



DISEASE CONTROL
PRIORITIES PROJECT



*The How and Why of Cost-Effectiveness
Analysis (CEA) in Disease Control
Priorities in Developing Countries*

*Disease Control Priorities in East Africa,
Dar es Salaam, 21-23 August 2007*

Philip Musgrove, DCP2 Editor

INVESTING IN GLOBAL HEALTH “BEST BUYS” AND PRIORITIES FOR ACTION IN DEVELOPING COUNTRIES

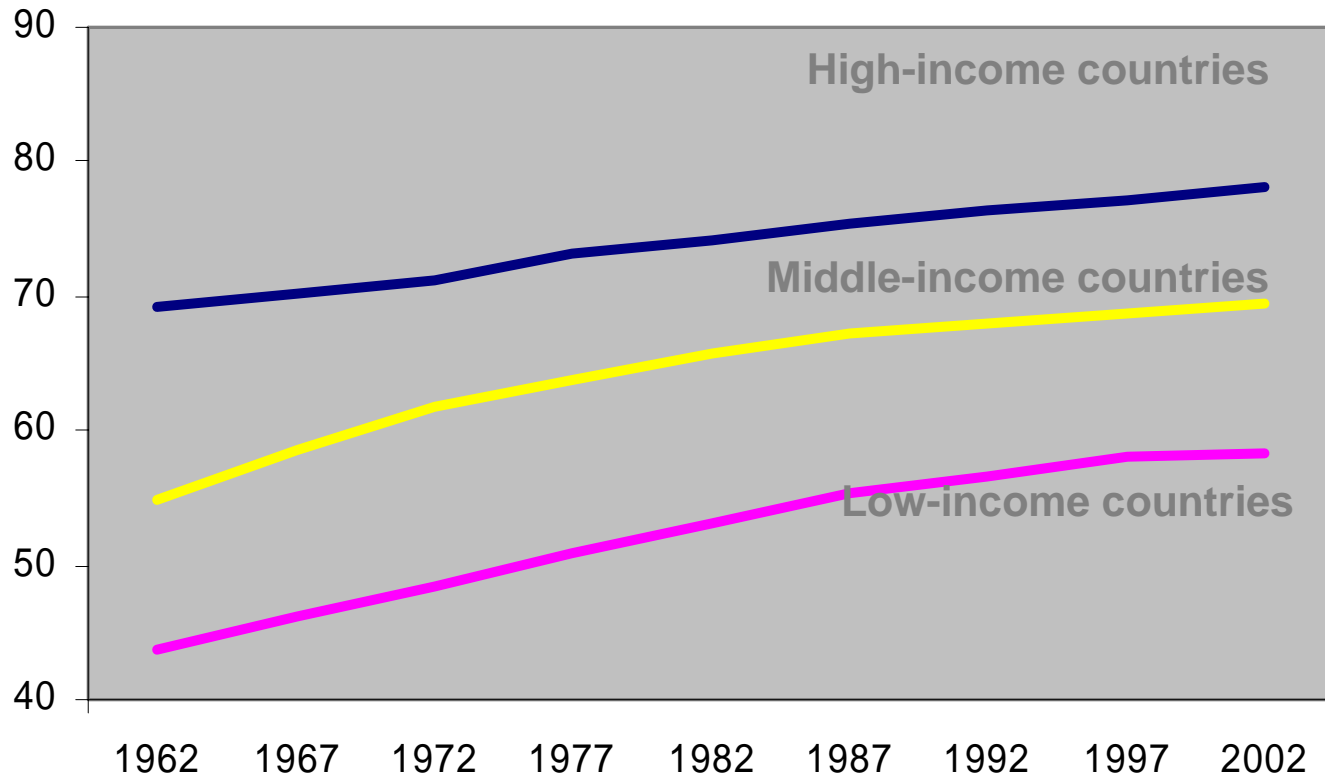
www.dcp2.org

What is DCPP ?

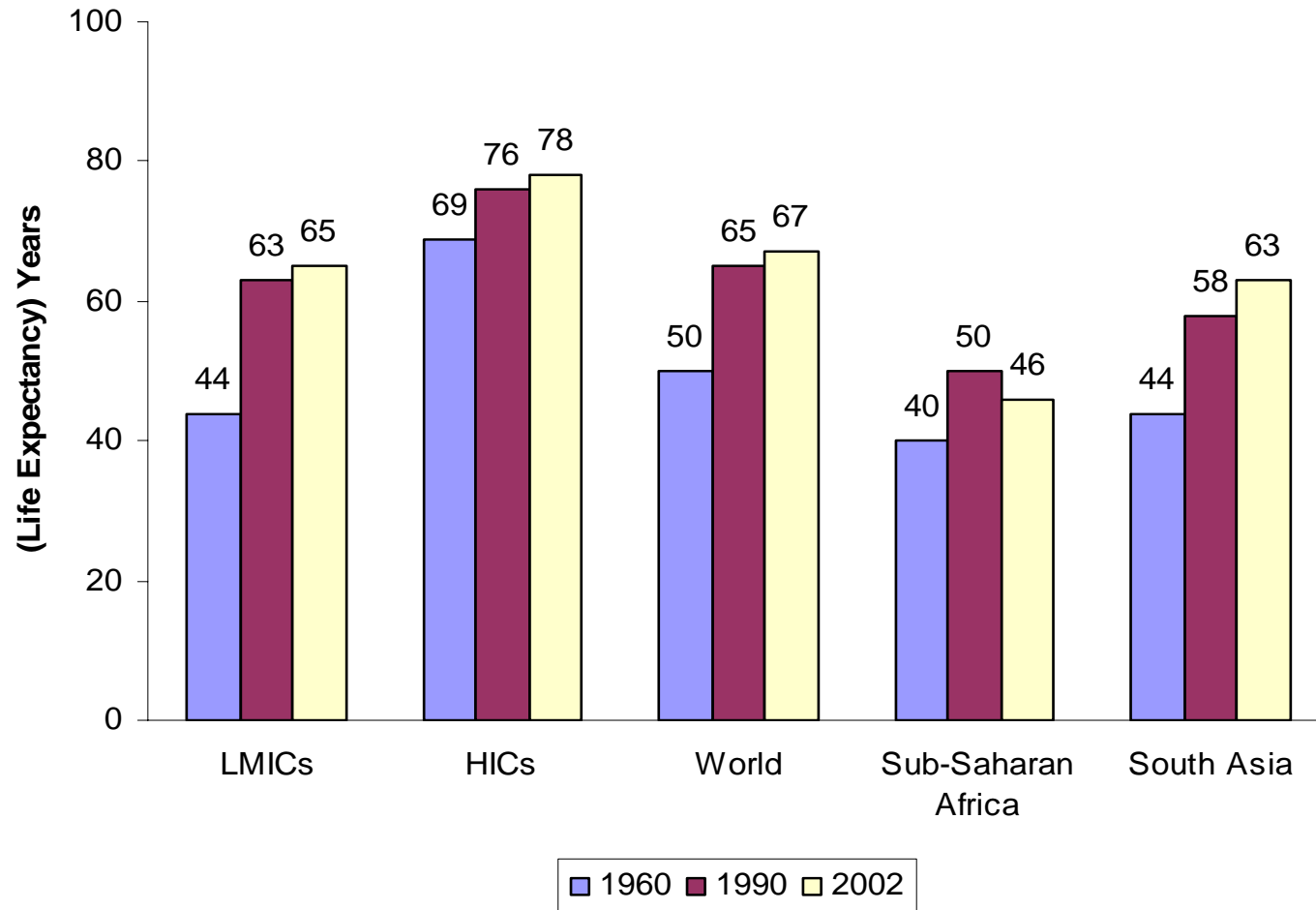
The Disease Control Priorities Project is a collaboration among WHO, the World Bank and the US National Institutes of Health, supported by the Bill and Melinda Gates Foundation. More than 300 experts have produced 73 chapters of analysis and advice on priorities for intervention against health problems

There has been dramatic improvement in health in the 20th century...

Life Expectancy (years)

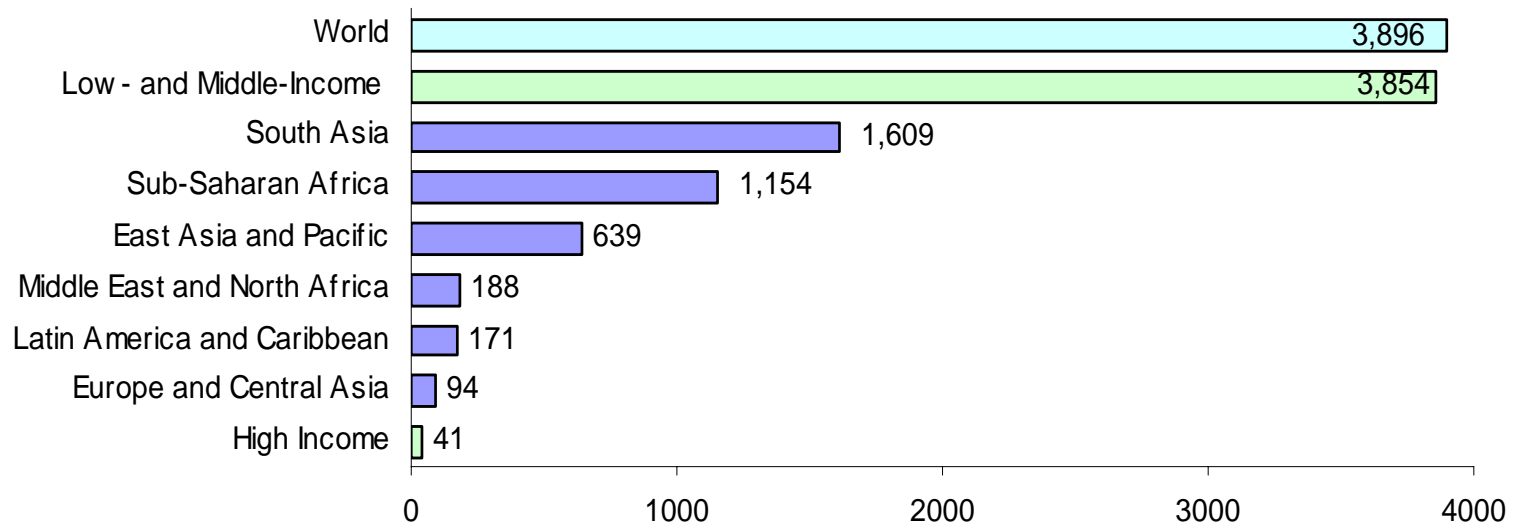


But progress has been uneven



Despite the existence of effective and inexpensive interventions, more than 4 million newborns die each year, especially in South Asia.

Number of Neonatal Deaths (thousands), 2001



Major causes of death (> 1.0% of total deaths) and disability (> 1.0% of total DALYs) in sub-Saharan Africa, 2001

Cause	Deaths		DALYs	
	000s	%	000s	%
Tuberculosis	317	2.93	8,084	2.34
STDs			3,842	1.11
HIV/AIDS	2,058	18.99	56,820	16.48
Diarrheal disease	712	6.60	22,046	6.39
Childhood cluster	745	6.87	23,198	6.73
Malaria	1,093	10.09	35,447	10.28
Tropical cluster			4,897	1.42
Lower respiratory	1,080	9.97	30,455	8.83
Maternal conditions	237	2.19	9,743	2.83
Perinatal conditions	573	5.29	20,047	5.81
Protein-energy malnutrition			5,220	1.51
Cancers	409	3.77	6,281	1.82
Neuropsychiatric conditions			15,151	4.39
Cataracts			5,169	1.50
Ischemic heart disease	343	3.17	4,579	1.33
Cerebrovascular disease	355	3.28	5,125	1.49
Respiratory diseases	477	4.40	6,150	1.78
Congenital anomalies			3,441	1.00
Road traffic accidents	121	1.12	6,374	1.85
Violence	141	1.30	4,090	1.19

These are the health problems that remain, after numerous successes—

Smallpox eradicated

Polio controlled, potentially eradicable

River blindness greatly reduced

and Millions Saved from other health scourges (malnutrition, trachoma, etc.)

Factors common to the successes—

*A clearly identified health **problem**;*

*A specific effective (and cost-effective) **intervention** (sometimes more than one);*

*A decision to give **priority** in resources and attention to the problem*

Can these factors be replicated ?

With so many remaining health problems for a country to deal with—

How to decide what to **emphasize** ?

What criteria to use to set **priorities** ?

How to make a priority **effective** ?

Setting Priorities can refer to--

- Deciding on uses for additional resources (e.g., funds from GFATM)
- Re-allocating resources from current budget, for *different* actions or goals
- Re-allocating resources from current budget, for different ways to achieve the *same* actions or goals

Priorities can be set along any of several different *dimensions*—

Geographic (regions of a country)

Overall disease burden (all diseases)

Specific diseases or conditions

Population groups (MCH, IMCI, etc.)

Programs (one disease or a cluster—
e.g., immunization)

Facilities or levels of the health system

Other (level or type of personnel) ?

An East African example:

The Tanzania Essential Health Interventions Project (TEHIP) combined two dimensions—
Geography (regions) and
Disease Burden (deaths)—
and re-allocated funds accordingly

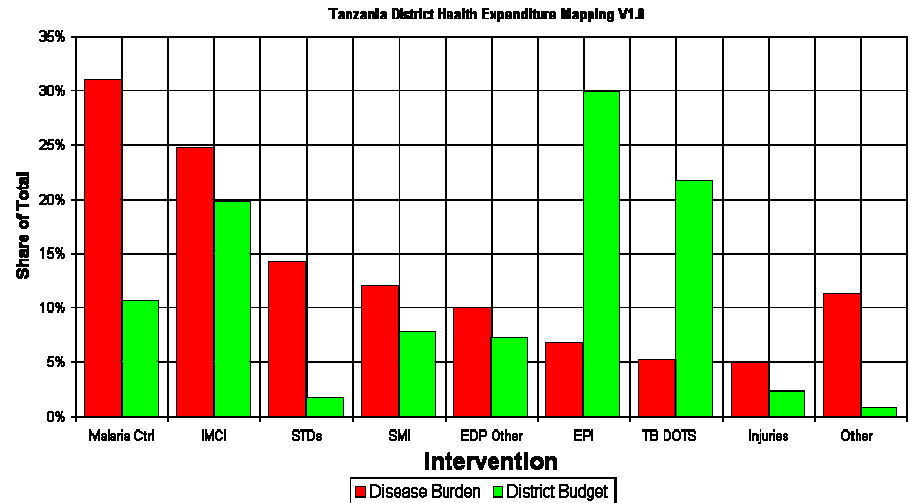
THE TANZANIA ESSENTIAL HEALTH INTERVENTIONS PROJECT (TEHIP)

(de Savigny et al 2004)

- Provided tools for district level decision makers to influence resource allocation
- Linked burden of disease data with expenditure on interventions
- Showed improved match between disease burden and district budget

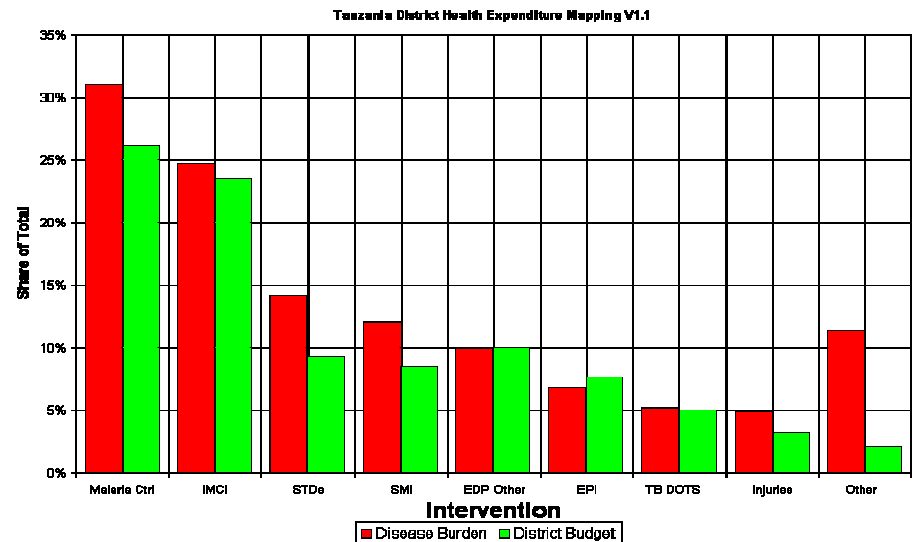
Intervention Expenditure Shares
Moro Rural District Health Plan 1996-97

[Return to Graph Menu](#)



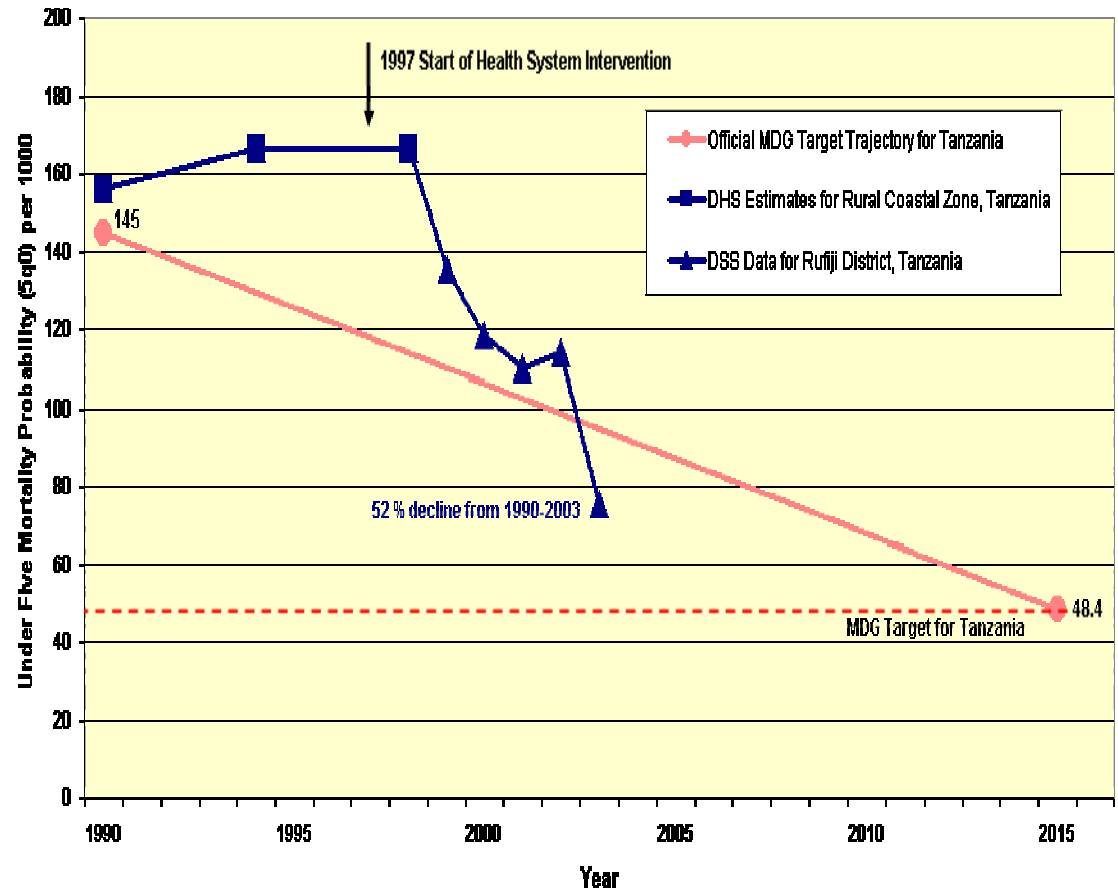
Intervention Expenditure Shares
Morogoro Rural District Health Expenditure 00-01

[Return to Graph Menu](#)



THE CONTRIBUTION OF TEHIP TO IMPROVED HEALTH OUTCOMES

Reversing the Trend in Child Mortality
Impact of District Health System Interventions in Rufiji District Tanzania



Every priority-setting decision,
To be **effective**, implies either or both of:

A decision about budgeting—where is
the money to go ?

A decision about activities/interventions
--what is the money to buy ?

The key question: How many years of healthy life can \$1 million buy?

In a developing country, the answer is:

- a) 100
- b) 1,000
- c) 10,000
- d) 1 to more than 100,000

Vocabulary: some terms to define—

Burden of Disease

Healthy Life Years

Intervention

What is the “Burden of Disease” ?

A synthetic measure of the total health loss in a population due either to **premature death** or to non-fatal **disability**

The loss due to death is measured by the number of years a person might have lived beyond that **age**

The loss due to disability is measured by the **severity** and **duration** of the disability from the age at **incidence**

Age, duration and severity are the key parameters

DCPP measures healthy life years by a specific unit, Disability-Adjusted Life Years (DALYs)

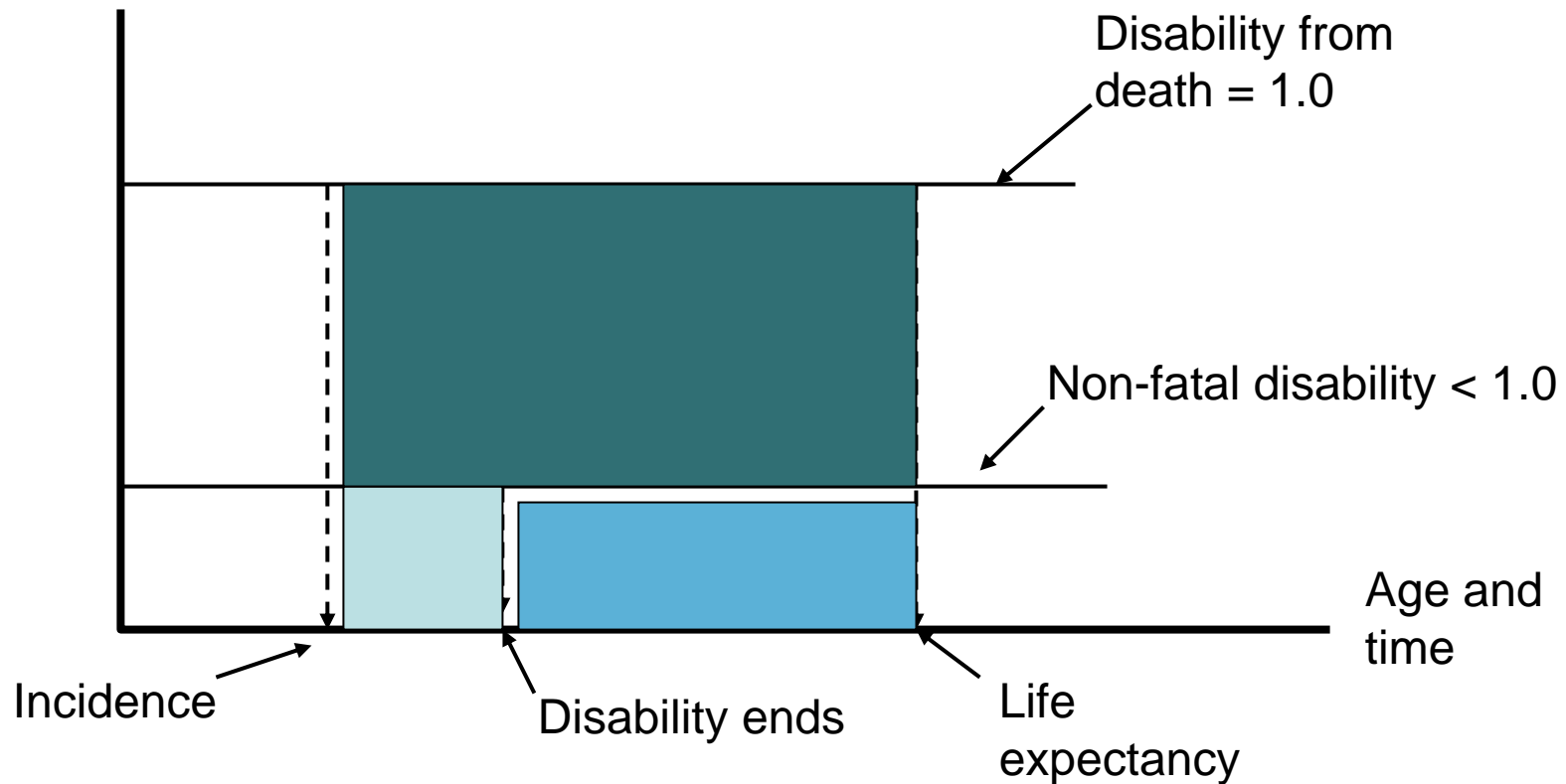
Years of life lost to premature death = the difference between the age at death and the life expectancy at that age, differentiated by sex

A year of life is of equal value at every age

Years of life affected by a disability are adjusted by a disability weight, which varies from one condition to another (blindness, depression, etc.) but is the same for all people with that condition.

Burden of disease from death or disability as a function of age, duration and severity

Value of a year of life





Burden from temporary, non-fatal disability
(ends before expected age at death)



Additional burden, if the disability is
permanent (lasts until expected age of
death)

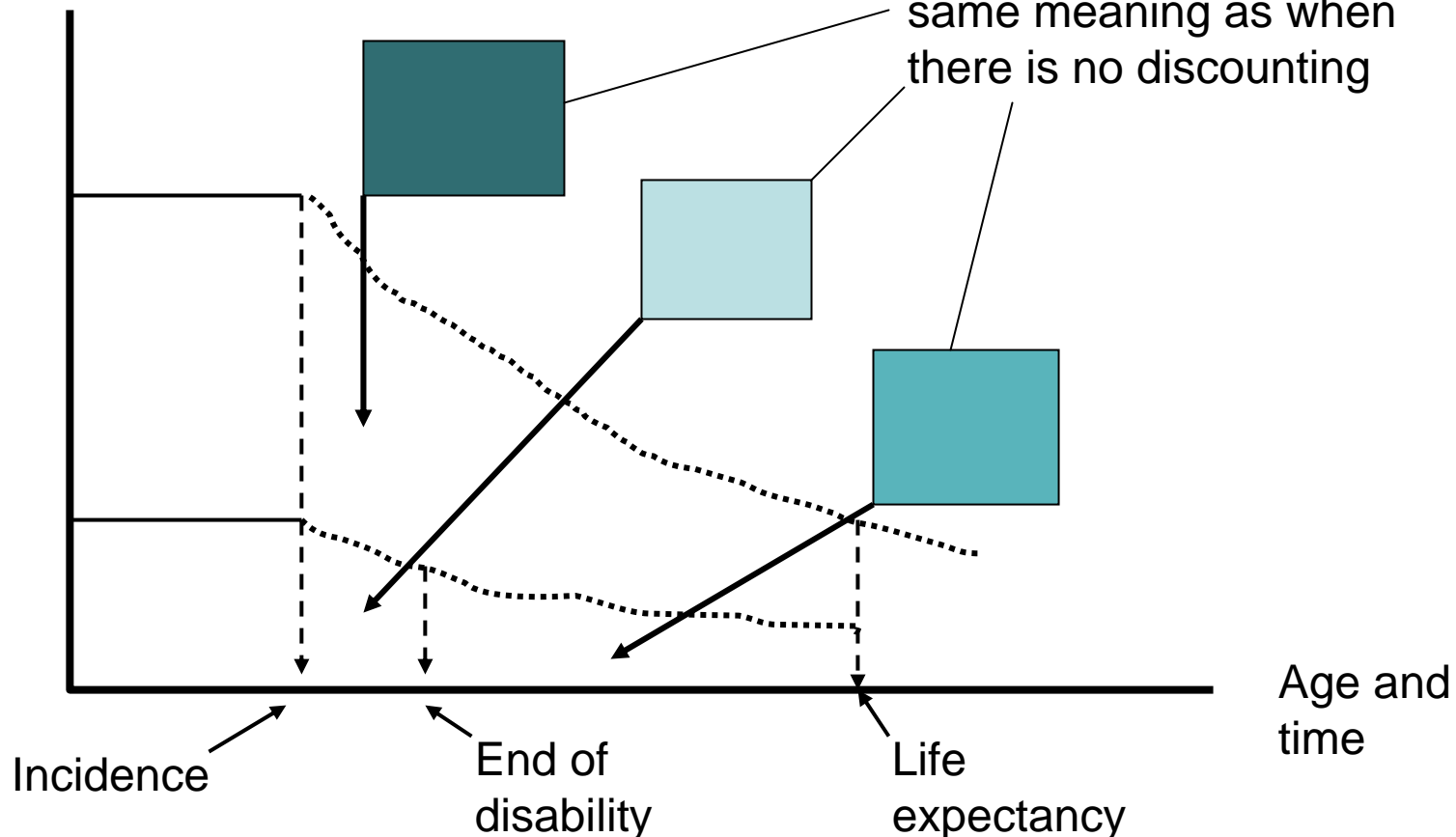


Additional burden from death (total
burden from death is represented by all
three areas together)

Burden of disease from death or disability when the future is discounted from the time of incidence (DCPP uses a discount rate of 3% per year) for burden, cost and effect of an intervention)

Value of a year of life

These areas have the same meaning as when there is no discounting



Effect of Discounting on Life Expectancies				
	Standard		Discounted at 3 %	
Age	Males	Females	Males	Females
0	80.00	82.50	30.31	30.53
5	75.38	77.95	29.86	30.12
15	65.41	68.02	28.65	29.00
30	50.51	53.27	26.01	26.59
45	35.77	38.72	21.93	22.90
60	21.81	24.83	16.01	17.51
70	13.58	16.20	11.15	12.83
80	7.45	8.90	6.67	7.81
90	3.54	4.25	3.36	3.99
100	1.46	2.00	1.43	1.94

The estimated burden of disease reflects all the assumptions about:

life expectancy at each age;

relative severity of disability; and

discounting the future.

All these assumptions are defensible, but all can be modified

What do we mean by “intervention” ?

An ***intervention*** is a deliberate action, using one or more resources, intended to improve health, and not undertaken by the patient or beneficiary

To stop smoking is ***not*** an intervention

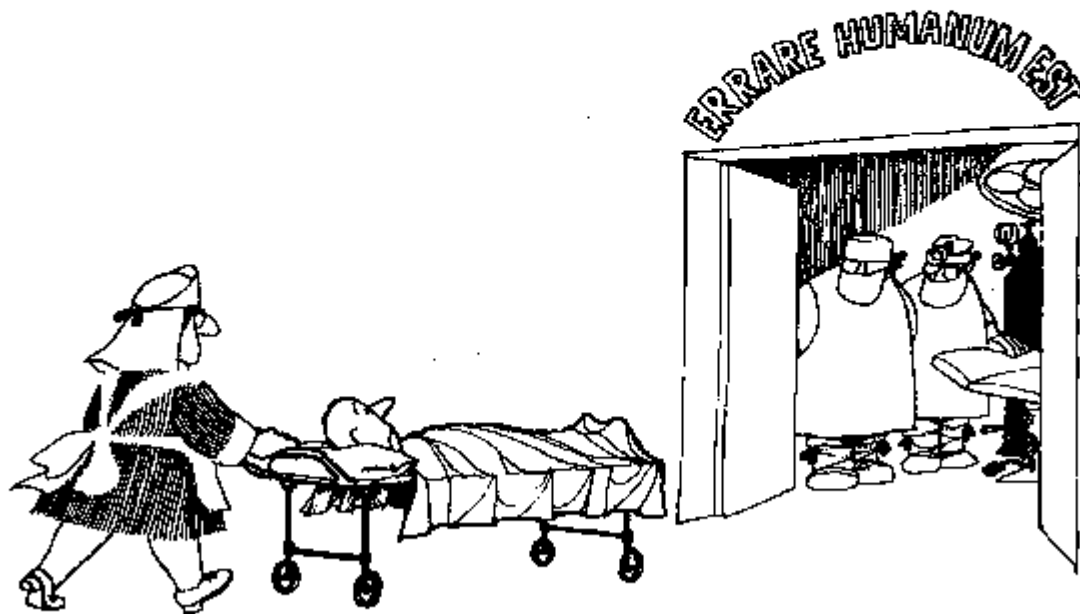
To make an effort to persuade people to stop smoking ***is*** an intervention

Different kinds of interventions

**Interventions aren't always medical--
they can:**

- ***Change*** how an intervention is delivered (particularly to improve efficiency of resource use, reduce waste)
- ***Improve*** the quality of the intervention (often the most important thing to do, if quality is low)
- ***Introduce or modify*** laws or regulations
- ***Impose*** economic incentives (prices, taxes, subsidies)

The objective of interventions to improve quality is to reduce medical errors...



Because interventions can differ so much in kind—

Costs can be very different, and paid in different ways or by different people

There may be substantial health effects without changing the name or the objective of the medical intervention

The best health interventions:

- Target major causes of death, disability and illness;
- Are cost-effective; and
- Can be scaled up at reasonable cost.

*End of Day 1
Presentation*