

# How can HIPTool support priority setting for health benefits package design?

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**2 March 2021**

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# Overview of HIPtool

# What is HIPTool?

With funding from the Bill and Melinda Gates Foundation, in 2018 we developed the Health Interventions Prioritization tool (HIPTool) to assist countries in the process of defining or updating national health benefits packages

HIPTool is an **allocative efficiency** tool, i.e. it calculates an optimal allocation of available spending across health interventions to maximise desired objectives within available budgets. In HIPTool these objectives are:

- Health maximisation (cost-effectiveness)
- Equity
- Financial risk protection

HIPTool was developed with low- and middle-income countries in mind. It has flexible data requirements and is easy to use (low-barrier to access in terms of resources/ time).

- It can therefore help complement administrative/analytical capacities that are often limited in LICs/LMICs

# How HIPTool works

1. Automatically uploads a country's disease burden
2. Imports best evidence for health program cost and effectiveness
3. Calculates the cost and impact of different interventions/ packages
4. Identifies interventions with greatest estimated impact on burden of disease
5. Estimates an optimal allocation of spending across interventions within an available budget, guided by user-defined weights on maximising cost-effectiveness, equity and financial risk protection

**Note that local stakeholders are key to providing certain inputs and are significantly involved throughout the analysis**

# What does HIPTool look like?

## 1. Automatically load up a country's disease burden from IHME:

Define burden of disease

Project: Demo User: demo

Create new burden set based on Afghanistan

Type here to filter burden sets

Burden set	Select	Created on	Last modified	Actions
Default	Open	2019-Oct-30 12:50:44	2019-Oct-30 12:50:44	Rename Copy Upload Download Delete

Show plots Download plots

Type here to filter diseases (cause names)

Active (283/360)	Code	Cause name	DALYs	Deaths	Prevalence	Actions
<input checked="" type="checkbox"/>	B.9.7	Acne vulgaris	10,609	0	498,665	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	B.8.3	Acute glomerulonephritis	5,023	102	218	<input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/>	A.5.8	Acute hepatitis	47,956	941	209,750	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	A.5.8.1	Acute hepatitis A	12,893	161	114,423	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	A.5.8.2	Acute hepatitis B	28,555	683	84,973	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	A.5.8.3	Acute hepatitis C	4,018	51	3,539	<input type="checkbox"/> <input type="checkbox"/>

## 2. Load a list of recommended cost-effective interventions:

Define interventions

Project: Demo User: demo

Create new intervention set based on Demo

Type here to filter intervention sets

Intervention set	Select	Created on	Last modified	Actions
Default	Open	2019-Oct-30 12:50:44	2019-Oct-30 12:50:44	Copy Rename Upload Download Delete

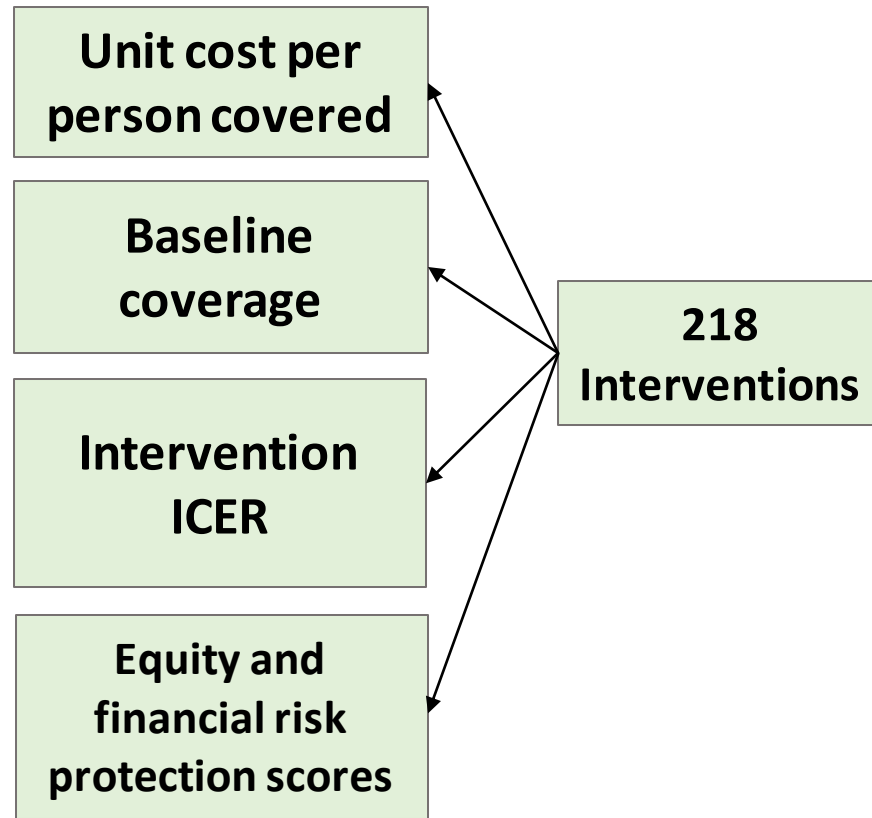
Type here to filter interventions

Active	Intervention name	Delivery platform	Cause of burden (max coverage)	ICER	Unit cost	Spending	FRP	Equity	Actions
<input checked="" type="checkbox"/>	Acute asthma and COPD	First-level Hospital	Chronic obstructive pulmonary disease: 0.0	7,840	106.2	2,914,863	4	1	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	Acute critical limb ischemia	First-level Hospital	Other cardiovascular and circulatory diseases	25,714	552.2	14,519	4	1	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	Acute management of severe vision loss	First-level Hospital	Other vision loss: 0.05	100.00	5.3	0	2	1	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	Acute severe malnutrition	Community	Nutritional deficiencies: 0.119	45,714	47.7	468,042	4	1	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	Acute ventilatory failure	Referral and Specialty Hospital	Asthma: 0.05; Chronic obstructive pulmonary disease: 0.05	7,840	217.9	0	4	1	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	Adolescent-friendly services	Community	Sexually transmitted infections excluding HIV	441.42	4.2	118,575	3	2	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	Antenatal and postpartum care	Community	Maternal disorders: 0.025; Neonatal disorders: 0.025	441.42	0.2	6,923,545	3	1	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	Appendectomy	First-level Hospital	Appendicitis: 0.357	441.42	161.2	209,964	6	1	<input type="checkbox"/> <input type="checkbox"/>
<input checked="" type="checkbox"/>	ART care for PLHIV	Health Center	HIV/AIDS: 0.029	91,429	196.5	6,196	5	1	<input type="checkbox"/> <input type="checkbox"/>

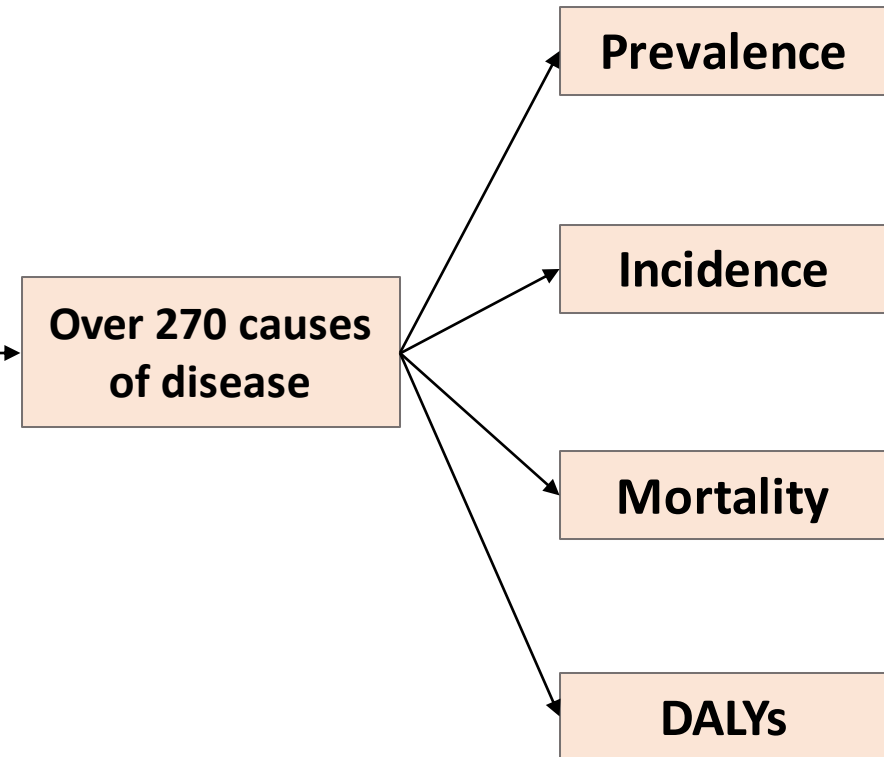
Users can update the burdens of disease and interventions using **local data**

# Input data

DCP3 Essential Universal Health Coverage (EUHC) package and other published sources



IHME, Global Burden of Disease



Users can update the burdens of disease and interventions using **local data**

# Health Interventions Prioritization tool (HIPtool): Incremental optimization

## Step 1: Interventions ranked from most to least cost-effective

Intervention	Delivery platform	Cost per DALY averted	
Childhood vaccination series (DPT, polio, BCG, measles, Hep B, Hib, rubella)	C	13	
Detection and management of SAM and referral if complications	C	32	
Hernia repair including emergency surgery	FLH	33	
Surgery for trachomatous trichiasis	RH	43	
Immediate ART initiation with regular monitoring of viral load for PLHIV	HC	64	
Counseling of mothers on providing kangaroo care for newborns	HC	237	
Surgery for ectopic pregnancy	FLH	322	
Retinopathy screening and treatment using laser photocoagulation	RH	631	
HIV testing/counseling (mobile units and venue-based testing) with referral	C	2,400	
Screening and management of albuminuric kidney disease (ACEi or ARBs)	HC	4,813	
Assessment, provision and training in the use of assistive products	FLH	7,163	

C=Community; FLH=First level Hospital; HC=Health Centre; RH=Referral and Specialty Hospital

# Health Interventions Prioritization tool (HIPtool): Incremental optimization

## Step 2: Maximum potential impact\* of interventions provides limits for the optimization

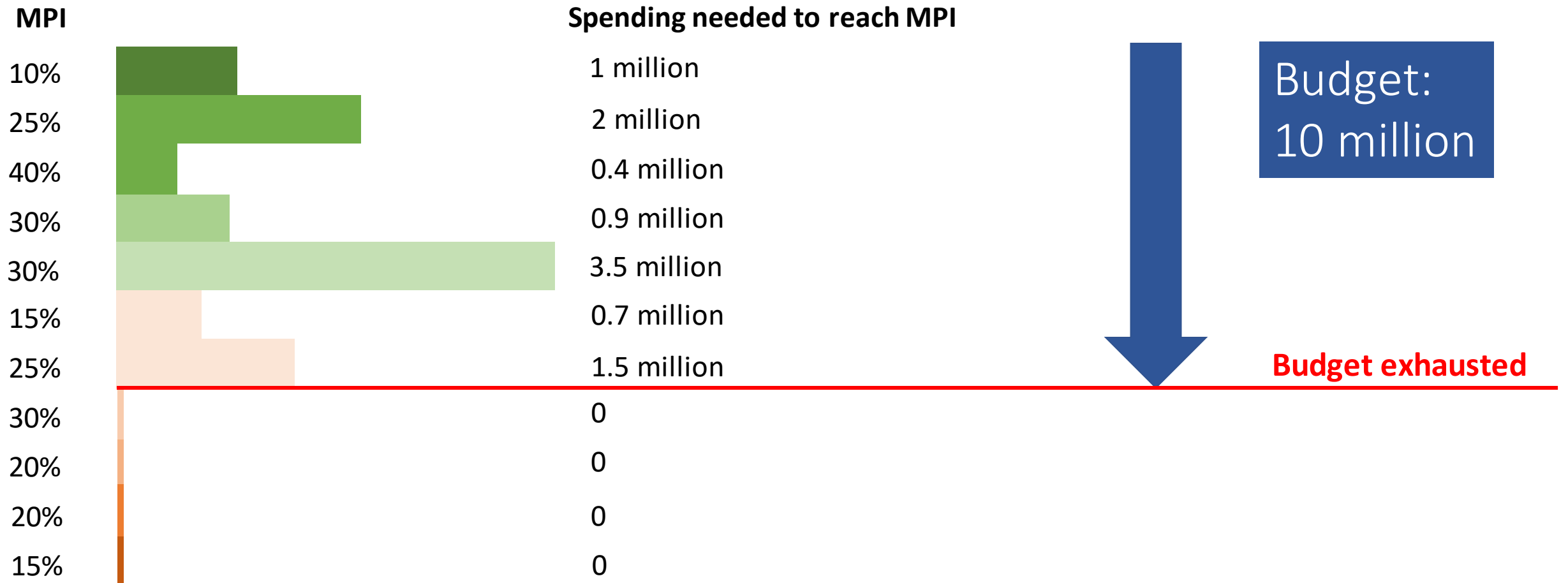
	MPI	GBD causes of disease in terms of DALYs
Intervention 1	10%	Diphtheria, pertussis, tetanus, polio, TB, measles, Hep B, Hib, rubella
Intervention 2	25%	Severe acute malnutrition
Intervention 3	40%	Hernias
Intervention 4	30%	Trachoma
Intervention 5	30%	HIV/AIDS
Intervention 6	15%	Neonatal disorders
Intervention 7	25%	Ectopic pregnancies
Intervention 8	30%	Retinopathy (due to diabetes)
Intervention 9	20%	HIV/AIDS
Intervention 10	20%	Kidney disease
Intervention 11	15%	Hearing/vision loss

\*The MPI of interventions is defined as the % of existing DALYs targeted that the intervention can avert



# Health Interventions Prioritization tool (HIPtool): Incremental optimization

**Step 3: The tool maximizes spending on interventions until the budget is exhausted**



Spending allocated to an intervention = (MPI x BoD addressed) \* cost per DALY averted

# Where/how has HIPTool been applied?

HIPTool is being/has been applied in several countries including:

- Afghanistan
- Armenia,
- Côte d'Ivoire
- Honduras
- Pakistan
- Zimbabwe

The tool has also been used to conduct a multi-country allocative efficiency analysis using available secondary data for 28 Sub-Saharan African region countries

# Limitations

Availability of data is limited

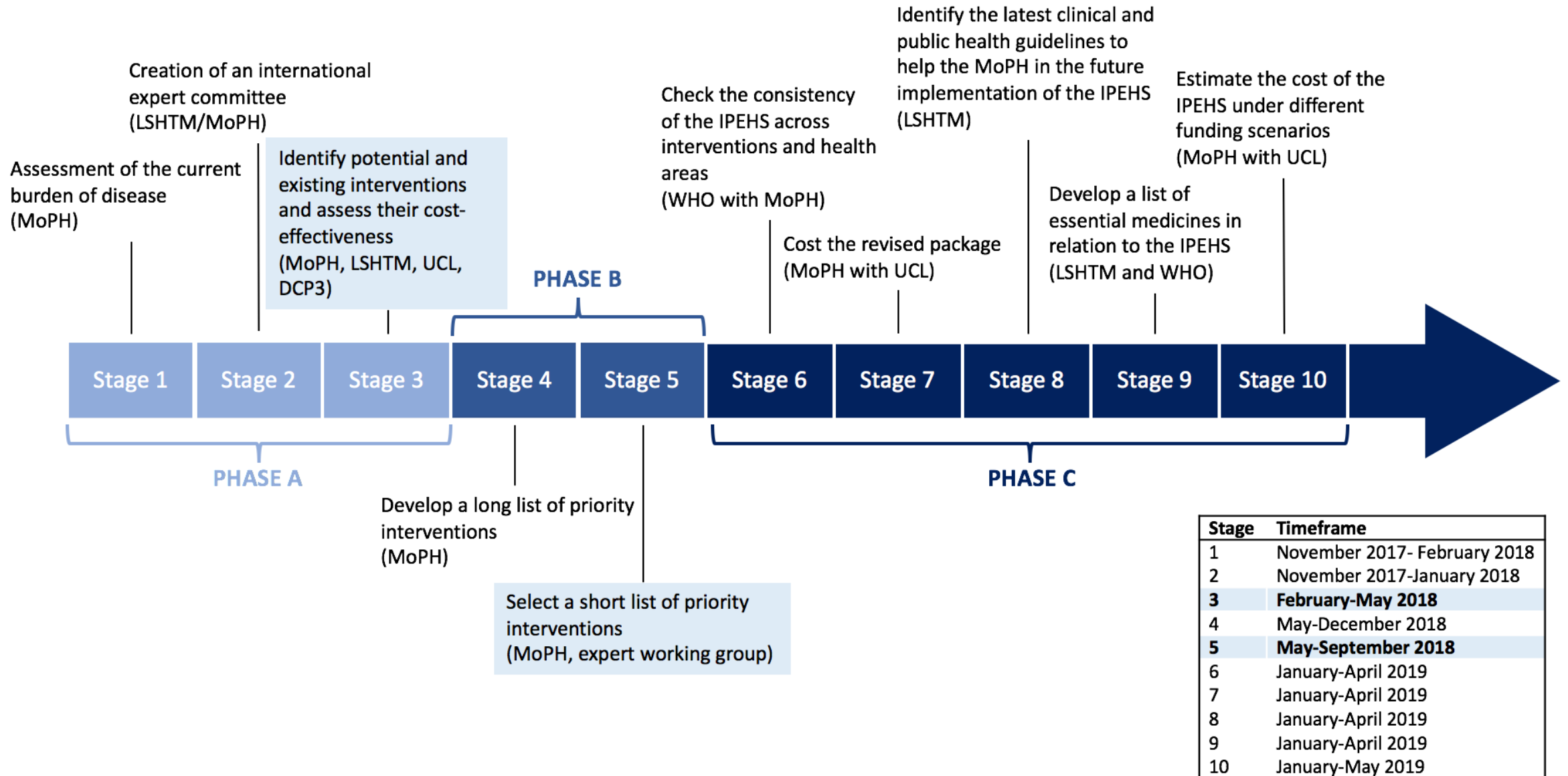
- EUHC intervention list not comprehensive
- Links between some EUHC interventions and GBD causes
- ICERs often point estimates rather than ranges and need for disaggregated cost and effect data
- Availability of data to inform MPI

Linear relationship between cost and impact?

Static model with instantaneous impact and no interaction between interventions considered...but doing so would increase complexity and data needs

Country application: Afghanistan

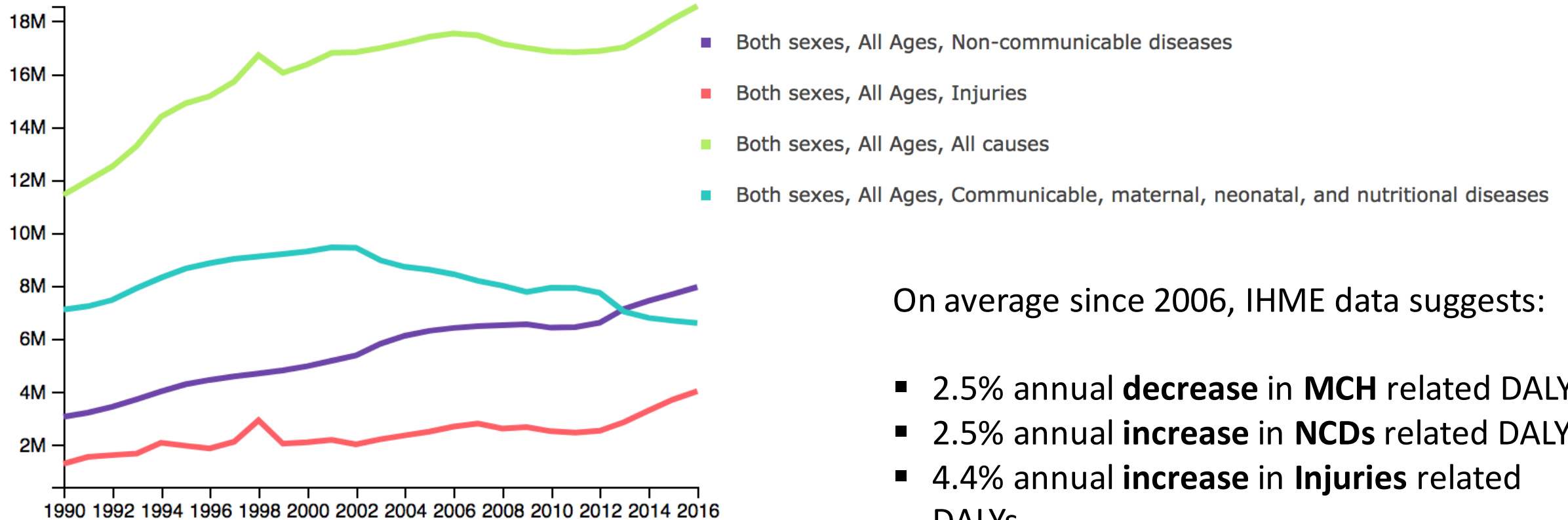
# How was HIPTool applied in Afghanistan?



# An applied case study using HIPTool: Afghanistan (i)

## What is the current burden of disease?

**DALYs (Disability-Adjusted Life Years), number**

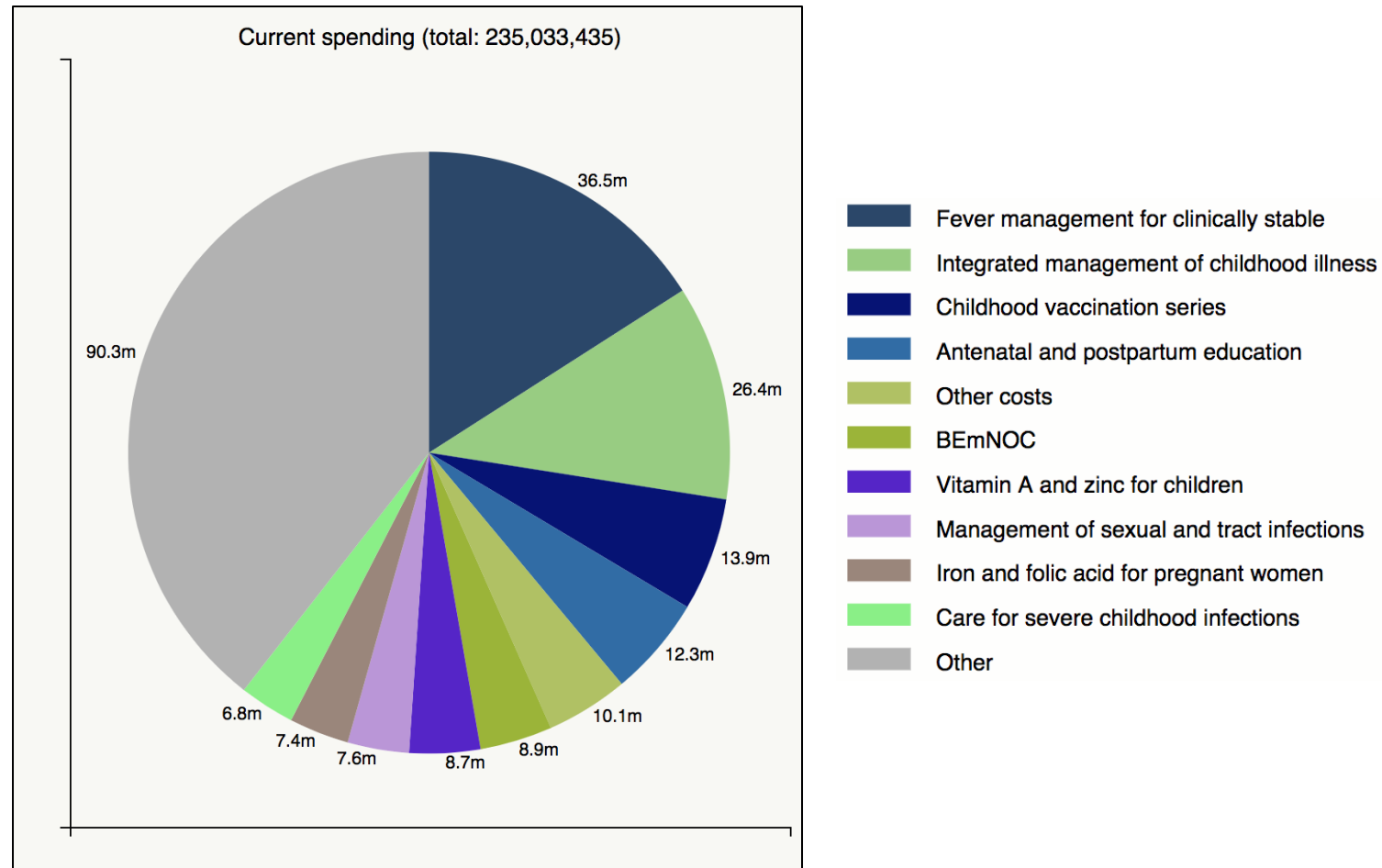


On average since 2006, IHME data suggests:

- 2.5% annual **decrease** in **MCH** related DALYs
- 2.5% annual **increase** in **NCDs** related DALYs
- 4.4% annual **increase** in **Injuries** related DALYs

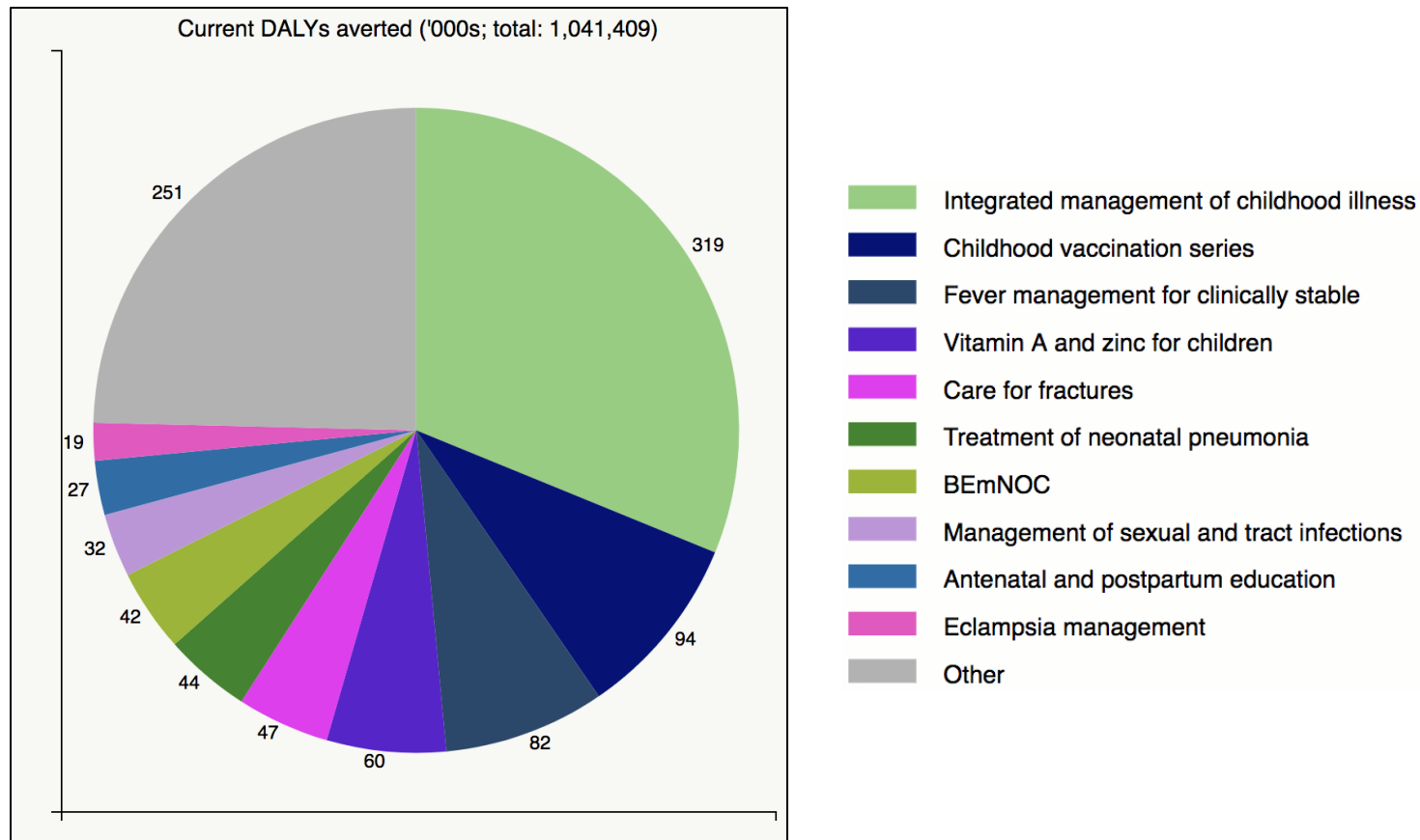
# An applied case study using HIPTool: Afghanistan (ii)

## How is spending allocated across interventions included in HBP?



# An applied case study using HIPTool: Afghanistan (iii)

**How much health\* does the current allocation of spending across interventions in the existing HBP generate?**

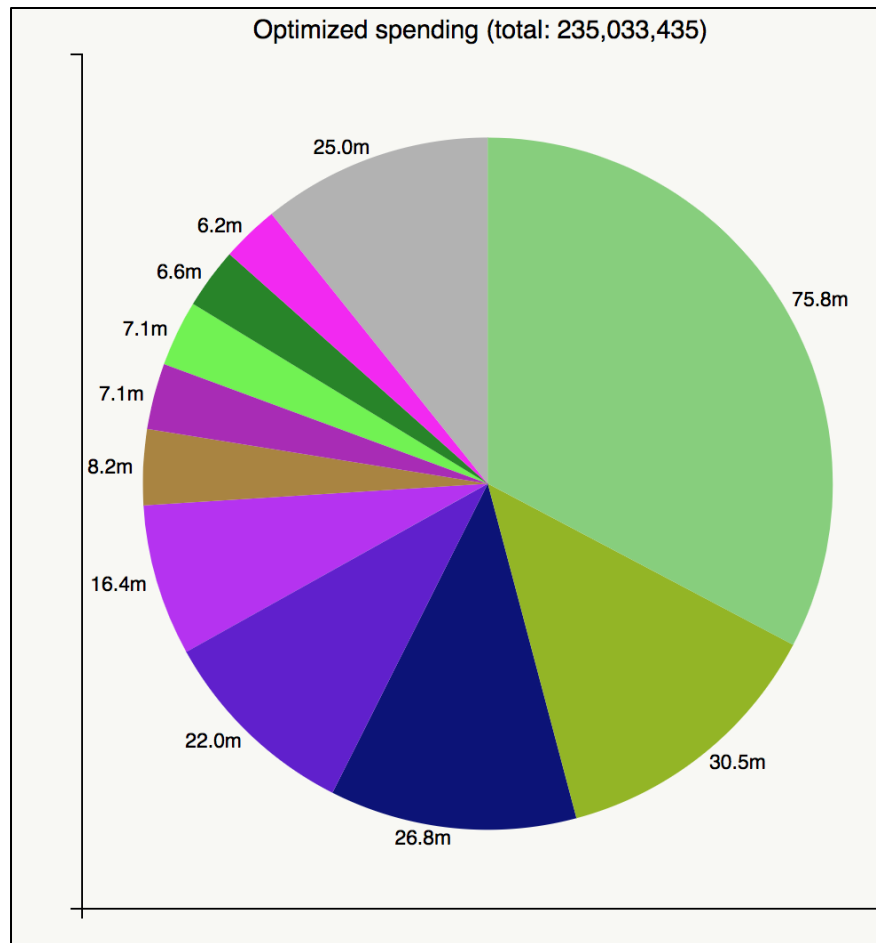


*\*Health represented as averting a composite measure of disability and mortality called Disability Adjusted Life-Years (DALYs).*



# An applied case study using HIPTool: Afghanistan (iv)

**What might an optimal allocation\* of spending and mix of interventions look like for this context?**

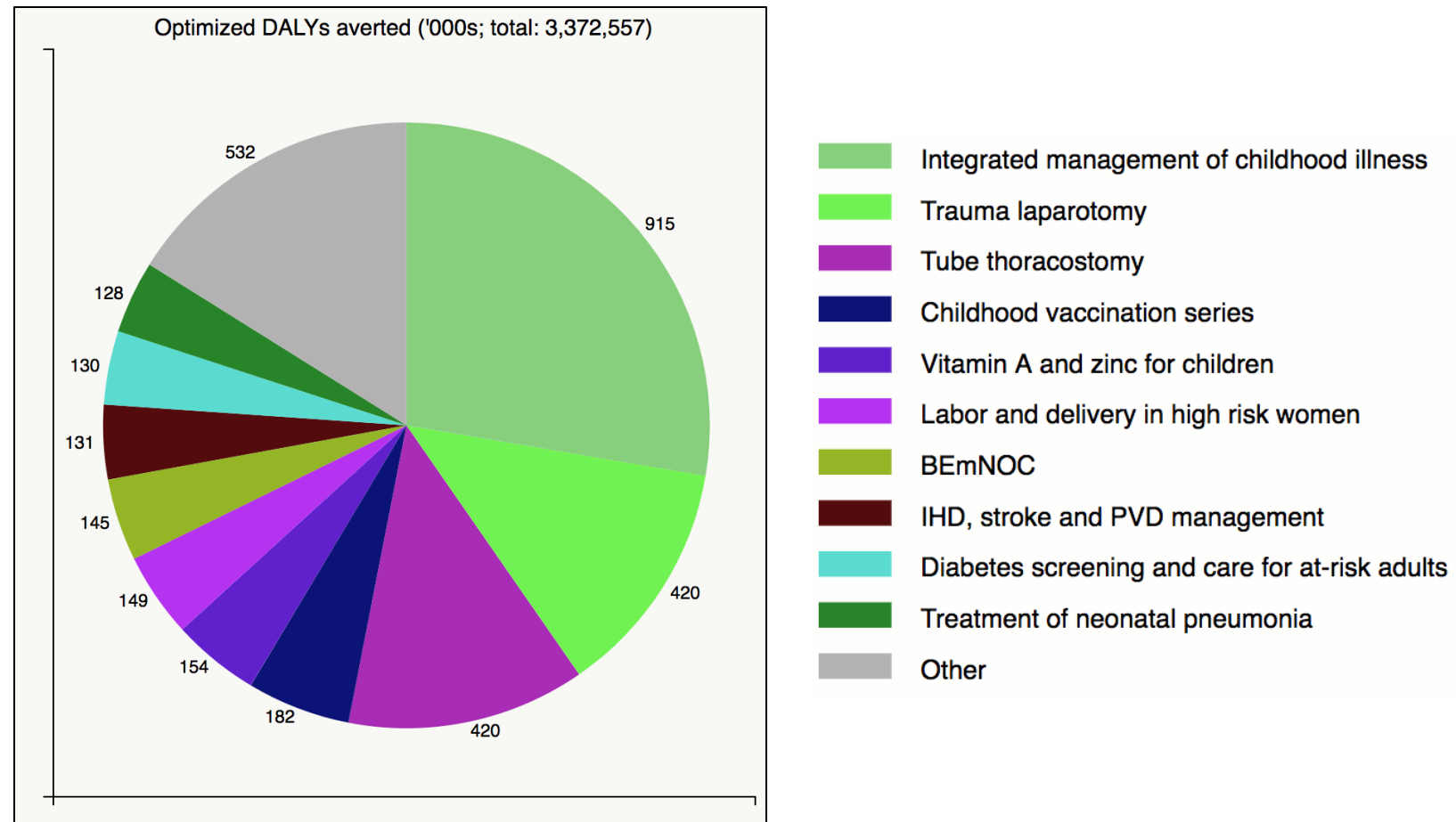


- Integrated management of childhood illness
- BEmNOC
- Childhood vaccination series
- Vitamin A and zinc for children
- Labor and delivery in high risk women
- Epilepsy management
- Tube thoracostomy
- Trauma laparotomy
- Treatment of neonatal pneumonia
- Care for fractures
- Other

\*Only cost-effectiveness was considered in this analysis

# An applied case study using HIPTool: Afghanistan (v)

**How much health\* could an optimal allocation of spending across interventions in a revised HBP generate?**



\*Health represented as averting a composite measure of disability and mortality called Disability Adjusted Life-Years (DALYs).

# An applied case study using HIPTool: Afghanistan (vi)

## Key policy recommendations:

- NCDs and injuries represent the majority of the country's burden of disease and are increasing
- While significant improvements have been made in MCH, there is disproportionately little focus on NCDs (especially mental health and CVDs) and injuries
  - There is a mismatch between spending focus/impact and burden of disease
- A revised HBP and spending on highly cost-effective interventions that are more aligned with burden of disease could buy significant gains in health
  - MCH spending is mostly maintained, with marginal shifts of spending to life-saving and high disability-averting interventions that address NCDs and injuries

Summary/walkthrough

# Summary

HIPTool has been applied in several countries to support priority setting/ health benefits package design

Can feed into different stages of a priority setting process and is intended to provide timely directional results on investments/what to prioritise

Global evidence is preloaded in the tool and accompanying spreadsheet, but can be overwritten with local data depending on availability

Simple charts in addition to excel output sheet to generate figures as needed

# Walkthrough

<http://app.hiptool.org/#/login>