

Guiding principles & approach

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Outline



Making cancer care available to al



How do we spend it? (economic factors)

- To promote equitable, resource use?
- To manage disease & programmatic priorities?





Where does the money come from? (financial factors)

To ensure sufficient and sustainable financing?

Priority-setting policy dialogue

Status quo: Lack of prioritization



Domain

Example and Outcome

Cancer control plan

70% NCCPs include breast cancer screening

YET....Feasible & cost-effective in **<20%**

Benefit package (UHC)

<20% of packages include palliative care

YET...40+% of packages in LIC cover screening

Treatment standards

20% of nEMLs include bevacizumab

but not asparaginase

Process

Political but should be based on:

Data → Dialogue → Decision-making



Why prioritization is needed

Failure to include cancer in policies and programmes



Key Findings

Core cancer services included in LMIC national benefit packages;

National cancer control plans are costed

Outcomes

>60% Families suffer financial hardship including selling of assets

Cancer control **doesn't need** to be expensive But... it does need to be **prioritized**

Basic package implementable for \$US 5-10 per capita



Priority-setting policy dialogue

Status quo: Lack of prioritization



Domain

Example and Outcome



(1) What interventions?

(2) What approach to increase coverage?

not asparaginase

(3) What implementation strategy?

NCCPs include breast cancer screening

....Feasible & cost-effective in <20%

Process

Political but should be based on:

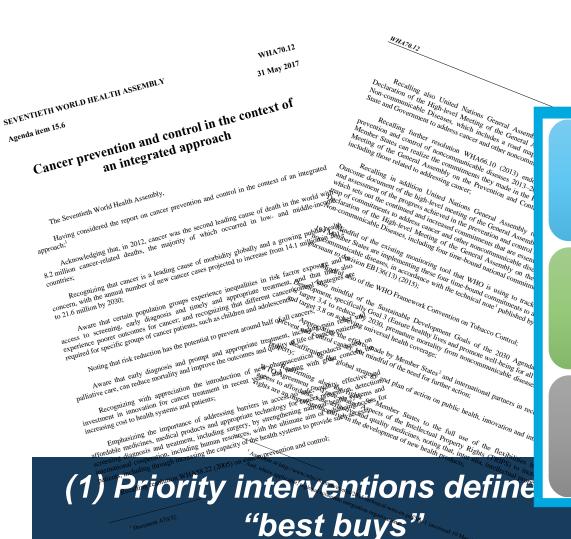
Data → Dialogue → Decision-making



Defining priority setting

World Health Organization

Best investment must reach scale & achieve value for money









OP1

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



OP2

 Collect, synthesize and disseminate evidence on the most cost-effective interventions...and to make an investment case for cancer

OP3

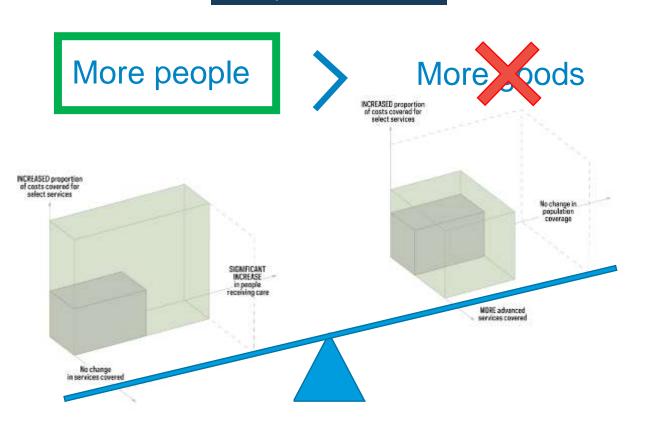
 Strengthen the capacity of the Secretariat to support implementation of cost-effective interventions and country-adapted models...

Priority setting: progressive realization



Best investment must reach scale & achieve value for money

↑funds



Two packages with same price

Scenario A

Basic package for 75% population

Radiotherapy for highimpact, curative cancers

Select targeted therapy (eg, rituximab)

Cost: \$US 6.38 per capita

Lives saved: ~500 by 2040

Scenario B

High techn package for 40% population

Radiothera y for all indications

10+ taggeted thereby (including immunoRx)

Cost: \$US 6.38 per capita

Lives saved: ~200 by 2040

(2) Focus on expanding coverage before introducing new services

Priority setting & system readiness



Coverage 1% per yr:

Coverage 2% per yr:

Yes





Additional salary (included in package): \$US 7,000 per provider

Training (included in programme cost): \$US 200,000 per year



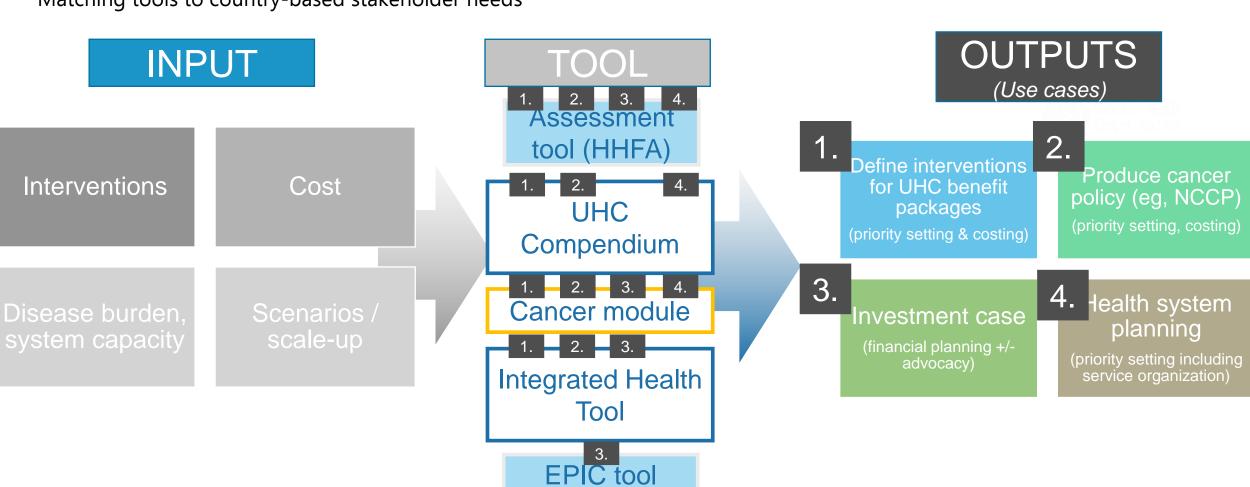
Purchase new machines for breast cancer screening programme

(3) Implementation approach must be based on feasibility & system readiness

Use cases



Matching tools to country-based stakeholder needs



Country Example

WHO, IARC, IAEA prioritization

1 st Feasibility assessment, scenarios and priorities

Management Policies	
Cancer guidelines	yes
Cancer guidelines incl drug-specific protocols	yes
Cancer guidelines (utilized in >50% facilities)	yes
Cancer guideline (last updated)	2019
Cancer guidelines (Include referral criteria)	yes
Breast cancer early detection pgm/guidelines	yes
Cervical cancer early detection pgm/guidelines	yes
Colon cancer early detection pgm/guidelines	no
Childhood cancer early detection pgm/guidelines	no
Breast cancer defined referral	
Cervical cancer defined referral	
Colon cancer defined referral	
Childhood cancer defined referral	no
Breast cancer screening pgm	yes
Breast cancer screening pgm (type)	opportunistic
Breast cancer screening pgm (method)	clinical breast exam
Breast cancer screening pgm (coverage)	>50% and <70%
Breast cancer screening pgm (target age start)	15
Breast cancer screening pgm (target age end)	50
Breast screening test performance (sens)	
Breast screening test performance (sens)	
Cervical cancer screening pgm	yes
Cervical cancer screening pgm (type)	opportunistic
Cervical cancer screening pgm (method)	visual inspection
Cervical cancer screening pgm (coverage)	>50% and <70%
Cervical caner screening (STEPS)	
Cervical cancer screening pgm (target age start)	15
Cervical cancer screening pgm (target age end)	60

Goal: ↑coverage by 1% per yr, focusing on women + children

2nd Health system planning & capacity





EQUIPMENT

Pathology
Radiology
Cancer Diagnosis
Prostate Cancer
Diagnosis
Palliative care

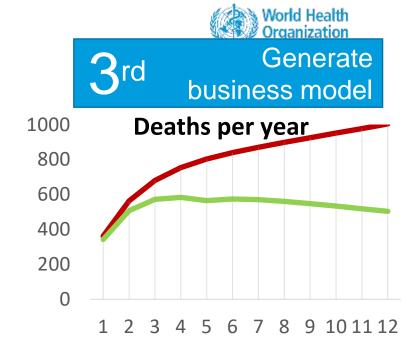
CONSUMABLES

Records
Endoscopy
Radiology and Nuclear
Medicine Treatment
Palliative care.

TRAINING

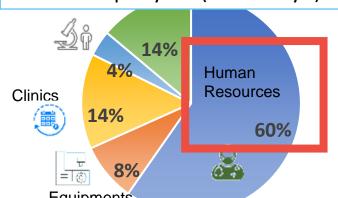
In service training Quality control programs Early Diagnosis Policies Service Organization

Capacity: workforce as bottleneck to reach goal



- **Baseline** (no further investment)
- Scale-up (1% ↑coverage / year)

Investment: 个\$US 0.30 to save 100 lives per year (50% <60yo)



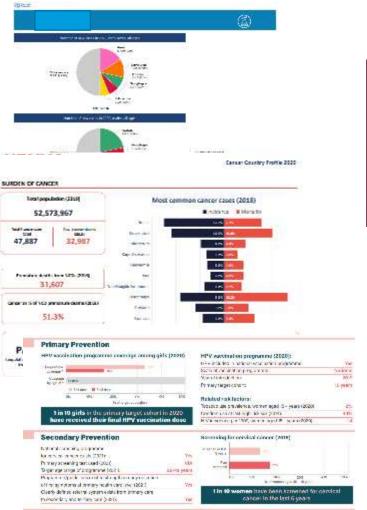
Effective cancer control planning in Country A

Review of costing & priority setting



Reference Policies and Reports

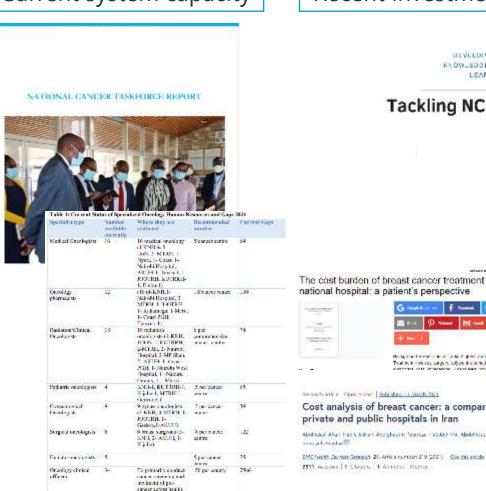
Disease burden estimates



Recent health policies



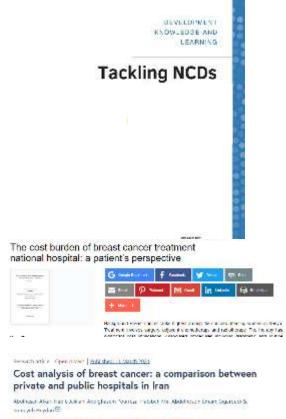
Current system capacity



helite anteface

amagous sat

Recent investment cases



Key Assumptions & Scenarios

Inputs

- Estimated coverage for management of all cancers = 28% (total number of cases per year estimated 42,000) (number of cases treated per year estimated 11,040)
- Disease burden and stage distribution (obtained from national reports)

	Cases per stage (number (row %))							
Cancer type	In Situ	Stage I	Stage II	Stage III	Stage IV	Total		
Cervix uteri	1 (0.1)	139 (7.5)	709 (38.1)	774 (41.5)	240 (12.9)	1863		
Breast	8 (0.9)	37 (4.2)	232 (26.3)	269 (30.5)	335 (38.0)	881		
Colorectal	0 (0)	8 (2.6)	49 (16.0)	122 (39.7)	128 (41.7)	307		
Oesophagus	0 (0)	4 (1.7)	30 (12.4)	81 (33.5)	127 (52.5)	242		
Stomach	2 (1.1)	6 (3.3)	28 (15.2)	43 (23.4)	105 (57.1)	184		
Other sites	4 (0.2)	145 (8.1)	286 (16.1)	446 (25.1)	899 (50.5)	1780		
Grand Total	15 (0.3)	339 (6.4)	1334 (25.4)	1735 (33.0)	1834 (34.9)	5257		

Scenarios

- Anticipated scale-up of coverage =
 3.5% per year (45% by 2028)
- Stage distribution shift (obtained from literature):
 Anticipated downstaging 2-3% per year (range reflecting differences between cancer types)
- Anticipated improvements in diagnostic and treatment quality =
 5-year survival (stage-specific) improved by 5-10%

Total costs

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Total programme costs	997,452,083	1,181,368,285	1,342,971,780	1,491,805,500	1,614,133,551	6,627,731,200
Total clinical services	2,534,999,424	3,057,183,644	3,551,161,586	4,007,916,787	4,432,765,129	17,584,026,570
Screening programmes (cervix, colorectal-pilot, hepatits B)	359,131,681	413,265,692	466,981,749	514,916,760	563,090,463	2,317,386,345
Adult cancers	1,882,802,595	2,323,355,843	2,744,917,931	3,136,491,566	3,494,937,730	13,582,505,665
Childhood cancers	293,065,148	320,562,109	339,261,906	356,508,461	374,736,937	1,684,134,560
Total capital costs	1,242,493,520	1,124,668,960	1,228,104,400	1,410,734,840	2,419,814,030	7,425,815,750
Total costs per year	7,309,944,450	8,420,404,534	9,673,399,352	10,918,373,914	12,899,477,840	49,221,600,090

Key findings

- (1) Programme costs 13% of total; capital costs 15%
- (2) Childhood cancer 10% of clinical service costs
- (3) Total costs nearly double over 5 yrs given scale-up rate

Total programme costs

Sub-activity (programme costs)	Activity	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Total programme costs		997,500,000	1,181,400,000	1,343,000,000	1,491,800,000	1,614,100,000	6,627,800,000
NCCP activities		369,075,000	437,118,000	496,910,000	551,966,000	597,217,000	2,452,286,000
Training		69,825,000	82,698,000	94,010,000	104,426,000	112,987,000	463,946,000
Monitoring & evaluation	N/a	34,912,500	41,349,000	47,005,000	52,213,000	56,493,500	231,973,000
General programme management		105,598,000	124,294,000	140,760,000	155,946,000	168,482,000	695,080,000
Other (shared infrastructure costs)		418,089,500	495,941,000	564,315,000	627,249,000	678,920,500	2,784,515,000
		HR P	rogramme costs inc	luded in NCCP			
	4.3.1.1	3,400,000	3,400,000	3,400,000	3,400,000	3,400,000	17,000,000
NCCP staff	4.3.1.2	2,448,000	2,754,000	3,060,000	3,366,000	3,672,000	15,300,000

Key findings

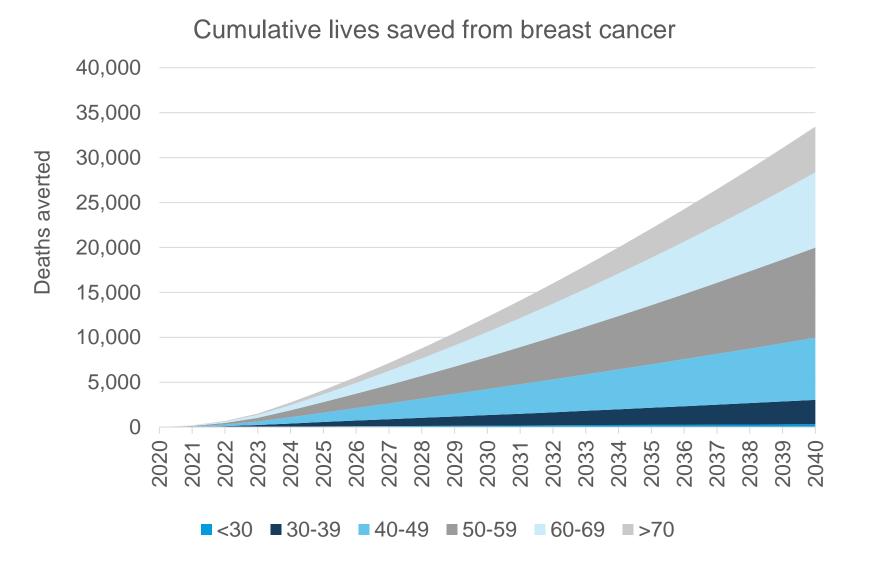
- (1) NCCP is 37% of programme costs (5% of total costs)
- (2) M&E 8% of programme costs
- (3) NCCP/NCI staff costs 1% of programme costs

Capital costs by group

CAPITAL COST PER NATIONAL CENTRE - National Centres (2)							
Sub-activity (specific clinical services)	Activity	Year 1	Year 2	Year 3	Year 4	Year 5	
Ultrasound at level 4	2.1.2.1	420,000	420,000	420,000	420,000	, Wada Feddi	
Acquire PT-CET in 2 national hospitals	2.1.2.3	145,000,000		145,000,000			
Acquire nuclear medicine + PET in 5 regional centres	2.1.2.3				165,000,000		
Development cloud-based radiology information system	2.1.2.3		20,000,000				
Establish immunohistochemical, flow cytometry, liquid biopsy	2.2.1.2	86,000,000					
Acquire cryostat equipment	2.2.2.4		2,400,000				
Aphersis equipment	2.2.2.6	12,000,000	12,000,000				
Establish and equip hostel facilities	3.1.2.2		80,000,000		80,000,000		

CAPITAL COST PER REGIONAL CENTRE - Regional Centres (5)							
Sub-activity (specific clinical services)	Activity	Year 1	Year 2	Year 3	Year 4	Year 5	
Ultrasound at level 4	2.1.2.1	516,000	516,000	516,000	516,000	-	
Establish interventional radiology services	2.1.2.2	84,900,000	57,400,000	84,900,000	57,400,000	84,900,000	
Acquire PT-CET in 2 national hospitals	2.1.2.3	-	-	-	-	-	
Acquire nuclear medicine + PET in 5 regional centres	2.1.2.3	33,000,000	33,000,000	33,000,000	-	33,000,000	
Development cloud-based radiology information system	2.1.2.3	-	24,000,000	-	-	-	
Establish immunohistochemical, flow cytometry, liquid biopsy	2.2.1.2	17,200,000	-	-	-	-	
Establish pathology laboratory infrastructure	2.2.2.1	-	17,148,000	17,148,000	11,432,000	11,432,000	
Mobile testing for telepathology	2.2.2.3	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	
Acquire cryostat equipment	2.2.2.4	-	480,000	-	-	-	
Aphersis equipment	2.2.2.6	2,400,000	4,800,000	4,800,000	7,200,000	7,200,000	

Anticipated impact (example of breast cancer)



Key findings (breast cancer)

- 31% of lives saved are women <50 years old
- Financial hardship avoided for >50% of families; 2.1 maternal orphans avoided per life saved
- Survival will increase to approx. 60%; bend curve of mortality rate

Example of investment case



	enaio: Coverage scale-up 296 per year pment, consumables and training ind uded	Total costover 5 years (2022-	Additional costs per	Total cost per	4
Intervention	Cancer	2026)	year in 2026	capita in 2026	2022
	Breast cancer	65, 666, 792	7, 109, 539. 74	_ 0.52	10,597,808
	Cervical cancer	59, 060, 941	5, 925, 143. 07	0.47	9,442,131
	Kaposi's sarcoma	30, 889, 885	605,684.01	0.21	5,935,751
	Colorectal cancer	12,620,662	1, 466, 438.95	0.09	1,407,668
	Prostate cancer	26, 367, 966	2,361,487.31	0.21	4,294,929
Clinical	Gastric cancer	6 , 500, 787	38,498.70	0.04	1,272,197
management of	Acute lymphoblasticle ukemia	3, 389, 291	191,846.65	0.02	601,248
cancer	Hodgkin's lymphoma	103, 526	4,929.83	0.00	18,736
	Burkitt's lymphoma	701, 410	51,956.31	0.01	119,560
	Retinoblastoma	881,163	146,860.47	0.01	118,410
	Wilms Tumour	1, 201, 174	277,193.98	0.01	132,828
	Low grade glioma	82, 769	1,622.92	0.00	15,905
	Total (all cancers)				
	Cervical cancer screening	9, 966, 346	786,819.61	0.08	1678541.325
Publichealth	Early diagnosis	1, 210, 000	242000	0.01	
interventions	Breast cancer screening (pilot) (equipment and training only)	-	4, 284, 000, 00	0.14	
Programme costs	Training Monitoring and Evaluation General Programme Management	- - -		-	535,372,88 1,018,288,40 320,489,47
	Other				8,222,989,06
	Total	54, 369, 214	1,941,757.66	0.38	10,097,139.81
Extra-budge tary	Patient housing		400,000.00		
TOTAL		273,011,926.32	25, 835, 779. 22	2.20	45,732,851





Investing in all childhood cancers combined would entail



MZN 2,387.05 million

Marie Town

and result in







17,677 million lives saved

which translates into an economic gain of

MZN 10,193.82 million

From 2021 to 2059



Making cancer care available



Health financing system



How do we spend it? (economic factors)

- To promote equitable, resource use?
- To manage disease & programmatic priorities?



Where does the money come from? (financial factors)

To ensure sufficient and sustainable financing?

...it depends...





Where does the money come from? And, where does it go?

How is money raised / organized? Core Financing Functions

Raising revenue

- Sustainable, predictable, progressive (ie, tax vs. insurance)
- Equitable and efficient revenueraising

Pooling risk

- Critical for financial risk protection
- Income and risk cross-subsidisation

3 Purchasing services

- What services, from whom and at what price?
- Allocative and technical efficiency

How is money spent? National Health Accounts

I. Ministry of Health budget (direct)

- (a) NCD or cancer programme
- (b) Research activities and/or special initiatives

II. Hospitals services

(unable to disaggregate by service type)

III. Medicines & technologies

(monitor expenditure by product type)

IV. Capital investments

(purchasing new equipment)





Where does the money come from? And, where does it go?

Ta	Pi	rogram	2016-17 \$'000	2017-18 \$'000	2018-19 \$'000	2019-20 \$1000	2020-2 \$'00
	Healthy Heart Initiative - targete Department of Health	ed activit	ties				
	Administered expenses	2.4		7,670	4,634	1,271	1,44
	Total expenses		8	7,670	4,634	1,271	1,44
D	National Cancer Screening Reg Department of Health Administered expenses	pister - tr 2.4	ansition an	angements 34,162			
A		4.1	2,207	(5,812)	157	(73)	9,65
Ai ai	Department of Veterans' Affairs Administered expenses		18	(49)		300	7
	Total expenses		2,703	28,301	157	(73)	9,72

The Government will invest \$10.8 million to fight childhood cancer through research and clinical trials. This includes providing Cancer Australia \$4.4 million aimed at increasing Australia's research capacity to advance diagnosis, treatment, management, analysis, and improve data and awareness of childhood cancer, as well as \$1.4 million to fast track international research collaborations of paediatric brain cancer in Australia. In addition, the Government will provide \$5 million under the Medical Research Future Fund to CanTeen to improve outcomes for children and young people fighting against cancer.

Independent Hospital Pricing

It is estimated that in 2017, breast cancer will become the most commonly diagnosed cancer. Funding of \$64.3 million will continue existing arrangements for women aged 70 to 74 years to participate in the BreastScreen Australia Program,

 National Mental Health Commission
 2,736
 2,736

 Professional Services Review
 5,891
 5,691

How is money spent? National Health Accounts

I. Ministry of Health budget (direct)

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Where does the money come from? And, where does it go?

The Australian Government supports improvements to the health system through strategic investments in health infrastructure, which enable general practices to deliver increased health services and increased opportunities to provide teaching and training for health practitioners.

In the 2017-18 Budget, funding of \$68 million will be provided to the South Australian Government to purchase accelerator equipment and treatment rooms to support the establishment of Australia's first Proton Beam Therapy facility for advanced research and treatment of cancer.

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(monitor expenditure by product type)

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(purchasing new equipment)



Where does the money come from? And, where does it go?



Supporting our hospitals

The Government will deliver an additional \$2.8 billion to public hospitals in this Budget Since the signing of the Council of Australian Governments (COAG)

The Government will spend \$1.2 billion on new and amended listings for the PBS.

well as \$1.4 million to fast track international research collaborations of paediatric brain cancer in Australia. In addition, the Government will provide \$5 million under the Medical Research Future Fund to CanTeen to improve outcomes for children and young people fighting against cancer.

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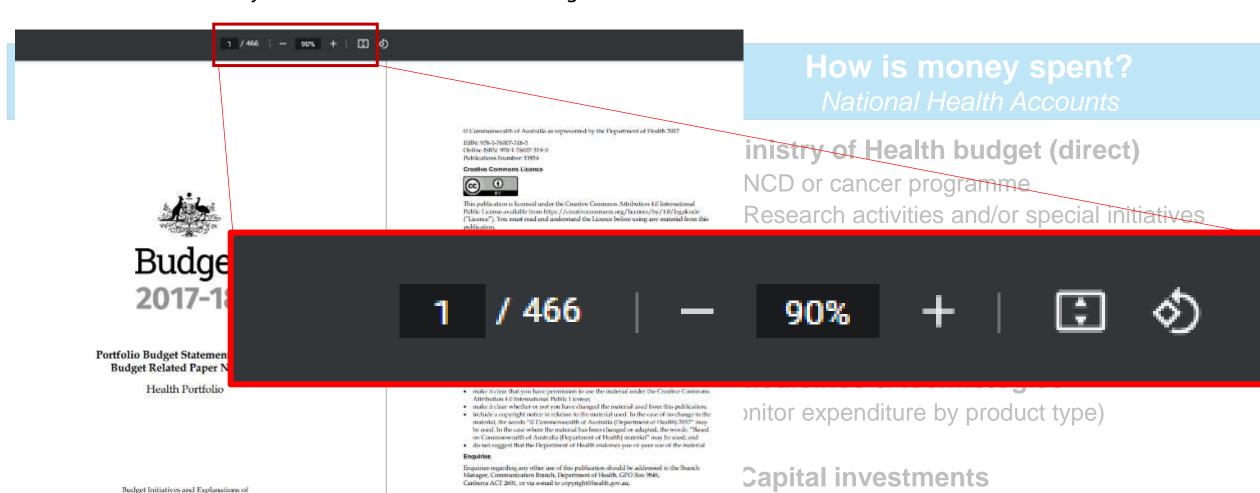
(purchasing new equipment)



Where does the money come from? And, where does it go?

Appropriations Specified by Outcomes

and Programs by Entity

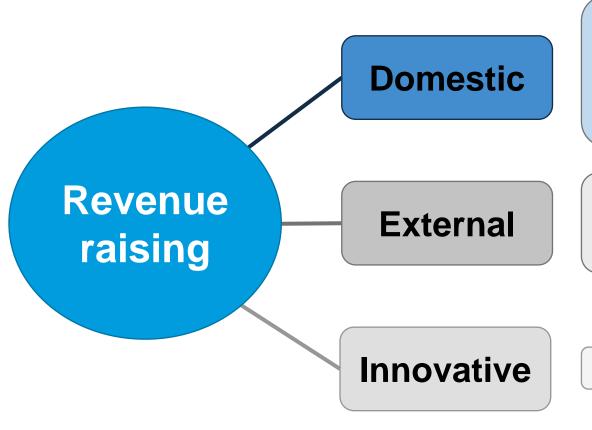


rchasing new equipment)

Sources of funding

World Health Organization

Who is providing the financing?



- (1) Prefinancing:
 - (a) Mandatory (general govern't expenditure)
 - **(b) Voluntary** (eg, private insurer, community-based)
- (2) Out-of-pocket payment
- (1) Loans for national/international banks
- (2) Grants from donors, development assistance
- (3) In-kind support (minor)

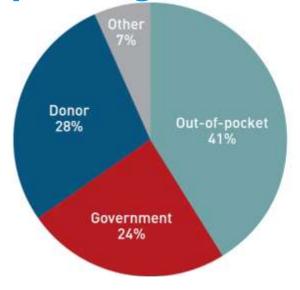
e.g. Innovative financing instruments

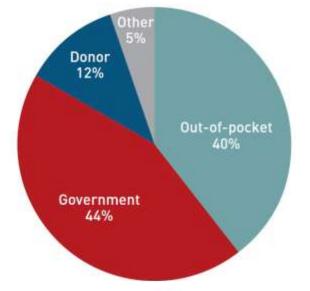




Burden of OOP

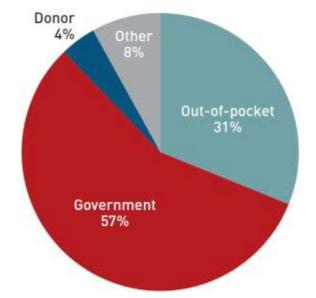
Low income

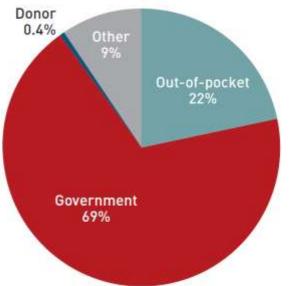




Lower middle income

Upper middle income



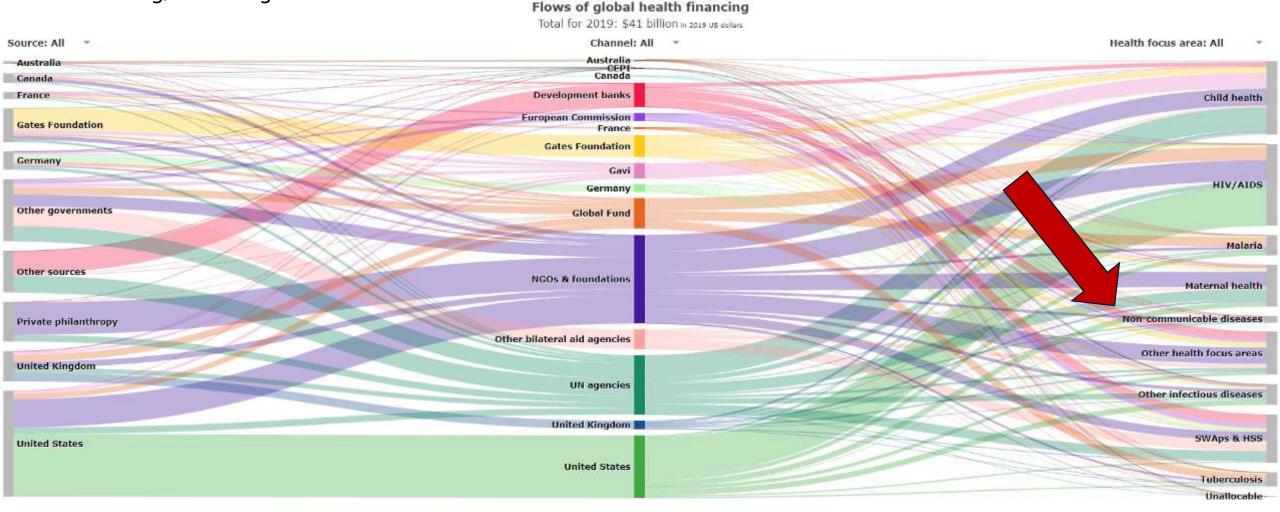


High income





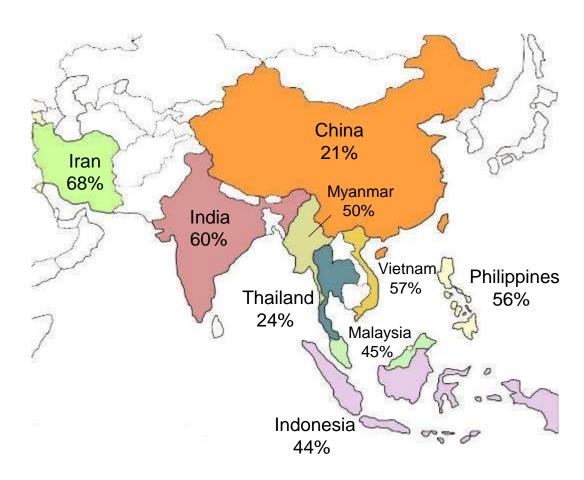
Not coming, not enough



In 2019, \$730 million DAH for NCDs

Financial burden of cancer to households





Financial catastrophe due to the costs of cancer treatment

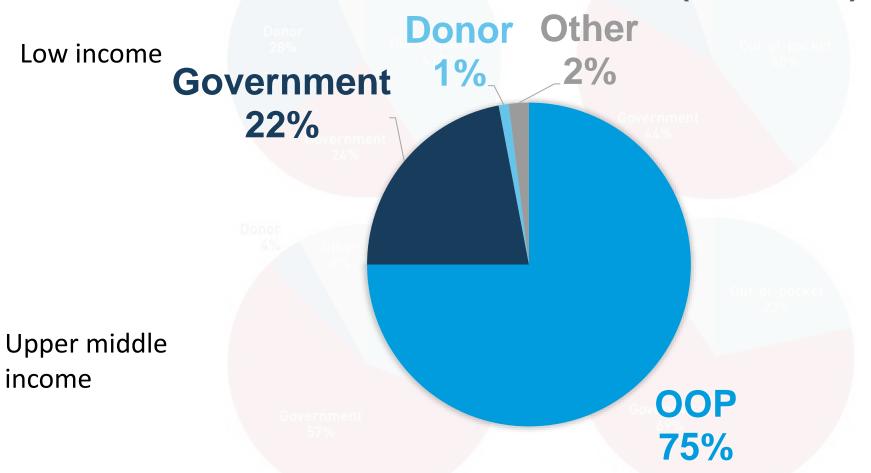
- In many countries, families bear cost of cancer care
- Large out-of-pocket spending puts a heavy burden on families, especially poor
- 50-90% risk of impoverishment due to catastrophic health spending → generational impoverishment.
- 30-80% risk of abandonment

Share of health spending



Burden of OOP

SAMPLE EXPENDITURE (CANCER)



Lower middle income

High income



Social and economic impact of cancer

Cancer negatively affects economies & imposes heavy economic burden

Economy impact: premature mortality, absence from work and lost productivity.

Social impact: psychological and subjective financial distress; >70% experience emotional distress (impact on marriage, child-raising)

But, limited evidence on the macro –and microeconomic impact of cancer. WHO activities:

- Several systematic reviews on economic burden of cancer ongoing
- Update estimates on global economic cost of cancer and investment case (2020 ROI is US\$ 2.30)
- Update EPIC tool to estimate the burden of ill-health (e.g. loss of employment to caregivers)

Who will prioritize implementation science?



Asset estimation

>40,000

Budget \$ 2-7 mil HIC > LMIC

members

Professional societies

>500 centres globally

Budget

\$ <1-5 bil

Cancer centres

>1000 orgs

Budget \$ <1 mil HIC > LMIC

Civil society

10 originator companies

Revenue

\$ 185 bil

per year (†20%)

Private sector

Limited implementation support

SSAN CINEAU SACION

10 national institutes

\$ 10 bil HIC > LMIC

Government research agencies

ODA cancer = \$300 million







Health financing system



How do we spend it? (economic factors)

To promote equitable, resource use?

So, where do we go from here?



Where does the money come from? (financial factors)

To ensure sufficient and sustainable financing?

Guiding principles: governance, capacity building & accountability Organization

Strategies for impact

Foundations for success

Data

Dialogue



Monitor

monitored plan

Governance

28% dedicated staff

Training, capacity building, cost recovery

purchase techn without training

Implementation strategy

operational approach

Threats to impact

	Before plan implementation*	After plan implementation†	p value‡
Absolute change in prevalence of smoking in men,	2000-15§ 24		
All countries (n=59)	-2.1% (4.2)	-1-4% (4-0)	0.17
Tobacco strategy specified (n=53)	-2.0% (4.4)	-1.2% (4.2)	0.07
Tobacco strategy not specified (n=6)	-3.8% (1.4)	-3.3% (1.2)	0.10
Availability of breast cancer screening programme	, 2010–158		
All countries (n=48)	42 (88%)	36 (75%)	0.10
Breast cancer screening strategy specified (n=43)	38 (88%)	34 (79%)	0.70
Breast cancer screening strategy not specified (n=5)	4 (80%)	2 (40%)	0-07
New radiotherapy units acquired per year, 1965–20	01875		
All countries (n=60)	1.9 (2.9)	3.7 (4.8)	0.01
Radiotherapy mentioned (n=33)	2.4 (3.7)	4.9 (5.9)	0.01
Radiotherapy not mentioned (n=27)	1.8 (2.2)	3-9 (4-1)	0-05
Annual change in per person opioid consumption,	1985 2015"		
All countries (n=61)	2.0 (3.1)	4-0 (7-8)	0.05
Strategy for pain management specified (n=38)	1.5 (2.5)	3.1 (5.5)	0.05
Strategy for pain management not specified (n=23)	2.1 (4.1)	4.3 (12.3)	0.20

Guiding principles: governance, capacity building & accountability Organization

Strategies for impact

Foundations for success

Data

Dialogue

making

Monitor

monitored plan

Governance

28% dedicated staff

Training, capacity building, cost recovery

purchase techn without training

Implementation strategy

operational approach

Ra	 	7 27 30 2

Effective cancer strategy requires

- Resources to operationalize
- ✓ MoH focal point
- Infrastructure investment & dedicated workforce

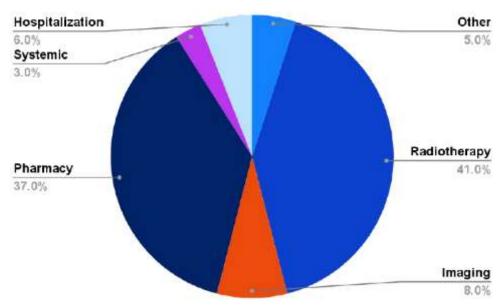
Financing Opportunities

Development bank interest





Revenue Distribution by Service



Additional revenue from R&D and education activities can be generated

Conclusions



Where to go from here

✓ Costing is essential.

Approach should focus on **process**, not outcome: **ownership is important**

- Priority-setting, stakeholder-led "dialogues" foundational to success, founded on "data"
- "Decision": align timing with broader policy discussions (eg, national health plans)
- Priority setting can be done by cancer type and intervention type
- ✓ WHO working with IARC, IAEA, ICCP and others have tools to support.
 - Data-driven decisions are best, based on health systems investments
- ✓ Financing cancer control: requires multi-dimensional dialogues
 Based on need and financing streams (eg, governmental agencies, development banks)
 Must focus on domestic financing for services (external support for equipment)
 Investment cases must show the full social and economic impact of cancer



Thank you

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