

# Costs and cost-effectiveness of interventions for chronic diseases of older adults

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Organization**

# Overview

- **Costs** (economic / financial burden to health system and beyond)
  - costs to whom? - private households, public services
  - scope / range of costs? - health, welfare)
  - implications for government (future budgets)
  
- **Cost-effectiveness** (efficiency of different care & prevention strategies)
  - Identifying best buys for key contributors to disease burden in older adults
  - Comparative intervention cost-effectiveness (across diseases and age groups)
  - efficiency : equity trade-offs (ethical considerations)

# What are the economic consequences of ill-health as we age? Who do the costs fall on?

	<i>Care costs</i>	<i>Productivity costs</i>	<i>Other costs</i>
<b><i>Patient</i></b>	Treatment & service payments	Work disability Lost earnings	Pain & suffering Side-effects
<b><i>Family</i></b>	Informal caregiving	Time off work	Carer burden
<b><i>Employers</i></b>	Contributions to treatment & care	Reduced productivity	-
<b><i>Society</i></b>	Health / welfare services (tax / insurance)	Reduced productivity	Stigma?

# Cost-effectiveness analysis

## Costs

### Programme-level:

- administrative staffing
- training
- drug supply / distribution

### Individual-level:

- treatment (drugs, therapy)
- inpatient care
- outpatient & primary care
- ancillary care

### Intervention populations:

(enhanced care or new treatment)

vs

### Non-intervention populations:

(usual care or no treatment)

## Consequences

### Programme-level / intermediate:

- detection
- referral
- treatment rates / quality

### Individual-level / final:

- morbidity
- mortality
- QALY, DALY (composite indices)

# Approaches to cost-effectiveness analysis

- Alongside (long-term) prospective studies
  - observational
  - experimental
- Modelling
  - decision analytic methods (e.g. 5-year cohort incidence model)
  - population-based disease modelling (e.g. WHO-CHOICE)

# CHOosing Interventions that are Cost-Effective ([www.who.int/choice](http://www.who.int/choice))

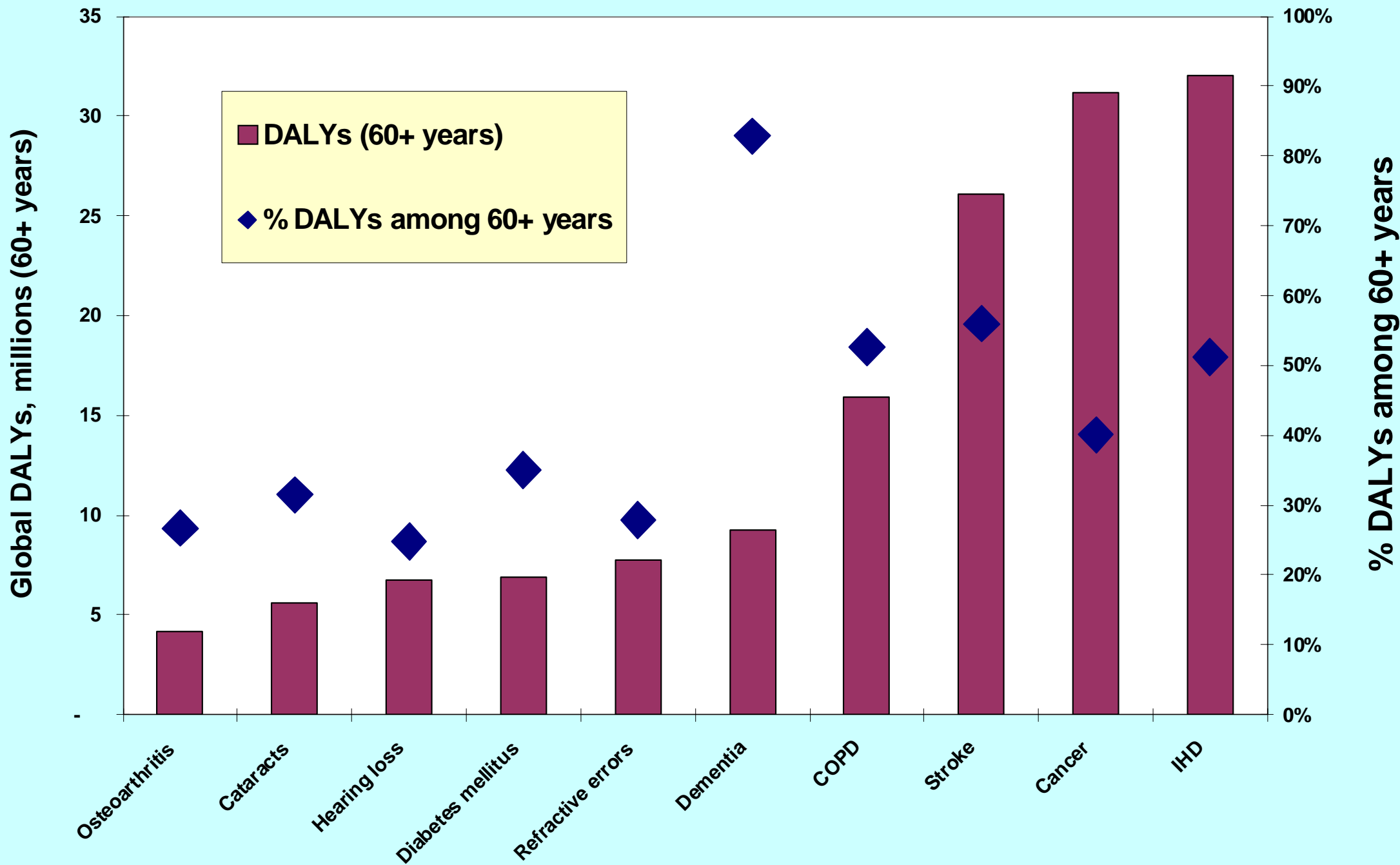
- CHOICE is WHO's work programme on cost-effectiveness
- Use of a common set of tools and methods
  - enhances comparability between diseases / risk factors
- Sectoral, population-level CEA
  - effectiveness: healthy years gained over the lifetime of a population, with / without intervention
  - resource costs: patient + programme level (intl \$ or local units)
- Results summarised in WHO regional C-E databases
  - available for country-level adaptation / analysis



# Application of WHO-CHOICE

- By disease / risk factor:
  - Communicable diseases: HIV, TB, malaria, childhood diseases
  - Non-communicable diseases: cancer, cardiovascular disease, diabetes, respiratory disorders, mental disorders, sensory loss disorders
  - Risk factors: alcohol and tobacco use, unsafe water, unsafe sex, under-nutrition etc.
- By geographical setting
  - Regional assessments: 14 epidemiologically-defined WHO sub-regions
  - Country applications: Argentina, Chile, Estonia, Ghana, Guatemala, India, Kyrgyzstan, Mexico, Spain, Sri Lanka, Thailand, Viet Nam

# Top 10 causes of DALYs, 60+ years

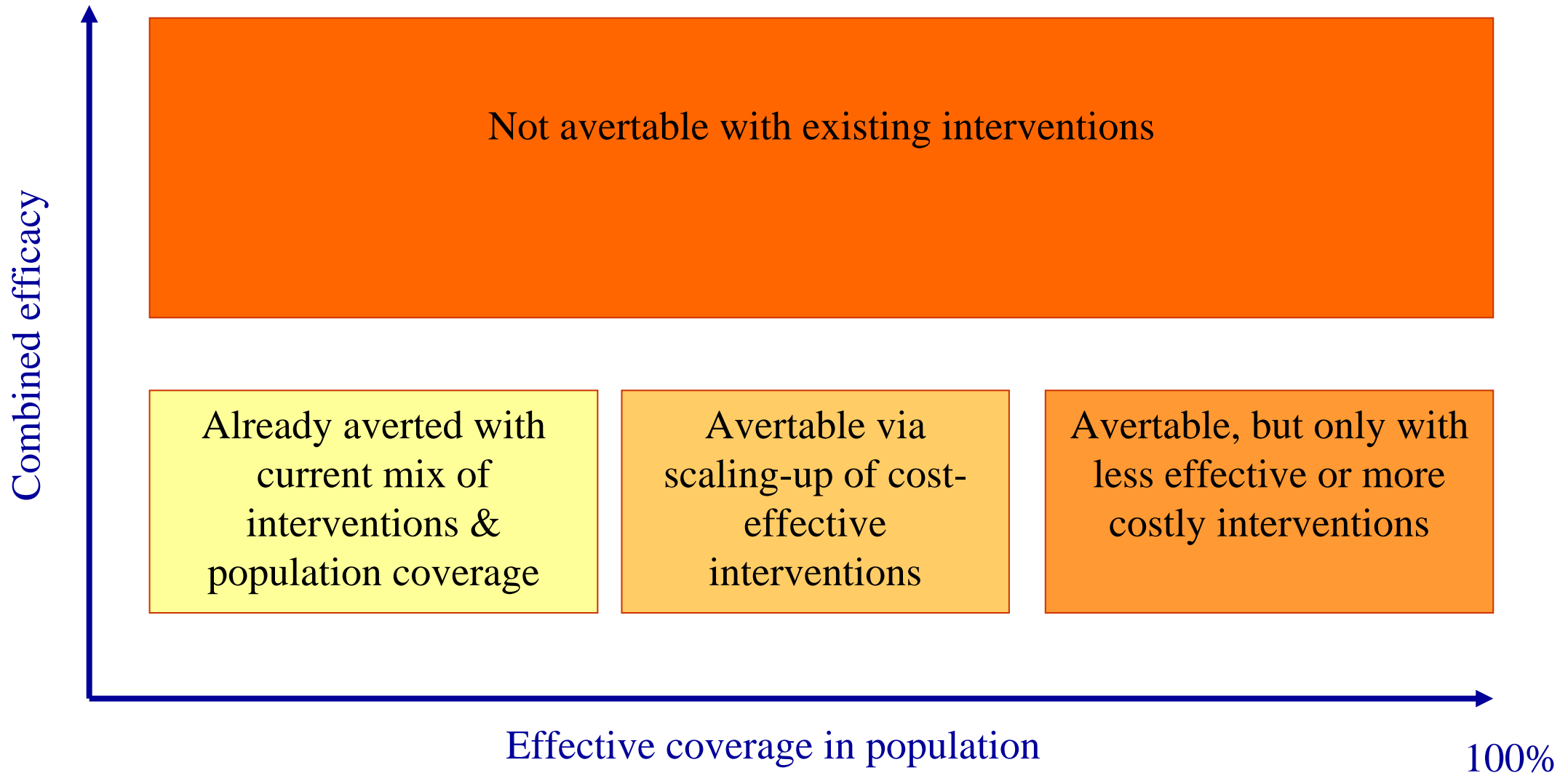


# Disease areas for which policy makers could use some economic evidence

- Cancers
  - Breast, liver, lung, prostate, stomach etc.
- Cardiovascular and respiratory disorders / risk factors
  - IHD, stroke, COPD, diabetes
- Sensory disorders
  - Cataract, refractive error, hearing loss
- Musculoskeletal
  - Osteoarthritis
- Neurological
  - Alzheimers' and other dementias

# Attributable vs avertable disease burden

100%



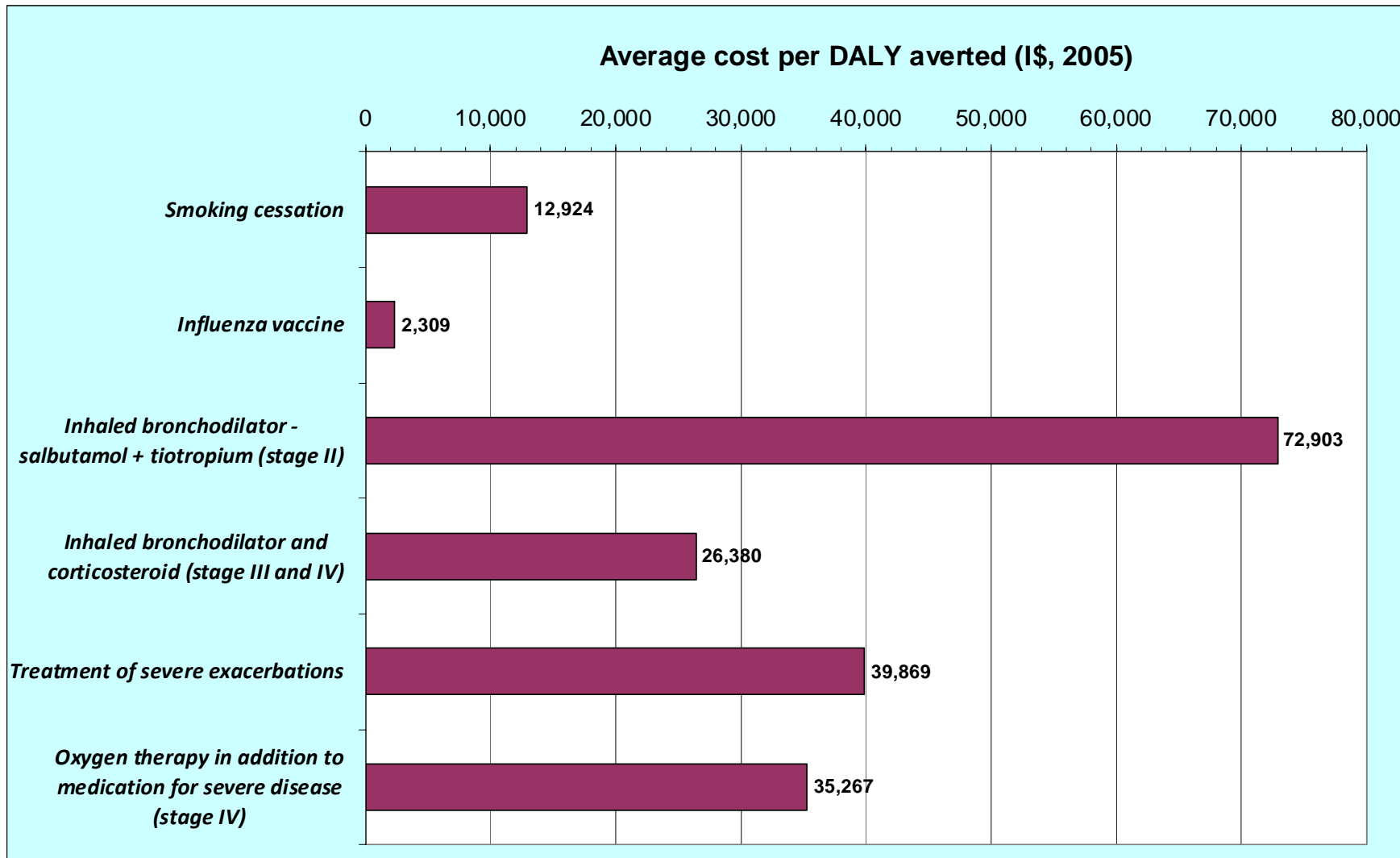
100%



# WHO-CHOICE evidence for prioritised NCDs and risk factors

Disease / risk factor		Analysis undertaken	Interventions assessed	Regional results	Country analyses
Diseases	Diabetes	Tx of <u>diabetes</u> I & II, plus complications	<i>Glycaemic control, retin- / neur-opathy screening</i>	Upcoming WHO-CHOICE series	<i>None</i>
	CVD (prevention)	Prevention of <u>high BP</u> & cholesterol	<i>Salt / chol reduction, single/multi-drug Tx</i>	Murray et al, 2003	<i>Argentina, China, Kyrgyzstan</i>
	CVD (treatment)	Tx of <u>IHD</u> and <u>stroke</u>	<i>Drug Tx for acute / long-term AMI, stroke, CHF</i>	Upcoming WHO-CHOICE series	<i>Kyrgyzstan</i>
	Cancer	Prevention & Tx of breast / colorectal / cervical <u>cancer</u>	<i>Screening, Tx (surgery, radio/chemotherapy), plus vaccination (HPV)</i>	Groot et al, 2004 Ginsberg et al, 2009 Ginsberg et al, 2010	<i>Breast cancer: Ghana, Costa Rica, Jordan</i>
	Respiratory diseases	Management of asthma and <u>COPD</u>	<i>Tx with bronchodilators, corticosteroids,</i>	Upcoming WHO-CHOICE series	<i>None</i>
Risk factors	Harmful use of alcohol	Prevention & Tx of hazardous <u>alcohol</u> use	<i>Excise tax, ad bans, brief advice, breath-testing,</i>	Chisholm et al, 2004 Anderson et al, 2009	<i>Estonia, Chile, Mexico, Thailand</i>
	Tobacco use	Prevention & Tx of <u>tobacco</u> use	<i>Excise tax, ad bans, clean air laws, NRT</i>	Shibuya et al, 2003	<i>Estonia, Thailand</i>
	Unhealthy diets	Policies to address <u>unhealthy diet &amp; physical inactivity</u>	<i>Mass media, school- &amp; work-based strategies, regulation, fiscal measures, counselling</i>	Sassi et al, 2009 (also new Lancet NCD series, 2010)	<i>Brazil, Russia, India, China, S Africa (ongoing)</i>
	Physical inactivity				

# COPD treatment options for persons aged 50+ years (WHO sub-region WprB; e.g China)



# Economic evidence for LAMI countries for other NCDs

Disease	Interventions assessed	Regional results	Findings
<b>Sensory disorders</b>			
Cataract	<i>Cataract extraction</i>	Baltussen et al, <i>WHO Bulletin</i> 2005	<i>Highly cost-effective</i>
Refractive error	<i>Screening (<u>school children</u> only)</i>	Baltussen et al, <i>Health Policy</i> 2008	<i>Highly cost-effective</i>
Hearing loss	<i>Screening &amp; provision of hearing aids; topical antibiotics for chronic otitis media; Tx of meningitis with ceftriaxone</i>	Baltussen & Smith, <i>WHO Bulletin</i> 2008	<i>Cost-effective</i>
<b>Osteoarthritis</b>	<i>NSAIDs; COXIBs</i>	N/A	<i>Cost-effective (more or less)</i>
<b>Dementia</b>	<i>Acetyl cholinesterase inhibitors</i>	Chandra et al, <i>DGP2</i> 2006	<i>Not cost-effective in reducing caregiver time (other benefits not considered)</i>  <i>(N.B. NICE evidence for UK)</i>

# Costs and cost-effectiveness - key points

- Health & social welfare costs of ageing populations
  - already large and growing rapidly
  - a major challenge for public health and for government policy
  - economic or financial impact studies can help make the investment case
- Economic evidence for policies concerning ageing and health
  - Paucity of studies in low- and middle-income countries
  - Over-reliance on modelling, with attendant uncertainties (e.g. effect sizes, RRs)
  - Comorbidity - more the norm than the exception, and can significantly push up costs
  - Largely a vertical disease approach (vs more horizontal, health platform approach)