IAEA
International Atomic Energy Agency
Atoms for Peace and Development

IAEA Division of Human Health
WINS virtual roundtable (Medical Applications)

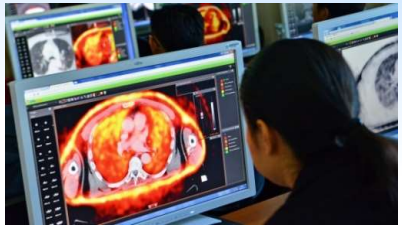
Debbie van der Merwe
Dosimetry and Medical Radiation Physics
International Atomic Energy Agency
27 April 2021

Division of Human Health

Nuclear Sciences and Applications

Division of Human Health

- ARBR
- DMRP
- NMDI
- NAHRES



Technical Cooperation (TC) Department	Manages projects in radiotherapy in LMIC countries; assistance in National Cancer Control Programmes through Division TC Cancer Therapy
Nuclear Safety (NS) Department	Establishes normative and codes of practice in radiation safety and security, and promotes regulatory infrastructure in all countries

Current status in LMIC (MV linacs) per mi population

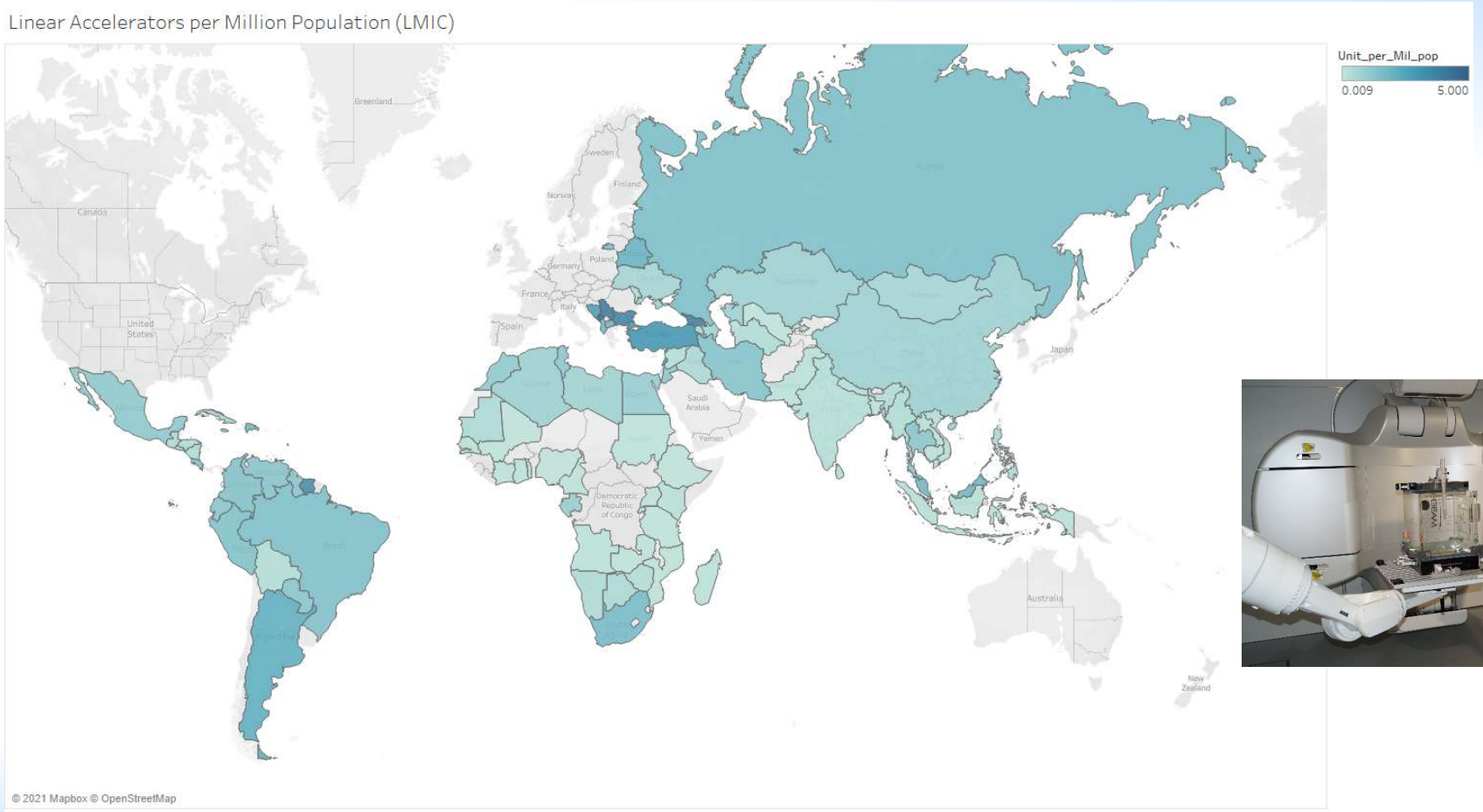


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Photo: IAEA Dosimetry Laboratory

Current status in LMIC (MV cobalt) per mi population

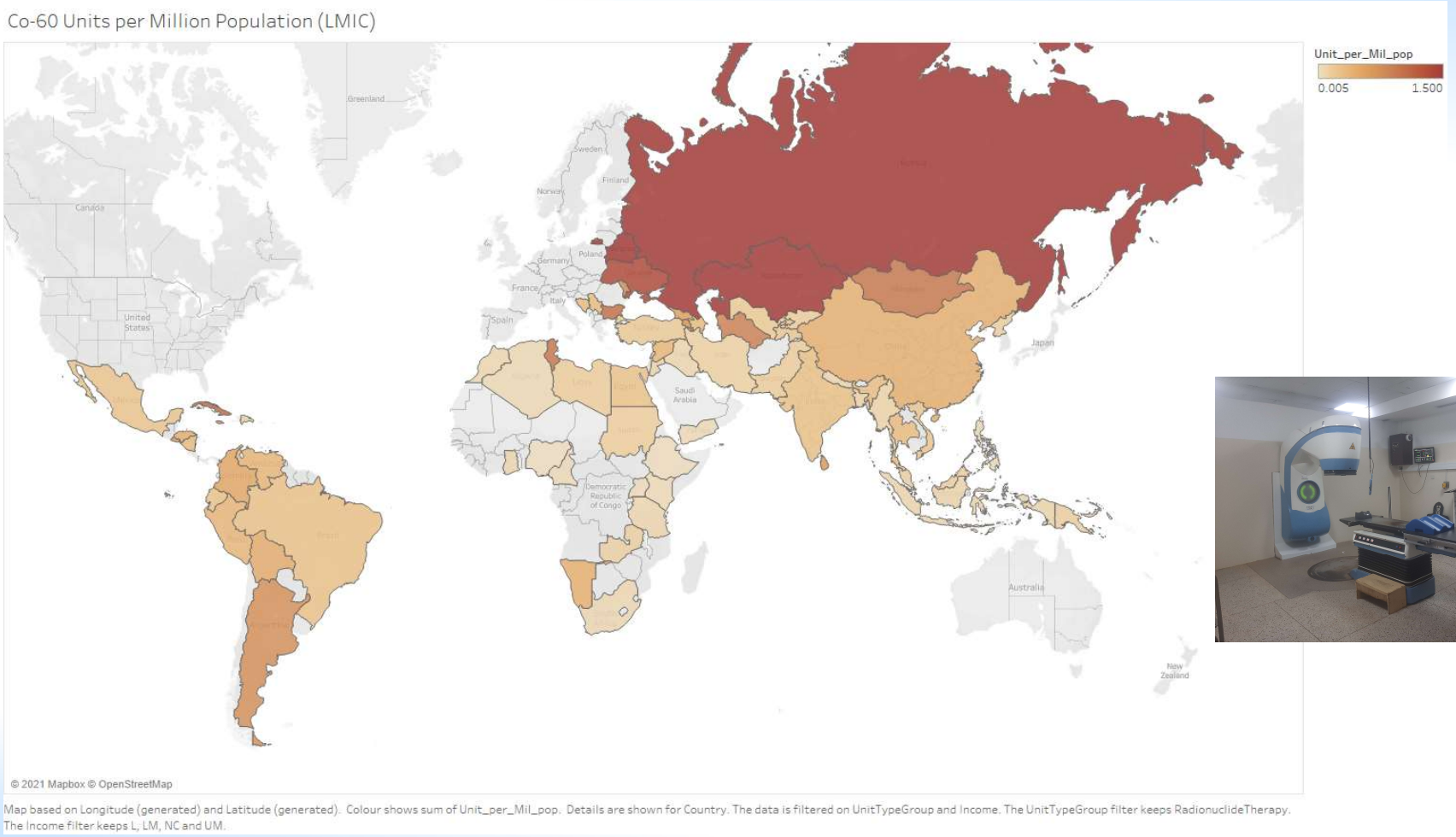

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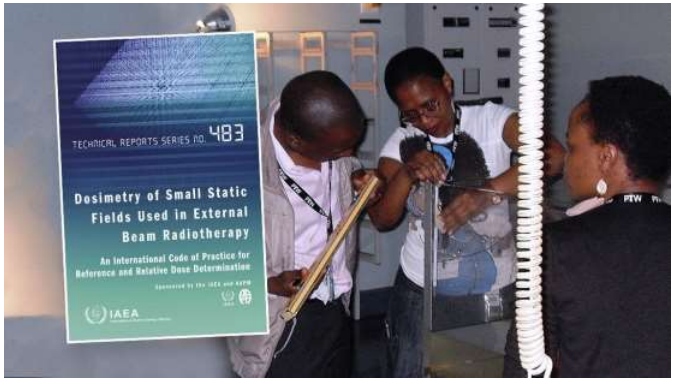
Photo courtesy Uganda Cancer Institute

Dosimetry – promoting accuracy in advanced technologies: from guidance to implementation

International CoP on small field dosimetry in EBRT

Prepared jointly with the AAPM and published in 2017



Following training courses in all regions, there is now a self-paced e-learning course

Capacity building; technology and knowledge transfer

CRPs and Technical Cooperation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How an IAEA Doctoral Coordinated Research Project Empowers Medical Physicists in Advanced Radiotherapy Techniques

Elodie Broussard, IAEA Office of Public Information and Communication

JAN 3 2020

Bertha García Gutiérrez is working to complete a PhD in medical physics through support from an IAEA doctoral coordinated research project. (Photo: C. Garcia)

In low- and middle-income countries there are often too few radiotherapy medical physicists available for cancer care services, and there are even fewer who are qualified to supervise training programmes of new medical physicists and advance research in this field. A series of IAEA doctoral coordinated research projects (CRPs) sets out to address this.

Related Stories

New CRP: Doctoral CRP on Advances in Radiotherapy Techniques (E24022)

E-learning Tool Helps Boost Medical Physics Expertise in Asia and the Pacific

Ensuring the Safe Use of Advanced Radiotherapy in Eastern Europe and Central Asia

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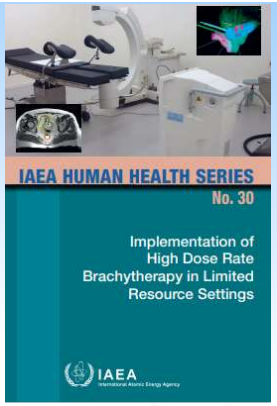
Radiation protection in radiotherapy

Radiotherapy - what patients need to know

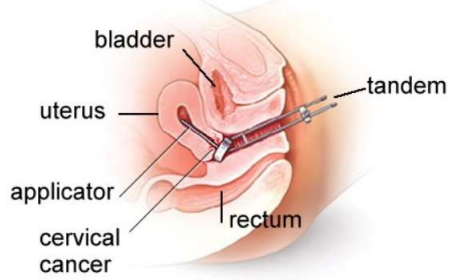
Safe Cancer Treatment With Radiotherapy

Radiation Protection of Patients (RPOP)

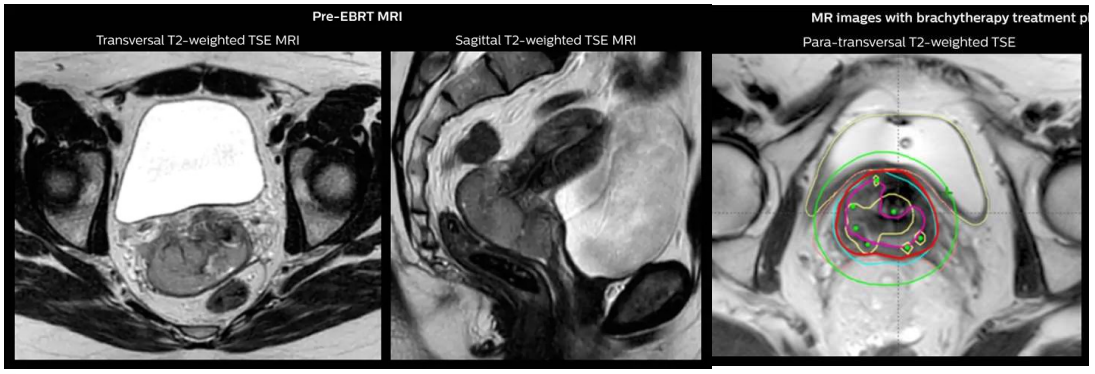


Dosimetry in Brachytherapy

An International Code of Practice for Secondary Standards Dosimetry Laboratories and Hospitals

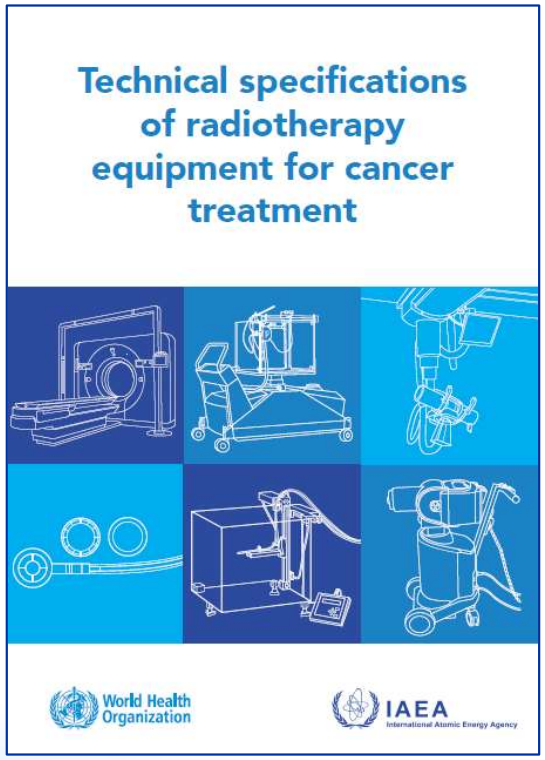


Courtesy of aboutcancer.com

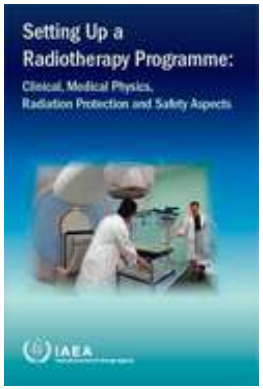


Courtesy of Philips Healthcare Education Resources

Guidance on establishing radiotherapy departments

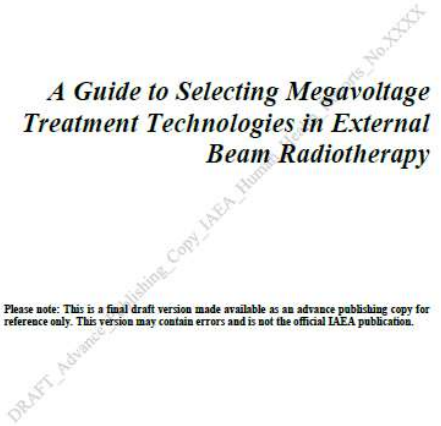


- WHO/IAEA publication
- Inter-divisional coordination with NSRW and NSNS
- Definition of turnkey packages
- Comprehensive specifications including standards and important reference documents
- Excludes modalities for which evidence of efficacy and cost benefit are considered emerging

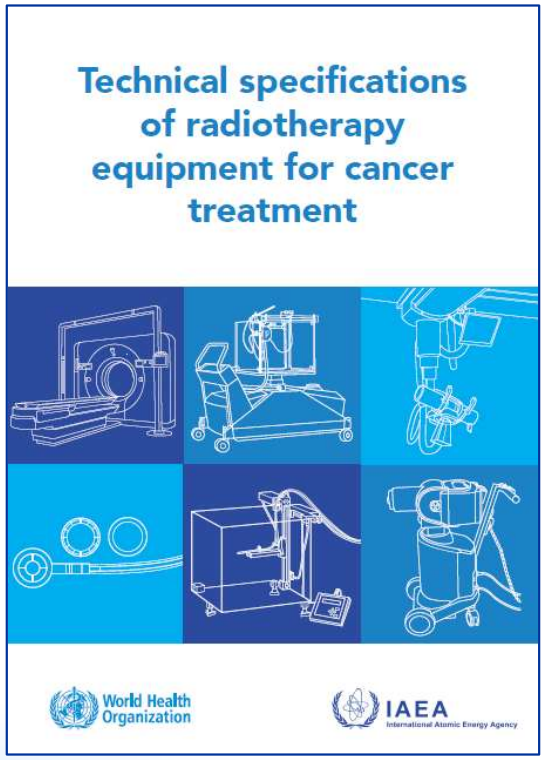


2008

2017

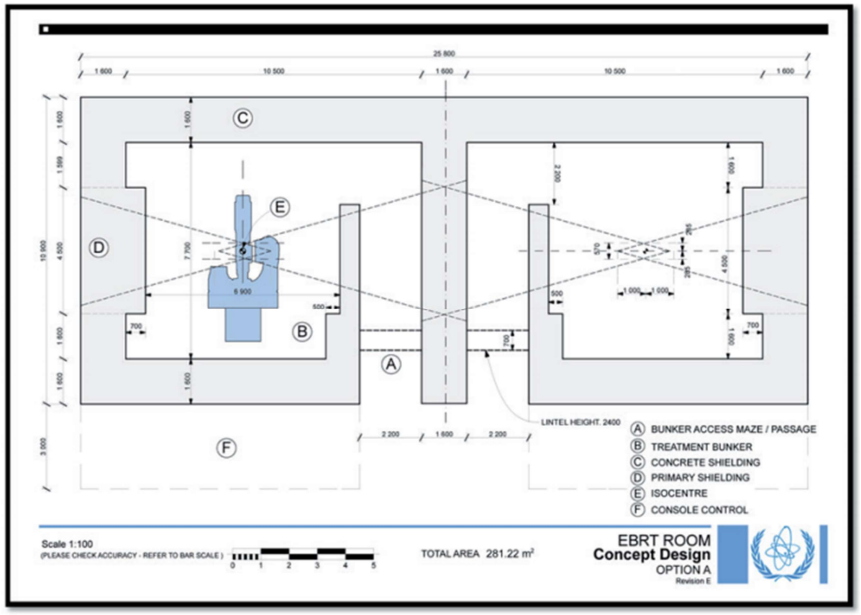


Guidance on establishing radiotherapy departments

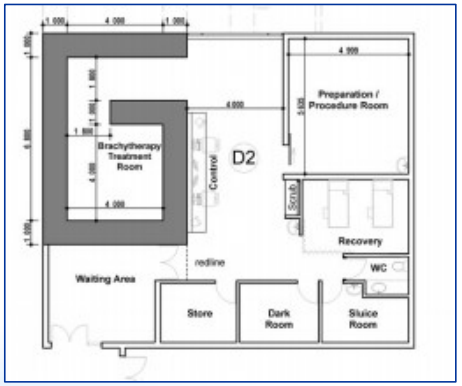


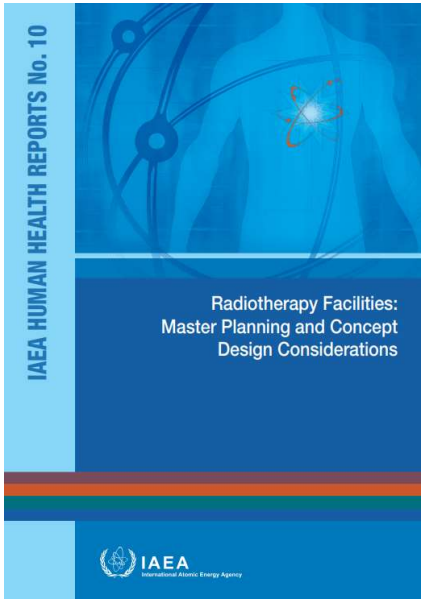
"If the radiotherapy department is considering the procurement of two or more cobalt-60 teletherapy units based on needs, then the selection of both an 80 cm SAD and 100 cm SAD unit is recommended to allow optimal long-term usage of the cobalt-60 sources. For example, because of the greater source to treatment distance for the 100 cm SAD unit and consequently lower dose rate for the same source strength, its source will need to be replaced first. However, the used source from the 100 cm unit may still provide adequate dose rate on the 80 cm SAD unit for a number of years. It will be possible to cascade cobalt-60 sources from the 100 cm SAD unit to [the] 80 cm SAD unit, which will be a major resource-sparing initiative for new sources."

Guidance on establishing radiotherapy departments



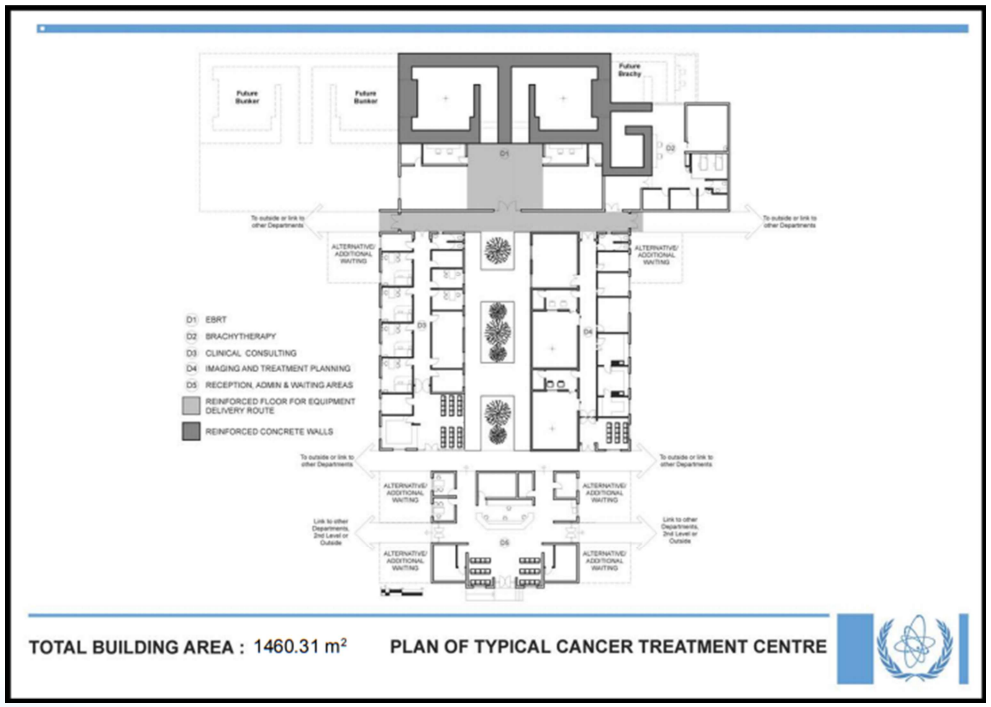
- Layout of a radiotherapy facility
- Generic bunkers for MV and BT
- Coordinated approach including provision and planning for future expansion





2014

Global access to radiotherapy: challenges and concerns



- In the past 2 decades there has been very little increase in access to radiotherapy in LMIC (GUA and NIR are good examples)
- Evidence is lacking:
  - Sustainability challenges
  - Brain drain
  - Lack of fully funded maintenance programmes and/or provision for source replacements
  - Lack of local maintenance infrastructure
  - Reasons for breakdowns
  - ????
- Exclusion of radiotherapy professionals from decision making
- An unrealistic expectation of technology is still prevalent
- Some source-based technologies are essential to treatment