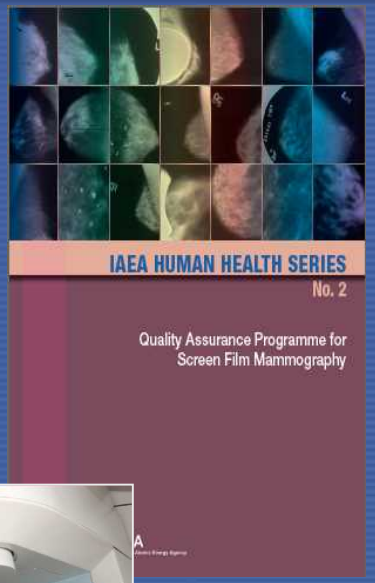
IAEA Publications - NMDI

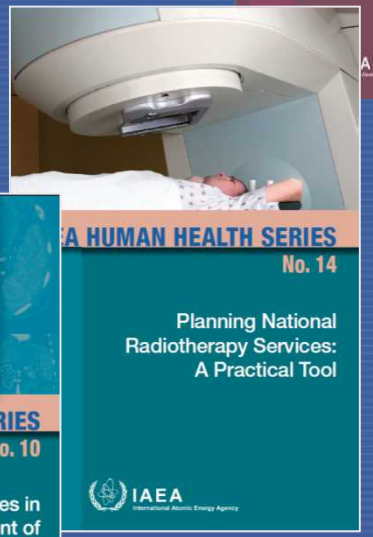
- Standard Operating Procedures for PET/CT - A practical approach for use in adult oncology
- Quality Assurance for PET and PET/CT Systems (DMRP)
- Strategies for Clinical Implementation and Quality Management of PET Tracers
- Quality Management Audits in Nuclear Medicine Practices
- A Guide to Clinical PET in Oncology: Improving Clinical Management of Cancer Patients
- Clinical Applications of SPECT/CT: New Hybrid Nuclear Medicine Imaging System
- The Role of PET/CT in Radiation Treatment Planning for Cancer Patient Treatment

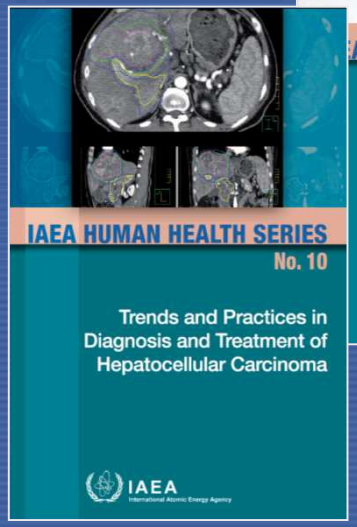


Publication of technical guidance & protocols

- Guidelines on setting up radiation medicine infrastructure
- Guidelines on Quality Assurance & Quality Control
- Dosimetry protocols







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ARBR: 2016.04 CRP2137 Modern Radiotherapy Techniques in Cervical Cancer

Background

Cervical cancer has a very high incidence in a number of MS and regions.

Scientific question Will the combination of definitive chemo-radiotherapy and a therapeutic anti-HPV vaccine improve outcomes in moderately and advanced cervical cancer?

Benefit to MS

Reduction of the morbidity and mortality of cervical cancer in south Asia, SE Asia, sub-Saharan Africa and Latin America.

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ARBR : 2016.05 CRP2125 Image-based treatment planning in Cervical Cancer

Background

Axial image-based brachytherapy treatment planning is becoming the most accurate and reliable approach. However, it currently relies on MRI/open-MRI technology

Scientific question

Can ultra-sound based treatment planning replace MRI in the brachytherapy planning of cervical cancer?

Benefit to MS

If US-based can be proven equivalent to MRI, then a much resource economic method can be developed and recommended to RT centres.

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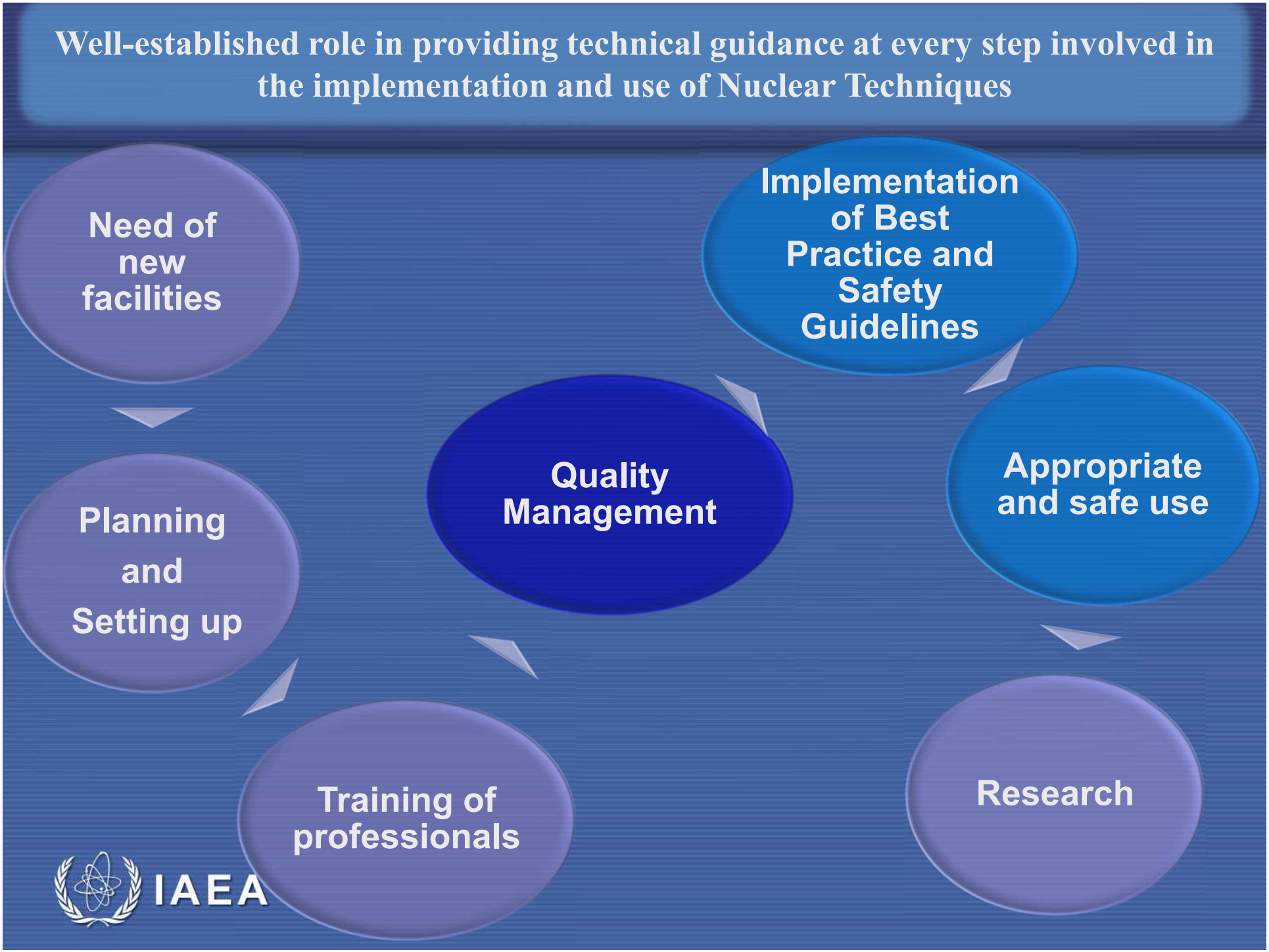
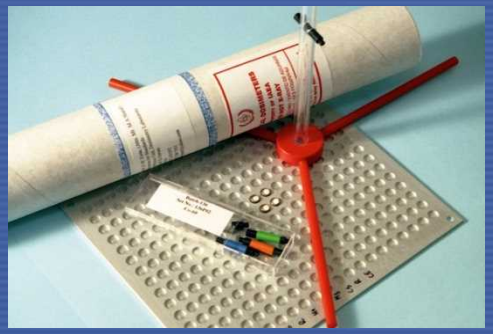
Well-established role in providing technical guidance at every step involved in the implementation and use of Nuclear Techniques



QA & Dosimetry Services

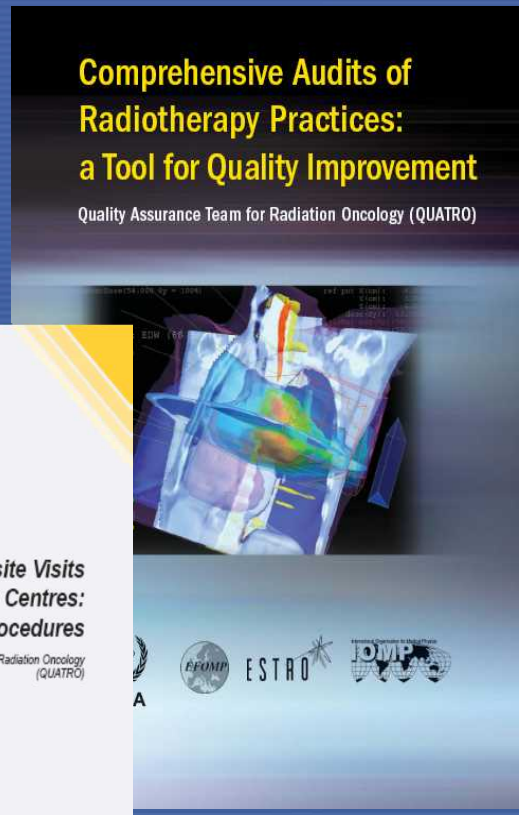
- **Radiation Dosimetry**
  - Dosimetry audits for radiotherapy hospitals to verify implementation
  - IAEA/WHO Network of Secondary Standards Dosimetry Laboratory
    Dissemination of traceable dosimetry standards to SSDLs



Quality Improvement in Radiation Oncology

Quality Assurance Team for Radiation Oncology

- ✓Radiation oncologist
- ✓Medical physicist
- ✓RTT
- ✓Safety specialist (local)



IAEA dosimetry travel kit used for QUATRO missions

QUATRO

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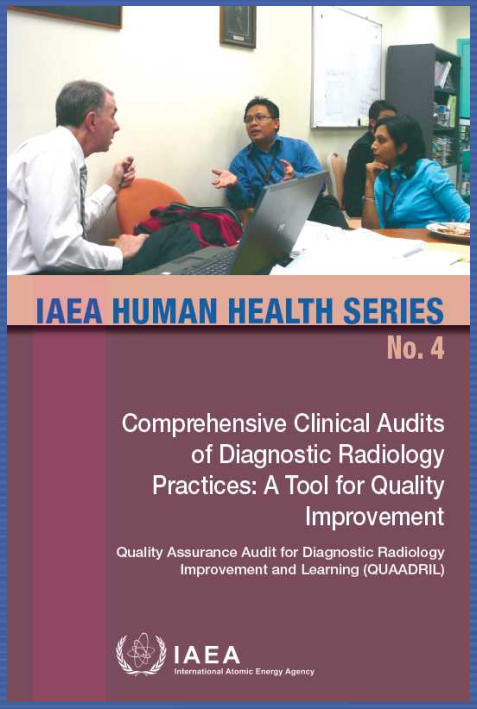
Quality Improvement in Diagnostic Radiology

Clinical Audits of Diagnostic Radiology Practices

- ✓Radiologist
- ✓Medical physicist
- ✓Radiographer
- ✓Safety specialist (local)



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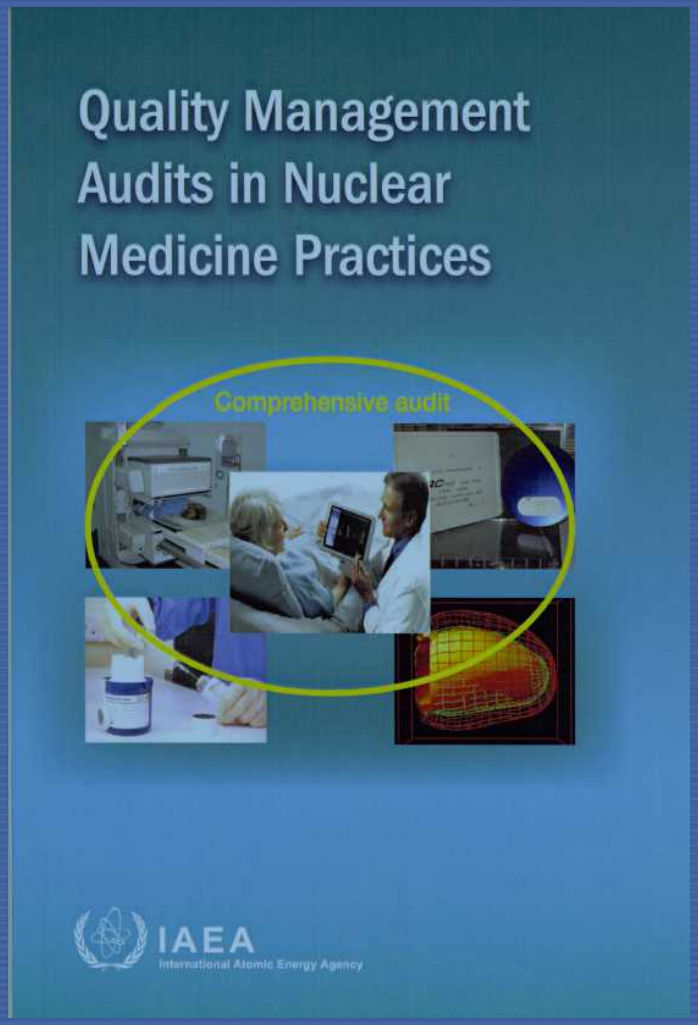
Quality Improvement in Nuclear Medicine



- QUANUM project: helps MS implement QA systems
  - Training professionals in QA
  - Quality check-list
  - Internal and external audits (EANM-EUMS)
  - Audit missions to advise on how to improve the quality of practice.
  - 28 audits in 19 countries

IAEA http://www-pub.iaea.org/MTCD/publications/PDF/Pub1371_web.pdf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IAEA & SNMMI COMPLIMENTARY CT WEBINAR SERIES!
CT REVIEW: A GUIDE FOR HYBRID IMAGING ANALYSIS
Six monthly webinars are planned from July through December 2013
What's New
Radiotherapy in Children
CT Review: A Guide for Hybrid Imaging Analysis - Abdomen and Pelvis
International Conference IMIC 2013
Standard Operating Procedures for PET/CT: A Practical Approach for Use in Adult
Goal: To support the MS with information for strengthening and improving the quality of practices through the use of CME Materials
http://humanhealth.iaea.org
Use of TC, RB and PUI funds

Focus of IAEA's programme in nutrition

To enhance Member State capabilities to combat malnutrition in all its forms:

- Maternal, newborn and child nutrition
- Obesity and non-communicable diseases

Stable isotope techniques are reference methods for assessment of:

- **Body composition**
- **Exclusive breastfeeding**
- **Total daily energy expenditure**
- **Micronutrient bioavailability**
- **Vitamin A status**
- **Protein and amino acid bioavailability and metabolism**

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Global Nutrition Situation

- **Undernutrition** (including suboptimum breastfeeding, stunting, wasting, deficiencies of vitamin A and zinc) causes 45% of child deaths annually
- **A well nourished child is more likely to**
  - **Continue education**
  - **Have a higher IQ**
  - **Earn up to 46% more over his lifetime**
- **Overweight and obesity** increasing globally contributing to diabetes and other chronic diseases in adulthood

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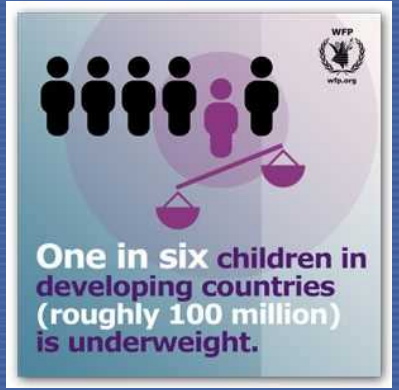
Stable isotope techniques

Used **to evaluate programs** that:

- Promote good nutritional practices, eg breastfeeding and healthy foods for infants
- Increase vitamin and mineral intake through food fortification and supplements
- Prevent and treat moderate and severe malnutrition



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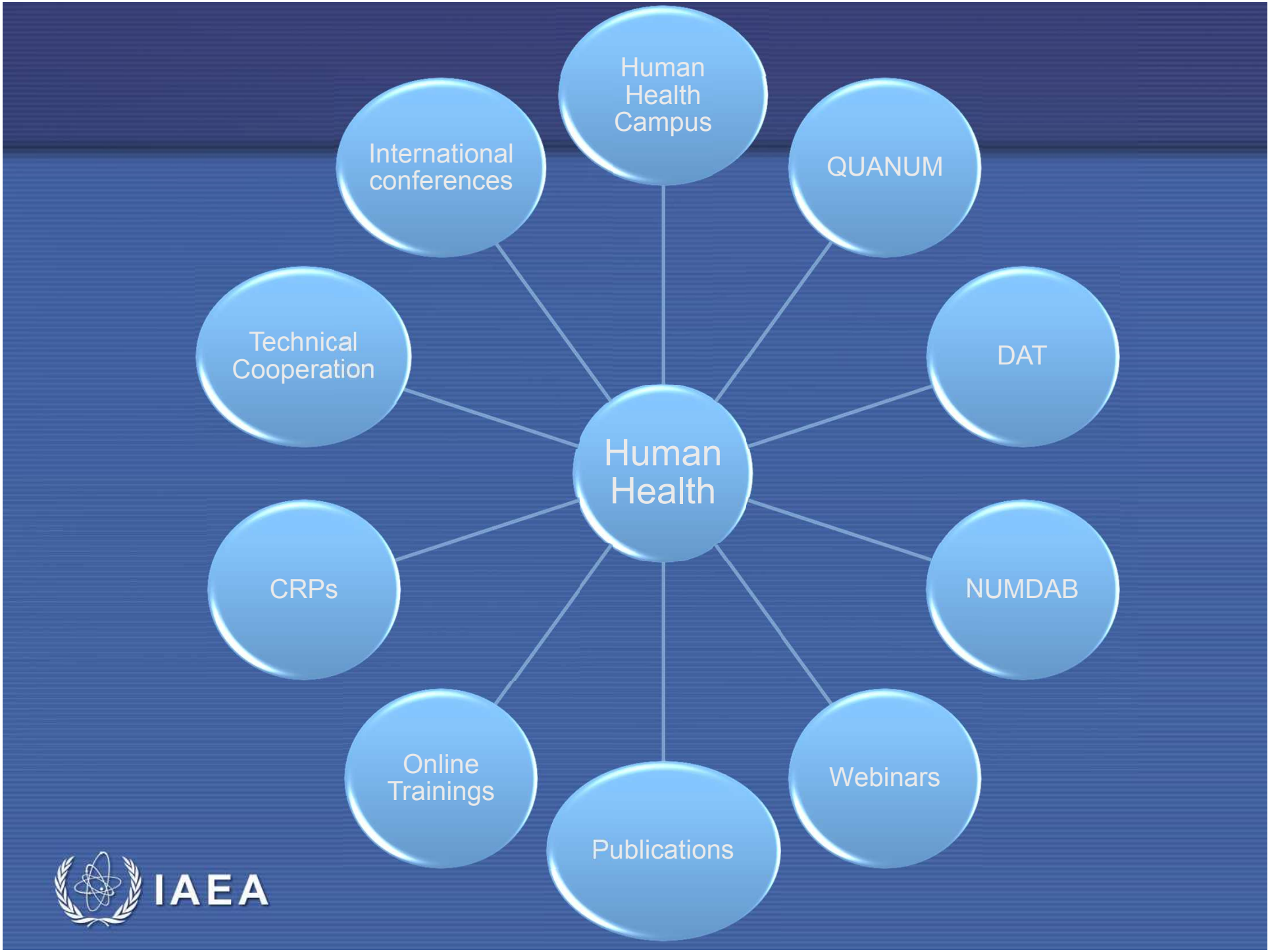
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