Lancet Radiotherapy Commission

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University of Toronto
UICC
Predicted Global Cancer Cases

Source: WHO GloboCan
The Equity Gap

• **Availability of care**
  – Prevention, early detection, diagnostic services
  – Facilities, health professionals, equipment
  – Health systems

• **Affordability**
  – Poverty, catastrophic expense, UHC

• **Awareness** - Education, stigma
Population per radiotherapy treatment unit.
Uganda's radiotherapy machine for cancer treatment breaks

© 8 April 2016 | Africa
Access to Radiotherapy

• Cancer is a growing problem in low and middle income countries
  – no adequate radiotherapy facilities in many countries

• Lack of adequate radiotherapy resources
  – in many high income countries
  – in most middle income countries
  – in all low income countries
WHO Resolutions

- EB134.R7 Strengthening of **palliative care** as a component of integrated treatment within the continuum of care
- EB134.R16 Access to **essential medicines**. Revision of the resolution
- EB136.R7 Strengthening emergency and essential **surgical care** and anesthesia as a component of universal health coverage
We unite the cancer community to reduce the global cancer burden to promote greater equity, and to integrate cancer control into the global health and development agenda.
Dr. Tabaré Vázquez
Honorary Chair:
Radiation oncologist and President of the Oriental Republic of Uruguay.

Task Force
Members from over 35 Countries
Task Force - Global Engagement
Collaborating partners:

GTFRCC
CCORE
Harvard School of Public Health
ESTRO
Princess Margaret Cancer Centre
IAEA
Lancet Oncology
UICC

“...investment in radiotherapy not only enables treatment of large number of cancer cases to save lives; it also brings positive economic benefits.”

September 2015
Radiotherapy Demand vs. Coverage

≈ 50% of all cancer patients globally require radiotherapy

Lancet Oncol 2015; 16: 1153–86
2012
7 M indications
119 M fractions
1.5 M cases with local control
580 000 lives

2035
12 M indications
204 M fractions
2.5 M cases with local control
950 000 lives
How many resources will we need in 20 years from now?

<table>
<thead>
<tr>
<th></th>
<th>High Income Countries</th>
<th>LMICS</th>
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<tbody>
<tr>
<td>Megavoltage Machines</td>
<td>9200</td>
<td>12600</td>
</tr>
<tr>
<td>Radiation Oncologists</td>
<td>1550</td>
<td>30000</td>
</tr>
<tr>
<td>Medical Physicists</td>
<td>17200</td>
<td>22100</td>
</tr>
<tr>
<td>Radiation Technologists</td>
<td>51900</td>
<td>78300</td>
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## Benefits of Radiotherapy vs. Costs

<table>
<thead>
<tr>
<th></th>
<th>Health benefits in life years saved (2015-2035; discounted)</th>
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<tbody>
<tr>
<td>Low income</td>
<td>6.3 million</td>
</tr>
<tr>
<td>Lower-middle income</td>
<td>9.9 million</td>
</tr>
<tr>
<td>Upper-middle income</td>
<td>10.7 million</td>
</tr>
<tr>
<td>Total</td>
<td>26.9 million</td>
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</tbody>
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<table>
<thead>
<tr>
<th></th>
<th>Nominal Model</th>
<th>Efficiency model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low income</td>
<td>$26.6 Bn</td>
<td>$14.1 Bn</td>
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<tr>
<td>Lower-middle income</td>
<td>$62.6 Bn</td>
<td>$33.3 Bn</td>
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<tr>
<td>Upper-middle income</td>
<td>$94.8 Bn</td>
<td>$49.4 Bn</td>
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<tr>
<td>Total</td>
<td>$184.0 Bn</td>
<td>$96.8 Bn</td>
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</table>
Translating costs and lives into economic benefits

- Human Capital Approach
  - Benefits from labour force participation and productivity as a result of deaths avoided from cancer.

- Full Income Approach
  - “Value in a particular country or region of a 1-yr [potential] increase in life-expectancy”

- Both calculated through effects on GDP
A Linear Investment in RT Coverage: Cost and Benefits

Atun et al., Lancet Oncology 2015

- Full Income Benefits
- Human Capital Benefits
- Costs-Efficient
- Costs-Nominal

US$ (Billions)

Cohort Year

2015 2020 2025 2030 2035

Atun et al., Lancet Oncology 2015
Findings

• the cancer epidemic will lead to a substantial increase in radiotherapy indications from 7 to 12 million by 2035

• there are important inequalities in access to radiotherapy, with predominant shortfall in LMIC

• radiotherapy scale up can provide up to 2.5 million local controls and saving 1 million lives in 2035

• there is a substantial economic gain to be realized from radiotherapy scale up

• investing in capital and human resources is needed
Call to Action

Action 1: Population-based Cancer Control Plans
Population based cancer plans must include radiotherapy. Explicit targets for scaling radiotherapy capacity to expand coverage must be defined.
Target: By 2020, 80% of countries have cancer control plans that include radiotherapy.

Action 2: Expansion of access to radiotherapy
Establishment of at least one comprehensive cancer centre in each LMICs by 2020 to immediately increase radiotherapy capacity and become training centres to develop a new radiotherapy workforce.
Target: By 2025, increase by 25% radiotherapy capacity

Action 3: Human Resources for Radiotherapy
Creation of new core curriculums, innovative teaching methods, and international credentialing to expand the radiotherapy workforce. Training should be part of the mandate for each national radiotherapy centre.
Target: By 2025, additional human resources - 7500 radiation oncologists, 6000 medical physicists, 20 000 radiation technologists
Action 4: Sustainable financing to expand access to radiotherapy
Domestic and international financing will be needed to expand radiotherapy capacity with substantial upfront investment. International development banks and the private sector should work in partnership with countries to finance investments in infrastructure and radiotherapy services.
Target: $46B on investment by 2025 to establish radiotherapy infrastructure and training in LMICs.

Action 5: Align radiotherapy access with universal health coverage
Inclusion of radiotherapy coverage in each country’s universal health coverage plans to prevent catastrophic out-of-pocket expenditures and treatment abandonment.
Target: 80% of LMICs to include radiotherapy services as part of the universal health coverage by 2020.
More of the same will not do...

“Insanity is doing the same thing over and over again and expecting different results.”
GlobalRT: building a new radiotherapy community

“...When a woman gets cancer, it's not just a patient—it's a family”. These powerful words of Tatiana Vidaurre, in a film entitled Verónica: a Peruvian Story of Cancer and Health, highlight the urgent need for global access to radiotherapy and other optimal cancer care. The film introduces us to Verónica, a young mother with cancer, receiving radiation treatment in Lima. Through the eyes of Verónica and Vidaurre, director of the National Cancer Institute in Peru, we see how the context, the person, and the available technologies all shape the problem. This problem is amplified by the projected 54% increase in global cancer incidence by 2030, with the steepest rise in countries of low and middle income. Radiotherapy is indicated in the treatment of roughly half of all cancer patients in high-income countries, and in an even greater proportion in countries of low and middle income, where advanced presentations of cancer are more common. However, as data from the International Atomic Energy Agency shows, radiotherapy is still completely unavailable in 55 countries committed to making radiotherapy universally available: the Young Leaders Program will ensure that the long-term goals of the GTFRCC are accomplished.

The young leaders are also key contributors to the GTFRCC working groups, participating in framework development and providing results that will be used in the GTFRCC report. Their involvement provides them with a unique opportunity to receive valuable mentorship from leaders in global health and cancer care. Mentors are particularly important in the field.
Summary

- Radiotherapy is a critical and inseparable component of comprehensive cancer treatment. It is an effective treatment modality providing 2.5 million local controls and saving 1 million lives each year by 2035.

- Yet, in planning and building capacity for cancer, it is frequently the last resource to be considered. Therefore, worldwide access to radiotherapy is unacceptably low and there are important inequalities in access to radiotherapy.

- We need investment, innovation, and engagement by young leaders to realize the potential gains.