

Medical Imaging and Therapy in Cancer

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Division of Human Health

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IAEA

International Atomic Energy Agency

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



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Human Diseases

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




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Research

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



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Services

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



Education

Goals: Building capacity in nuclear knowledge for HH through

- Seminars and workshops
- International, regional conferences
- Teaching materials
- Technical and scientific publications



Nutrition and Infectious Diseases

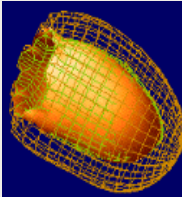
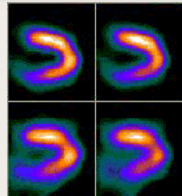
Aim: To enhance Member States capability to use nuclear techniques in strategies to combat malnutrition and to prevent and control infectious diseases



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)

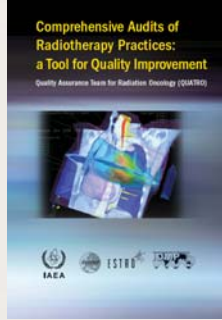
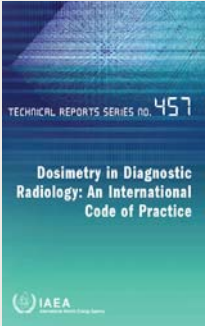
- ✓ radiation oncologist
- ✓ medical physicist
- ✓ RTT



The IAEA dosimetry travel kit used for QUATRO missions



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QA & Metrology



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Nuclear Medical Technology in Cancer

Cancer

- Diagnostic
- Staging
- Response to treatment

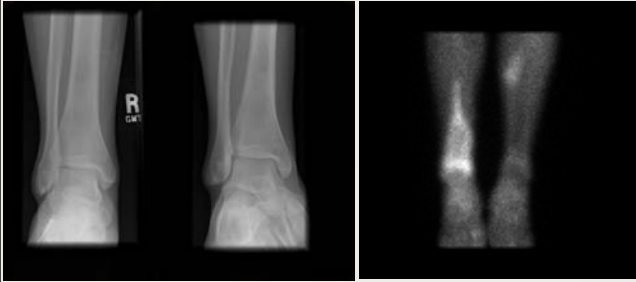


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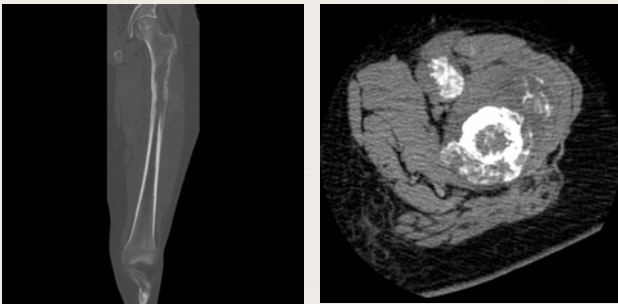
Detecting Cancer



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Ewing Tumor



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Ewing Tumor



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Staging Tumor



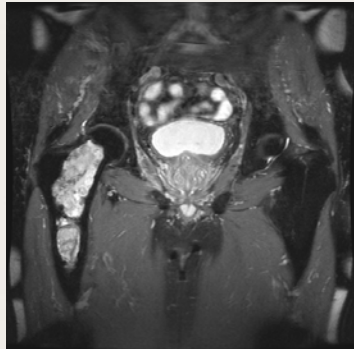
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Ewing Tumor



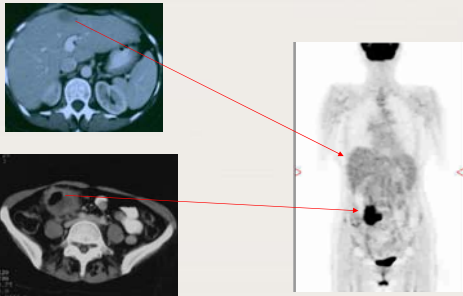
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Metastases



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Chondrosarcoma



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PET & CT

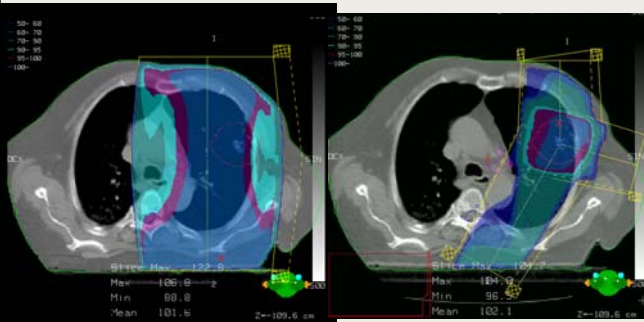


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Planning Treatment



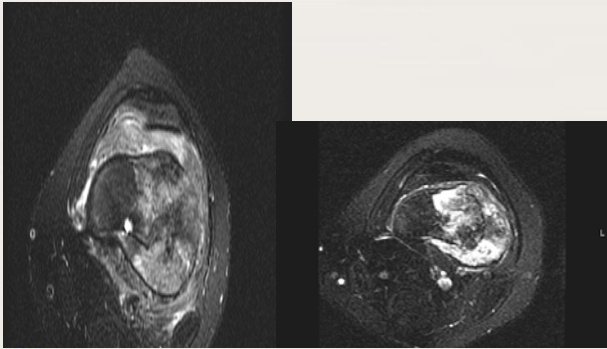
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CT vs PET/CT



Response to Treatment



Tumor Response to Treatment



Medical Imaging and Nuclear Technology Cancer

- Accurate detection, staging and treatment planning using nuclear knowledge increase survival rate and enhance life quality of cancer patients



Thank you