Radiotherapy Utilization in Middle Income Countries: International Atomic Energy Agency Study

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Background

- Planning national radiotherapy (RT) services is a complex task and above all, requires reliable data on the demand for RT.

- Unmet need for RT can be estimated based on knowledge about optimal and actual radiotherapy utilization (oRTU and aRTU).

- Data on RTU is mainly available for high-income countries (HICs); for low- and middle-income countries (LMICs) more evidence is needed.

- International Atomic Energy Agency (IAEA) conducted a study on RTU in nine MICs around the world.
Method

- 9 MICs from Africa, Asia, Latin America and Europe (World Bank classification of economies, 2012)

- oRTU calculated using epidemiological evidence-based method:
  - Cancer incidence data from GLOBOCAN 2012
  - Radiotherapy indication trees from the CCORE group*

- aRTU calculated using:
  - Data on total number of cases treated with RT in 2012 (provided by participating countries)
  - Total number of new cancer cases diagnosed in 2012 (GLOBOCAN 2012)

- Unmet RT need calculated using:
  - oRTU and aRTU country data

*Delaney et al, Cancer 2005
*Barton et al, Radiother Oncol 2014
Results

- Unmet RT need:
  - 82.3% (GHA) to 18% (TUN)
- Most difficult situation (unmet RT need >80%) in countries with large population and low number of teletherapy machines (GHA, PHI)

Median oRTU rate: 52%
Median aRTU rate: 28%

Actual RTU vs. optimal RTU rates in 9 MICs

Correlation between % unmet RT need and number of TT machines/1000 cancer cases
Conclusions

• Optimal RTU rates in MICs are similar to those in HICs

• Nearly half of eligible cancer patients in nine MICs do not have access to RT

• Underutilization of RT could be explained by inadequate radiotherapy capacity and obstacles in access to existing RT services

• National radiotherapy services should be rationally planned in order to improve access to RT