

Benefits and Costs of the NCD Targets for the Post-2015 Development Agenda

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MOTIVATION

Current Situation

NCDs are a major contributor to mortality and morbidity in low- and middle-income countries (LMICs).

- NCDs account for **65% of global deaths** and for a majority of deaths in **all regions** except sub-Saharan Africa (1)
- NCD mortality exceeds that of communicable, maternal, perinatal and nutritional conditions combined (2)
- **80% of global NCD deaths occur in LMICs**, making NCDs a major cause of poverty and an urgent development issue
- \$47 trillion in economic output will likely be lost to NCDs by 2030 (3).

Post-2015 Development Agenda

Goal 3 of the proposed Sustainable Development Goals (SDGs) is:

Ensure healthy lives and promote well-being for all at all ages.

Proposed target (3.4) in the Post-2015 SDG Framework aims to:

by 2030, reduce premature mortality from NCDs by one-third through prevention and treatment and promote mental health and well-being.

OUR GOAL

We consider five (of many potential) interventions that need to be in place to meet proposed target 3.4, and calculate the cost-benefit ratios of implementing each. These cost-benefit ratios can then be compared across development topics. We find that cost-effective prevention and treatment solutions for NCDs compare favorably to other development goals, and are ready to be scaled-up across the globe.

INTERVENTIONS

We considered five interventions that would need to be in place by 2030 to come close to reaching the NCD target. All five interventions are part of the World Health Assembly's NCD targets.

TOBACCO TAX – Tax tobacco at sufficiently high rates to achieve a 50% relative reduction in user prevalence. In this target, we concentrate on low- and middle-income countries because many high-income countries (HICs) have already implemented significant tax increases.

ASPIRIN THERAPY FOR AMI - Provide aspirin to 75% of patients at the onset of an acute myocardial infarction (AMI).

SALT REDUCTION – 30% reduction in the mean dietary intake of salt through voluntary reformulation of processed foods.

HYPERTENSION MANAGEMENT – Use of hypertension medicine by 50% of those at medium to high risk.

SECONDARY PREVENTION OF CARDIOVASCULAR DISEASE–

70% coverage and at least 60% adherence to a multi-pill regimen for those at a high risk of a cardiovascular event.

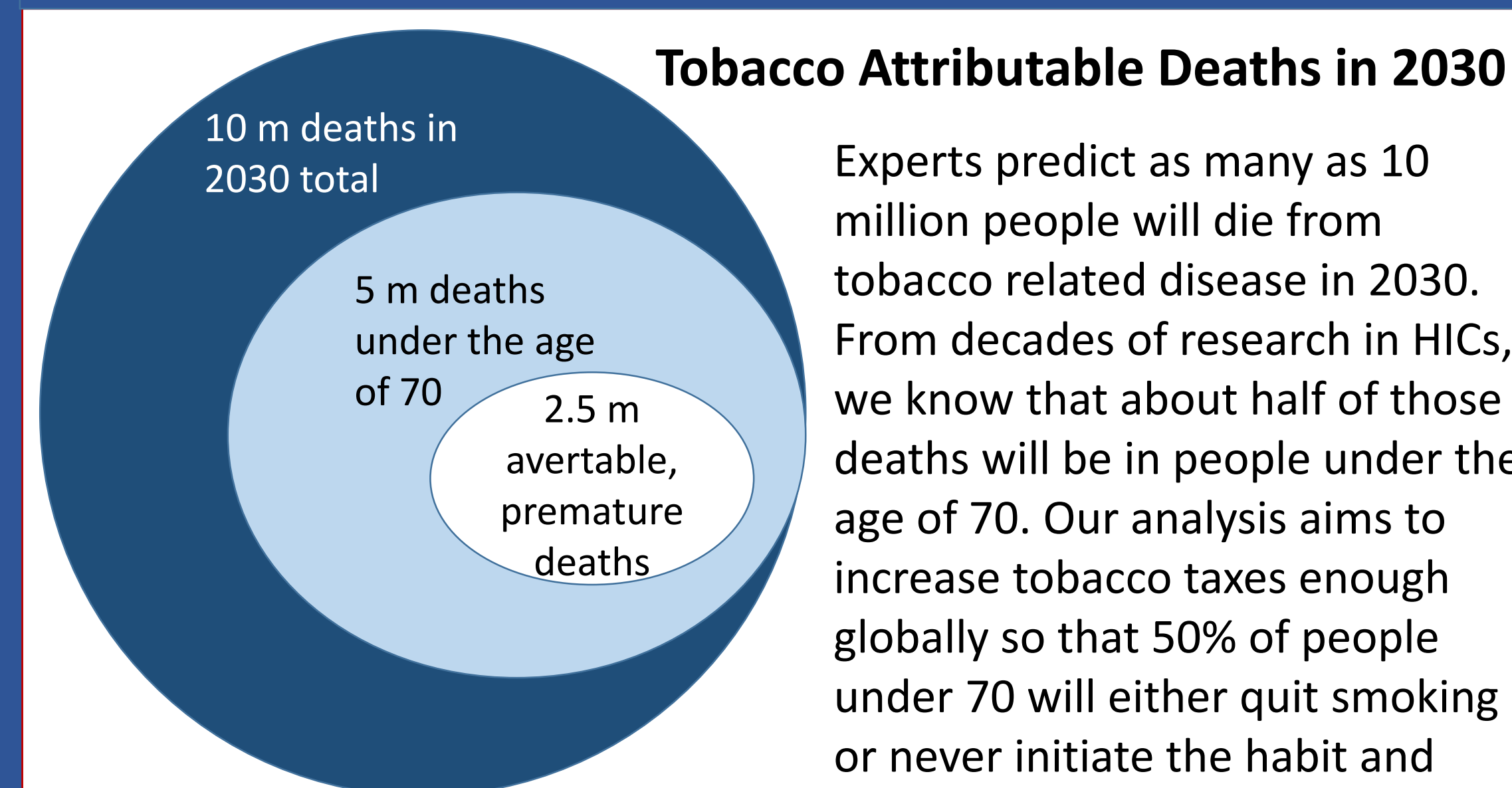
METHODS

To assess the benefits and costs of achieving the proposed post-2015 NCD target, we first calculated the number of deaths to be averted in 2030. Generally speaking, premature deaths are defined as deaths that occur before average life expectancy is reached (about 70 years of age). Our target is a range of projections from two sources; for one source, we took the midpoint of projections from two age groups.

Source	Age range	Projected NCD deaths in 2030 (in millions)	Deaths to avert to reach target (in millions)
WHO Global Health Estimates 2013 (4)	30-69	17.60	5.87
Norheim et al 2014 (5)	0-69	23.02	7.67
Norheim et al 2014 (5)	50-69	17.57	5.86
Calculated Target	30-69		5.87 – 6.77*

*6.77 is the midpoint between 5.86 and 7.67

Methodological Example: Tobacco Taxation



The real price of tobacco would have to increase by 125% for a 50% consumption decrease. This is based upon a generally agreed upon tobacco prevalence elasticity of -0.4.

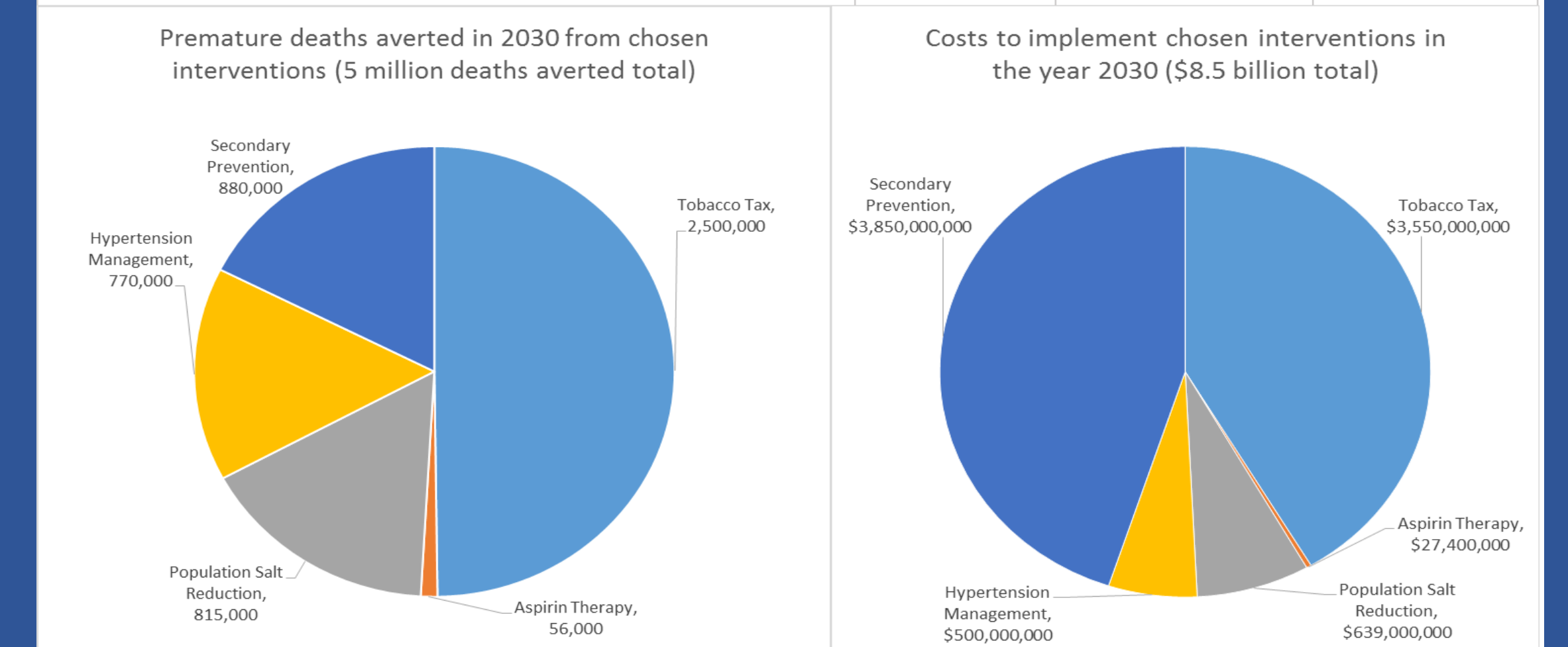
We attach a monetary value to deaths averted by estimating how many extra years of productive life each person would have lived. In this analysis, we averaged each death averted as 15 disability-adjusted life-years gained. Each of those life-years is then valued at \$1,000, which is the average GDP per capita in LMICs, or the average productivity of an active adult.

Asaria et al. (6) estimate the average annual cost per capita to implement a revised tobacco tax system is about \$0.50. We multiplied this number by the projected 2030 population to find the total cost of tobacco taxation. Our benefit-cost analysis does not incorporate tax revenue.

RESULTS

Summary of Intervention Benefits, Costs and Benefit-Cost Ratio

Target	Annual benefits (\$m)	Annual costs (\$m)	Benefit per Dollar Spent
Aspirin therapy at the onset of AMI (75% coverage)	\$836	\$27.40	\$31
Chronic hypertension management for medium to high-risk patients (50% coverage)	\$11,410	\$500	\$23
Reduce salt content in manufactured foods by at least 30%	\$12,121	\$638	\$19
Increase tobacco price by 125% through taxation	\$37,194	\$3,548	\$10
Secondary prevention of CVD with polydrug (70% coverage)	\$13,116	\$3,850	\$3
Total	\$74,677	\$8,563	\$9



KEY MESSAGES

- The NCD target was chosen by a panel of Nobel Laureates as one of 19 targets representing **the best value-for-money in development** over the period from 2015 to 2030.
- Interventions to address NCD burden are cost-effective presently, and will **increase in value** as disease and population transitions occur.
- **Tobacco taxation has the farthest reach**, averting the same number of deaths as the other 4 interventions combined
- Aspirin therapy at the onset of AMI provides the **highest BCR** of the analyzed interventions, but has a limited reach to avert deaths
- **Other health system strengthening efforts** are necessary to create platforms for NCD management, our ratios are meant to complement health system strengthening efforts.

Citations:

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3. Bloom D, Cafiero E, Jané-Llopis E, Abrahams-Gessel S, Bloom L, Fathima S. The global economic burden of non-communicable diseases. 2011. World Economic Forum, Geneva; 2012
4. Global Health Estimates Summary Tables: Projection of Deaths by Cause, Age, and Sex. July 2013 ed. Geneva, Switzerland: World Health Organization; 2013.
5. Norheim OF, Jha P, Admasu K, et al. Avoiding 40% of the premature deaths in each country, 2010–30: review of national mortality trends to help quantify the UN Sustainable Development Goal for health. *The Lancet* 2014; **385**(9964): 239-52.
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