Medical Imaging and Therapy in Cancer

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International Atomic Energy Agency
IAEA
Division of Human Health

**Mission**
Enhancing human health using nuclear knowledge through
- Service
- Education
- Research

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- Primary objective: To enhance capacity of MS to meet basic human needs
- Primary outcomes: Increased use by MS of nuclear knowledge in human health

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**4 Sections**
1. Nuclear Medicine
2. Dosimetry and Medical Radiation Physics
3. Applied Radiation Biology and Radiotherapy
4. Nutritional and Health-related Environmental Studies
Human Diseases

- Communicable diseases
- Non-communicable diseases:
  - Cardiovascular Disease
  - Cancer (PACT)
  - Musculoskeletal
  - Metabolic, etc

Research

- Building capacity in research through Coordinated Research Projects, with a few leading to a doctoral degree in collaboration with academic partners

Services

- Dosimetry: Accurate measurement of radiation exposure
- QA of equipment
- Good practice of medical imaging and radiotherapy in hospital settings,
  - etc…
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#### Education

**Goals:** Building capacity in nuclear knowledge for HH through
- Seminars and workshops
- International, regional conferences
- Teaching materials
- Technical and scientific publications

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#### Nutrition and Infectious Diseases

**Aim:** To enhance Member States capability to use nuclear techniques in strategies to combat malnutrition and to prevent and control infectious diseases

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#### Nuclear Cardiology

**Coronary Artery Disease**
- Diagnosis
- Severity
- Risk stratification
- Prognosis
- Response to treatment
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QA & Metrology in Radiation Medicine

- Radiotherapy
- Medical Imaging (NM and Radiology)

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QA & Metrology in Radiation Medicine

Worldwide QA and standardization in Diagnostic Radiology

New X-ray calibration facility

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QA & Metrology in Cancer Treatment

QA Team for Radiation Oncology (QUATRO)

✓ radiation oncologist
✓ medical physicist
✓ RTT

The IAEA dosimetry travel kit used for QUATRO missions
Nuclear Medical Technology in Cancer

Cancer

• Diagnostic
• Staging
• Response to treatment

Detecting Cancer
Ewing Tumor

Metastases

Chondrosarcoma
• Accurate detection, staging and treatment planning using nuclear knowledge increase survival rate and enhance life quality of cancer patients
Thank you