Rising Costs of Cancer

What are the drivers?
What are the consequences?

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Overview

• Understanding the international context:  
  *Current cost landscape*

• Identifying cost drivers  
  *Factors impacting increasing costs of care*

• Developing solutions:  
  *Using models to inform decision-making*
  *Promoting Universal Health Coverage*
Overview

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How much is spent on cancer services in the USA? (in $USD)

A. < $50 billion
B. $50 – 100 billion
C. $100 – 300 billion
D. > $300 billion
How much is spent on cancer services in the USA? (in $USD)

A. < $50 billion
B. $50 – 100 billion
C. $100 – 300 billion
D. > $300 billion

Source: IHME. https://vizhub.healthdata.org/dex/
Total Health Expenditure (THE): High-income Country

Cancer spending accounts for about 7% of disease based health expenditures.

<table>
<thead>
<tr>
<th>General Health care</th>
<th>HIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per capita THE</td>
<td>$4800</td>
</tr>
<tr>
<td>% Government</td>
<td>62%</td>
</tr>
<tr>
<td>% Private (%OOP)</td>
<td>38% (14%)</td>
</tr>
<tr>
<td>External aid</td>
<td>1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cancer</th>
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<tbody>
<tr>
<td>% THE</td>
<td>5-10%</td>
</tr>
<tr>
<td>Medicines</td>
<td>5-10%</td>
</tr>
<tr>
<td>% financial harm</td>
<td>5-15%</td>
</tr>
</tbody>
</table>


Ref: WHO Global Health Expenditure Database. Online: http://apps.who.int/nha/database
# Total Health Expenditure (THE): Middle-income Country

<table>
<thead>
<tr>
<th>Country</th>
<th>Financial catastrophe</th>
<th>Other impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>32%</td>
<td>76% financial harm</td>
</tr>
<tr>
<td>Haiti</td>
<td>&gt;66%</td>
<td>91% income</td>
</tr>
<tr>
<td>VietNam</td>
<td>78%</td>
<td>Particularly elderly</td>
</tr>
<tr>
<td>Malaysia</td>
<td>48%</td>
<td>Depends on region</td>
</tr>
<tr>
<td>China</td>
<td>21-75%</td>
<td>Depends on region</td>
</tr>
<tr>
<td>South Korea</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>US</td>
<td>12%</td>
<td>Depends on insurance</td>
</tr>
</tbody>
</table>

## General Health Care

<table>
<thead>
<tr>
<th></th>
<th>LMIC</th>
<th>HIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per capita THE</td>
<td>$ 90</td>
<td>$ 4800</td>
</tr>
<tr>
<td>% Government</td>
<td>36 %</td>
<td>62 %</td>
</tr>
<tr>
<td>% Private (%OOP)</td>
<td>64 %</td>
<td>38 % (14 %)</td>
</tr>
<tr>
<td>External aid</td>
<td>3 %</td>
<td>1 %</td>
</tr>
</tbody>
</table>

## Cancer

<table>
<thead>
<tr>
<th></th>
<th>LMIC</th>
<th>HIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>% THE</td>
<td>1-40%</td>
<td>5-10 %</td>
</tr>
<tr>
<td>Medicines</td>
<td>20-60%</td>
<td>5-10 %</td>
</tr>
<tr>
<td>% financial harm</td>
<td>20-80%</td>
<td>0-15 %</td>
</tr>
</tbody>
</table>

**Ref:** WHO Global Health Expenditure Database. Online: [http://apps.who.int/nha/database](http://apps.who.int/nha/database)

**Key differences:**
- 100x lower budget
- out-of-pocket
- % budget for medicines

**Countries:**
- India: 32% financial harm
- Haiti: >66% income
- VietNam: 78% particularly elderly
- Malaysia: 48%
- China: 21-75% depends on region
- South Korea: 40%
- US: 12% depends on insurance

**Cancer:**
- % THE: 1-40% (LMIC), 5-10% (HIC)
- Medicines: 20-60% (LMIC), 5-10% (HIC)
- % financial harm: 20-80% (LMIC), 0-15% (HIC)
How much money is available per patient for cancer management in a lower-middle-income country? (in $USD)

A. $ 50 – 100 
B. $ 100 – 500 
C. $ 500 – 2000 
D. > $ 2000
How much money is available per patient for cancer management in a lower-middle-income country? (in $USD)

A. $ 50 – 100
B. $ 100 – 500
C. $ 500 – 2000
D. > $ 2000
Ghanian Cancer Control Strategy 2012-2016

Summary of required budget to undertake cancer control activities: 2012 - 2016

<table>
<thead>
<tr>
<th>Main intervention areas</th>
<th>Year</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Total (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventing cancers</td>
<td>1,150,000</td>
<td>1,255,000</td>
<td>1,550,000</td>
<td>1,890,000</td>
<td>2,115,000</td>
<td>7,960,000</td>
</tr>
<tr>
<td>Early Detection and Screening</td>
<td>1,825,000</td>
<td>2,025,000</td>
<td>2,380,000</td>
<td>2,502,000</td>
<td>2,650,000</td>
<td>11,382,000</td>
</tr>
<tr>
<td>Treatment</td>
<td>1,050,000</td>
<td>1,205,500</td>
<td>1,225,000</td>
<td>1,350,000</td>
<td>1,505,000</td>
<td>6,335,500</td>
</tr>
<tr>
<td>Palliative Care</td>
<td>796,500</td>
<td>965,000</td>
<td>985,000</td>
<td>1,180,000</td>
<td>1,210,000</td>
<td>5,136,500</td>
</tr>
</tbody>
</table>

Total health expenditure per capita (THEpc): $80 (2015)

Expenditure on cancer: $1.67 per capita (2.1% of THEpc) (OECD: 5%)

Government expenditure per cancer patient: $94

Consequences:
1. Patients pay balance → high financial catastrophe
2. Government pays for care for select group of people
3. Limited treatment options made available
Overview

• Understanding the international context: 
  Current cost landscape

• Identifying cost drivers 
  Factors impacting increasing costs of care

• Developing solutions: 
  Using models to inform decision-making 
  Promoting Universal Health Coverage
Interpreting Rising Costs

1. \(\uparrow\) # of patients
2. \(\uparrow\) cost of care for same service
3. \(\uparrow\) cost of treatment options (e.g. new medicine)
(1) Increasing Cancer Burden = Increase # of Patients

  - Demographic changes & RF exposure

Reference: GloboCan 2012. Projections from UNPOP database
(2) Increasing Coverage

Figure 9: Coverage of radiotherapy services according to country as determined by global equipment databases, an activity-based operations model, cancer incidence, and evidence-based estimates of radiotherapy need.

Estimates depend on the nature of equipment use. The colour bar shows the operational model: 12 h operation was used as the feasible case, but 8 h and 16 h were also modelled to capture typical and potential capacity, respectively.
Figure 8: Cost breakdown for salaries, buildings, and equipment needed for radiotherapy, by gross-national-income region
(3) Increasing Costs of Treatment

- Diagnostic tests
  - Cost of imaging for cancer $\uparrow$5-10 % / year (compared to $\uparrow$2-4% for general costs)

- Costs for robotic surgery & advanced radiotherapy:
  $\uparrow$13% vs. open == $2.5 billion costs/year

- Surveillance with high-cost imaging, no benefit
  - Up to 50% high-tech imaging may be unnecessary

- WHO: 20-40% health expenditure wasted
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**Setting Priorities**

**3 medicines:** 81% of budget, <16% of cancer population

- **Common challenges:**
  1. Failure to provide comprehensive services
  2. Prioritize high-cost medicines for select cohort

  - ? Pathology capacity
  - ? Ward capacity = \( \uparrow \) coverage
  - \( \downarrow \) out-of-pocket expenditure

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Data from: Martel RM et al. Methodology to Forecast Volume and Cost of Cancer Drugs in Low- and Middle-Income Countries. Journal of Global Oncology 2018;4, 1-8
Setting Priorities

• **Common challenges:**
  1. Failure to provide comprehensive services
  2. Prioritizes high-cost medicines for select cohort

• **Potential solutions:**
  – Understand benefit & harm of programmes
    • Lives saved
    • Population covered
  – Assess feasibility (e.g. sufficient health workforce?)
What percentage of countries have a budget specified in their cancer plan?

A. 5-20%
B. 20-50%
C. 50-70%
D. <70%

Preliminary data. Publication pending.
What percentage of countries have a budget specified in their cancer plan?

A. 5-20%
B. 20-50%
C. 50-70%
D. <70%

Preliminary data. Publication pending.
### Estimating Budget Requirement

#### Common challenges:
1. No estimates
2. Incorrect estimates

#### Potential solutions:
- Ensure budget available
- \(\uparrow\) population coverage
- Support donor agenda

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Objectives and Activities</th>
<th>Indicators</th>
<th>Stake holders</th>
<th>Budget 2017</th>
<th>Budget 2018</th>
<th>Budget 2019</th>
<th>Budget 2020</th>
<th>Budget 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>To improve quality of pathology and immunology services</td>
<td>CD markers for 20 panels</td>
<td></td>
<td>200,000</td>
<td>200,000</td>
<td>200,000</td>
<td>200,000</td>
<td>200,000</td>
</tr>
<tr>
<td></td>
<td>Flow cytometry</td>
<td>Accessory reagent for flow cytometry</td>
<td></td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
<td>50,000</td>
</tr>
<tr>
<td>2</td>
<td>To upgrade blood bank services</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>To purchase following equipment for safer blood supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1.1</td>
<td>a) Hemofuge</td>
<td>No. of equipment purchased</td>
<td></td>
<td>269,600</td>
<td>269,600</td>
<td>269,600</td>
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</tbody>
</table>
• Common challenges:

1. Weak procurement & supply chain → ↑ price
2. Prescribing medicines not coordinated (off protocol), not indicated
3. Breast cancer screening inappropriate age group

Promote Standardization

• **Common challenges:**
  1. Weak procurement & supply chain → ↑price
  2. Prescribing medicines not coordinated (off protocol), not indicated
  3. Breast cancer screening inappropriate age group

• **Potential solutions:**
  - Develop national protocols
  - Promotes pooled, centralized procurement

*WHO/Health Action International Project on Medicine Prices and Availability*

The Project on Medicine Prices and Availability was a collaborative partnership between WHO and the international non-governmental organization Health Action International. The Project was supported by a resolution of WHO Member States at the 54th World Health Assembly in 2001, calling for the development of "systems for voluntary monitoring drug prices and reporting global drug prices" (Resolution WHA 54.11).
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Universal Health Coverage: Next Steps

- **What?...**
  - Ensure access to priority care needs:
    - \(\downarrow\) financial catastrophe
    - \& Without suffering financial hardship

- **Define package**
  - Expand services
    - \(\uparrow\) coverage

- **Link to national cancer strategy**
  - Finance & implement with focus on quality
    - \(\downarrow\) services that provide "value for money"
Which strategy has the highest general impact on population outcomes?

A. Expand number of available medicines
B. Increase number of people receiving
C. Reduce select out-of-pocket costs
Which strategy has the highest general impact on population outcomes?

A. Expand number of available medicines

B. Increase number of people receiving

C. Reduce select out-of-pocket costs
Expanding coverage is generally more efficient at improving outcomes vs. introducing new services

• Develop resource-stratified tool kits to establish and implement comprehensive programmes...leveraging work of other organizations

• Collect, synthesize and disseminate evidence on the most cost-effective interventions for all age groups...and to make an investment case for cancer prevention and control

• Strengthen the capacity of the Secretariat both to support the implementation of cost-effective interventions and country-adapted models...

World Health Organization Mandate

“Universal Health Coverage is the most powerful concept that public health has to offer.”
- Margaret Chan, WHO (2012)

“States are **under the obligation** to respect the right to health by ... refraining from denying or limiting equal access for all persons ... to preventive, curative and palliative health services.”
- UN Committee on Economic, Social and Cultural Rights
Summary

• Cancer is a global disease with a global impact

• Costs of cancer are increasing

• Oncologists must lead discussion on prioritization, financial protection
