Non-Communicable Diseases (NCDs)

The Problem

India is currently undergoing an epidemiological transition, with rising morbidity and mortality due to non-communicable diseases (NCDs). The World Health Organization (2014), based on Global Status Report on Non-Communicable Disease (NCDs) data, reported that NCDs account for more than 5.87 million or about 60% of all deaths in India. This is confirmed by the Global Burden of Disease study (2016), which found that Disability Adjusted Life Years (DALYs) due to NCDs have gradually exceeded those due to communicable, maternal, neonatal and nutritional diseases since 2003. It is estimated that NCDs and mental health conditions will cost India $4.58 trillion between 2012 and 2030, with CVDs alone contributing about $2.17 trillion (Bloom et al 2014).

With respect to Andhra Pradesh self-reported morbidity increased significantly between three rounds of the National Sample Survey (1995, 2004 and 2014): (i) for cardiovascular diseases (CVDs), self-reporting went up from 2 to 38 cases per 1000 population; and (ii) for all non-communicable disease (NCDs) combined, self-reporting went up from 9 to 40 cases per 1000 population (Paul and Singh 2017). Despite the implementation of the National Program for the Prevention and Control of Cancer, Diabetes, CVD and Stroke (NPCDCS), data show that coverage of some of the key interventions continues to be low. For example, only about a third of women in the age group 15-49 had undergone a cervical examination, and around 5% had had a breast examination.

There is a need to re-orient the approach more towards early detection, resulting in lowered treatment costs and improved treatment outcomes, through population-based NCD screening and treatment programs to achieve the objective of Universal Health Coverage of Government of India.

It is assumed that all the interventions will be delivered through the existing primary health care network but located at the Primary Health Center (PHC) rather than the Sub-center as in the current National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) design. All interventions will cover the individuals in the age group of 30-69 years. Available community level resources can be leveraged for information dissemination and mobilization of target groups. Targets for screening and treatment coverage should be monitored stringently.

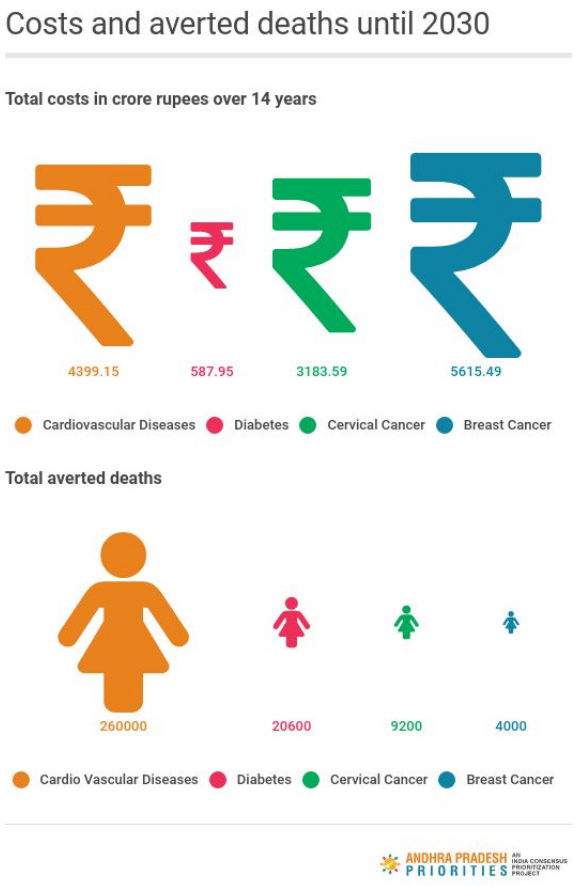
Costs for all the 4 interventions is a sum of treatment costs, private costs and opportunity costs. Benefits for all the four interventions are estimated based on the number of deaths averted by the selected intervention, the estimated number of years of life saved, multiplied by the value of one YLL.

Solutions

Interventions	BCR	Benefit (INR crores)	Cost (INR crores)
Cardiovascular Diseases	31	136464.13	4399.15
Diabetes	18.2	10723.39	587.95
Cervical Cancer	1.6	5038.69	3183.59
Breast Cancer	0.4	2165.55	5615.49

Total costs & benefits are discounted at 5%

The full paper by Professor **Shreelata Rao Seshadri** of Azim Premji University with **Vijayalakshmi Hebbare** of Center for Global Health Research is available on www.appriorities.com/health-non-communicable-diseases.



Secondary Prevention of CVD through use of a multidrug polypill

The Problem

Analysis of mortality data by the Registrar General of India (RGI) in 2010-13 shows that mortality due to CVD constitutes 23% of all deaths and 32% of adult deaths during that period (Gupta et al 2016). The Global Burden of Disease database estimates the absolute number of people dying in India due to CVD was 1.13 million in 2010, and the proportion of Years of Life Lost (YLL) due to CVD was 9.8% (IHME 2017). Projections to 2030 predict an alarming rise in CVD deaths, accounting for 35.9% of all deaths, and 52% of all NCD associated deaths (Reddy and Mohan 2014). The same study estimates that about 2.7 million people die of CVD annually currently; this is projected to increase to 4.2 million by 2030. It is estimated that CVDs will cost India $2.17 trillion between 2012 and 2030 (Bloom et al 2014). In AP, deaths due to cardiovascular disease in the age group 30-69 years are estimated at 487/100000 and YLDs at 265/100000.

The Solution

The intervention seeks to implement a screening program to identify those at high risk of CVD; and then put those with elevated blood pressure on a polypill. High risk patients can be relatively easily identified either because they have already accessed health services, or through simple screening for common risk factors (tobacco use, blood pressure, weight, age and sex) at the primary care level. The target population for this intervention are people aged between 30-69 years assessed as being at high risk and those with existing cardiovascular disease. The target would be to screen 70% of this population with the assumption of achieving 60% adherence to treatment. The WHO has prepared guidelines for secondary prevention in resource-limited environments which generally include the use of four medications: aspirin, ACE-inhibitors, beta blockers and statins, which can be combined in a 'polypill'.

Costs

Average cost per treated individual is estimated at Rs. 4,108 for males and Rs. 3,959 for females.

Benefits

Between 2018-2030, 168 million individuals would be screened and 13.5 million would be treated. Projected CVD deaths averted due to secondary prevention are 0.26 million.

Diabetes screening and treatment with Metformin therapy

The Problem

Diabetes causes about 59/100,000 deaths in AP, about 40% of which could be averted by early detection and treatment with Metformin. Metformin is a well-recognized cost-effective treatment for pre-diabetes and diabetes, resulting in avoidance of diabetes in about 30% of high risk individuals.

The Solution

The intervention seeks to screen individuals for diabetes and those identified with elevated blood sugar will be put on a regimen of 850 mg Metformin twice a day. The target population for this intervention are people aged between 30-69 years

with the aim of 50% coverage of the target group annually, and the assumption of achieving 65% adherence to treatment.

Costs

Average cost per treated individual is estimated at Rs. 2,103 for males and Rs. 1,954 for females (Based on estimates of treatment costs, private costs and opportunity cost).

Benefits

It is estimated that 30% of the deaths can be averted over a 13-year period with Metformin therapy. Assuming 65 % adherence to Metformin therapy about 20,600 projected diabetes deaths could be prevented in AP. Between 2018-2030, 30-69-year-old about 120 million individuals would be screened and 11.3 million would be treated.

Cervical cancer screening and treatment through VIA/VILI screening (one time)

The Problem

About 1,32,000 new cases of cancer cervix are detected in India every year, constituting one quarter of the global burden; and 200 women are estimated to die of cervical cancer every day (Ray and Varghese 2016). Cervical cancer causes about 10/100,000 deaths in AP, of which about 35% could be averted by screening and early detection. Routine screening has been initiated however, coverage is low only about a third of women in AP have had a cervical exam.

The Solution

The intervention seeks screening of women in the age group of 30-69 years for cervical cancer. The aim is to cover 30% of women in the target group annually for the first 3-4 years and covering the cohort of women entering the 30-year age group thereafter. About 10% of women in AP are likely to have cervical lesions, which require cryosurgery.

Costs

Average cost per screened individual for screening is INR 2,813 and for Cryosurgery it is 2,333.

Benefits

Between 2018-2030 Number of women (30-69 years) who would be screened are 11 million and treated are 0.95 million. Projected cervical Cancer deaths averted between 2018-2030 is estimated to be 9,200.

Breast Cancer Screening through biennial clinical Breast Exam (CBE)

The Problem

Breast cancer causes about 14/100,000 deaths in AP of which 16% could be averted by early detection through CBE. Routine screening has been initiated however, coverage is low only with about 5% women in AP have had a breast exam.

The Solution

The intervention seeks breast cancer screening. The target group for this intervention are women in the age group of 30-69 years and the aim is to cover 50% of women in the target age group each year and eventually achieving 100% coverage of all women in this age group.

Costs

Average cost per person screened is INR 550.

Benefits

Number of women who would benefit from CBE are 59 million. Projected breast cancer deaths averted due to this intervention stands at 4,000.