

# **IAEA Support for Radiotherapy Services for Patients with Cervical Cancer**

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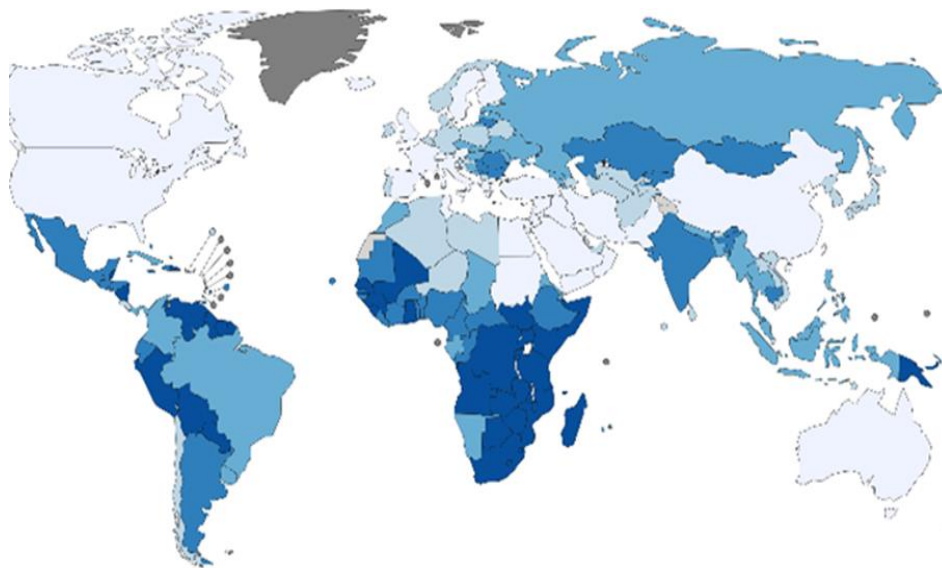
**Applied Radiation Biology and Radiotherapy Section  
Division of Human Health**



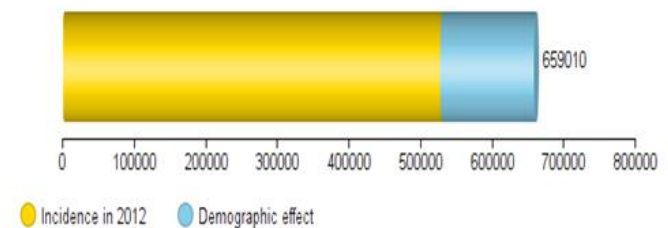
Cervix Cancer Education Symposium, February 2018

## Hugely Important to IAEA

- Fourth commonest cancer in women, with >500,000 cases worldwide overall
- Set to rise
- 87% of cervical cancer deaths occur in LMICs



International Agency for Research on Cancer  
World  
Cervix uteri  
Number of new cancers in 2025 (all ages)



GLOBOCAN 2012 (IARC) (8.1.2016)

- **Women with locally advanced disease may be cured with radiotherapy!**



## IAEA Support

- Technical Co-operation Projects ('TC')
  - May be 'national,' 'regional' or 'interregional'
- Clinical Research Protocols
  - Designed and conducted by investigators in LMICs
- Collaborative Initiatives
  - Recent UNGJP Inception Missions for cervical cancer service planning in high incidence countries
- Maintenance of Standards and Documents
  - These include brachytherapy manuals
- Advice on Resource Mobilisation and Cancer Planning



## TC Projects: Implemented in partnership with Member States

- IAEA support Member States developing projects in any aspect of nuclear technology
- Projects align with their Country Framework Policy
- If a radiotherapy project is proposed, 'technical officers' (TOs) in radiotherapy (RT) and medical physics (MP) are assigned to the project team.
- TOs advise to an extent, but generally appoint experts to visit the member state or host Fellows
- Projects activities can include Fellowships, Expert Missions, Training Courses and assistance with procurement

## Building a first RT centre

- Phase 1:
  - Infrastructure
  - Equipment
  - Human Resources
  - Quality Measures
- Phase 2:
  - Expansion planning
  - Human Resource Training Schemes
  - Sophisticated Techniques
  - Quality Measures

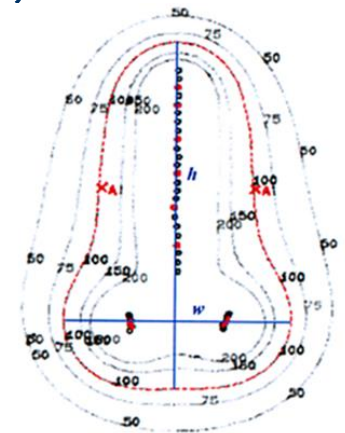
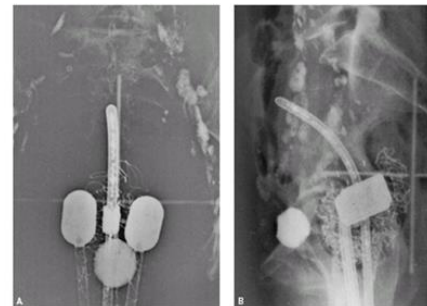


Within a  
national  
regulatory  
framework



## Brachytherapy: From the start

- In most LMIC countries, this is an absolute priority, and safe introduction and use of sources is obviously a significant issue for IAEA
- We recommend using Co 60 HDR, as few LMICs can schedule frequent source replacement reliably
- IAEA can advise on regulatory implications, infrastructure, procurement and training



## Clinical research protocols

- Excellent reasons to bring emerging RT centres into the research world
  - Patient care is better in centres doing research
  - LMICs represent a resource in research
  - Some conditions may be infrequent elsewhere
- But new centres find it hard to 'break in'
  - Set up costs are high c.f. 'gain;' sponsors prefer a track record
- IAEA aims to give centres in LMICs a chance to develop skills and prove themselves
- Termed 'transfer of technology'

## IAEA:ESTRO Contouring Project

- Recruited centres in LMICs who had transitioned to 3D RT
- Accuracy in contouring is crucial and hard to learn from books
- Evaluated the benefit achievable from on line 'blended learning' for head and neck, lung and gynaecological contouring
- Costa Rica on line at 7am!





## IAEA Cervical Cancer Trial

- A 2 x 2 randomised study of 9 Gy x 2 vs. 7 Gy x 4 HDR insertions, plus/minus CDDP
- Eligibility: IIb and IIIb cervical cancer, planned for radical radiotherapy, 46 Gy in 23# plus HDR
- Centres in India, Peru, South Africa, Brazil, Pakistan, Morocco and Macedonia,
- N = 601 (IIb = 440, IIIb = 161)
- Average age 48.7 years
- Overall 5-yr survival: 71% for IIB, 58% for IIIB



## Cervical Cancer Project Results

- Tumour control and toxicity**

Study arm	5 yr Tumor control %, 95% CI  (p=0.0007 for A+C vs B+D)	Overall Survival (No significant differences)	GU Gd 3-5 toxicity excluding fistula	GU fistula	GI Gd 3-5 toxicity excluding fistula	GI fistula
Arm A EBRT 46 Gy plus HDRBT (4x7 Gy)	88 (81-92) %	62.2 %	7.3%	0%	4%	1.3%
Arm B EBRT 46 Gy plus HDRBT (2x9 Gy)	78 (71-84) %	68.3%	6.7%	0.6%	4%	1.3%
Arm C (Arm A + CDDP)	89 (82-94) %	73.1%	5.3%	0.6%	6%	0%
Arm D (Arm B + CDDP)	75 (67-82) %	65.1%	7.2%	0%	5.9%	0%

GU: Genito-urinary. GI: Gastro-intestinal



## Future Cervical Cancer Projects

- Three further CRPs are planned:
  - 1) To explore the use of U/S in planning
  - 2) A study of logistics and health economics:
    - A survey of current treatment practice
    - A study of the operational impact of different methods of treatment delivery (time/cost)
    - A study to an optimal pathway for transitioning from '2D' treatment to more sophisticated techniques
  - 3) A clinical trial

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A screenshot of a project management software interface. The title bar reads "2017 Modern radiotherapy techniques in cervical cancer". The main content area shows project details for "APIS Project Number 200024". It includes fields for "Division" (NMGU), "Project Officer" (ZSICHARETA Blarisa), "Status" (Forecast), and "Alternate Project Officer". There are sections for "Dates" (Approved, Signed, Requested End, Last Review) and "Costs" (Estimated Total Cost, Actual Total Cost). A table lists "Research Coordination Meetings (RCM)" with columns for "RCM APIS Task Number", "From", "To", "Cost (€)", "AIRMS", "RCM Summary", and "RCM Report". At the bottom, there are sections for "NACI Staff Comments" and "Project Officer Comments".

## IAEA support for Multi-agency initiatives

- IAEA staff have joined UN Global Joint Program Inception Missions to member states with the highest incidence of cervical cancer to map current services and plan interventions
- Now fundraising to take projects forward



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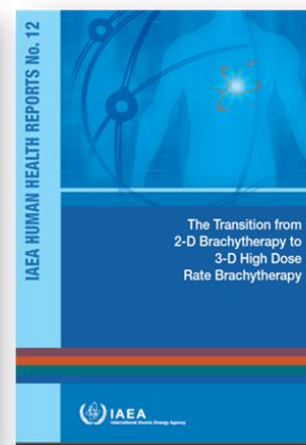
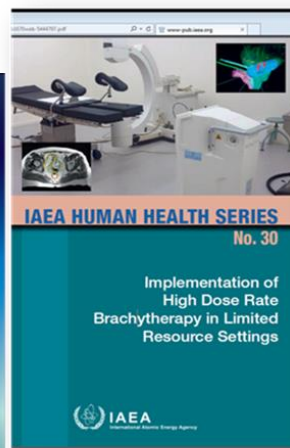
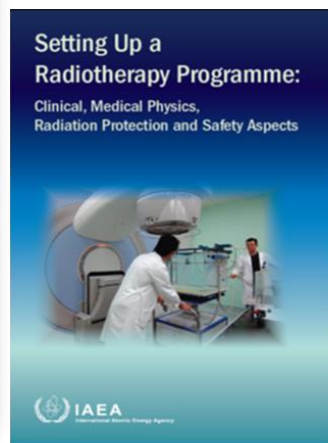
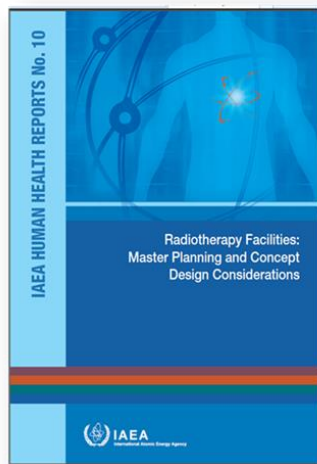


## UNGJP Diagnosis and Treatment Project Plan: Tanzania

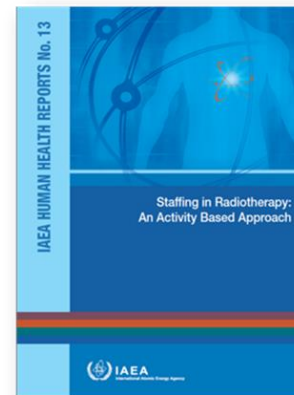
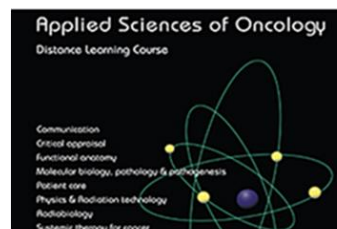
- Challenges in all areas, summarised in:
  - Service Delivery Framework
  - Resources
  - Governance
- Framework chosen for initial proposal
- Currently may be 6 months from suspicion of cancer to treatment. This allows fallout, tumour progression, and severe anaemia at the start of RT.
- Streamlined pathway of care agreed and project designed to pilot in one region

# Gynecologic Cancer InterGroup Cervix Cancer Research Network

## On Line Resources: Free to view



### IAEA Educational Materials



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## PACT: The programme of action for cancer therapy

- Advise on resource mobilisation and link member states with donors and loan agencies
- Specific programs including:
  - ImPACT missions: provides a multidisciplinary situational analysis at the request of host Governments
  - VUCCnet: provides free on line educational resources
  - AGART: Advisory Group on Access to Radiotherapy





## Summary

- Cervical cancer is a common, distressing and lethal disease in many low and middle income countries
- Despite vaccination and early diagnosis, locally advanced disease will be common for years to come
- Many women remain treatable and even curable with a combination of teletherapy and brachytherapy.
- IAEA support Member States through technical co-operation projects, collaborative research, integration with multi party initiatives, on line resources and advice on resource mobilization and cancer planning

**Gynecologic Cancer InterGroup  
Cervix Cancer Research Network**

**Thank you from ARBR, IAEA!**



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