

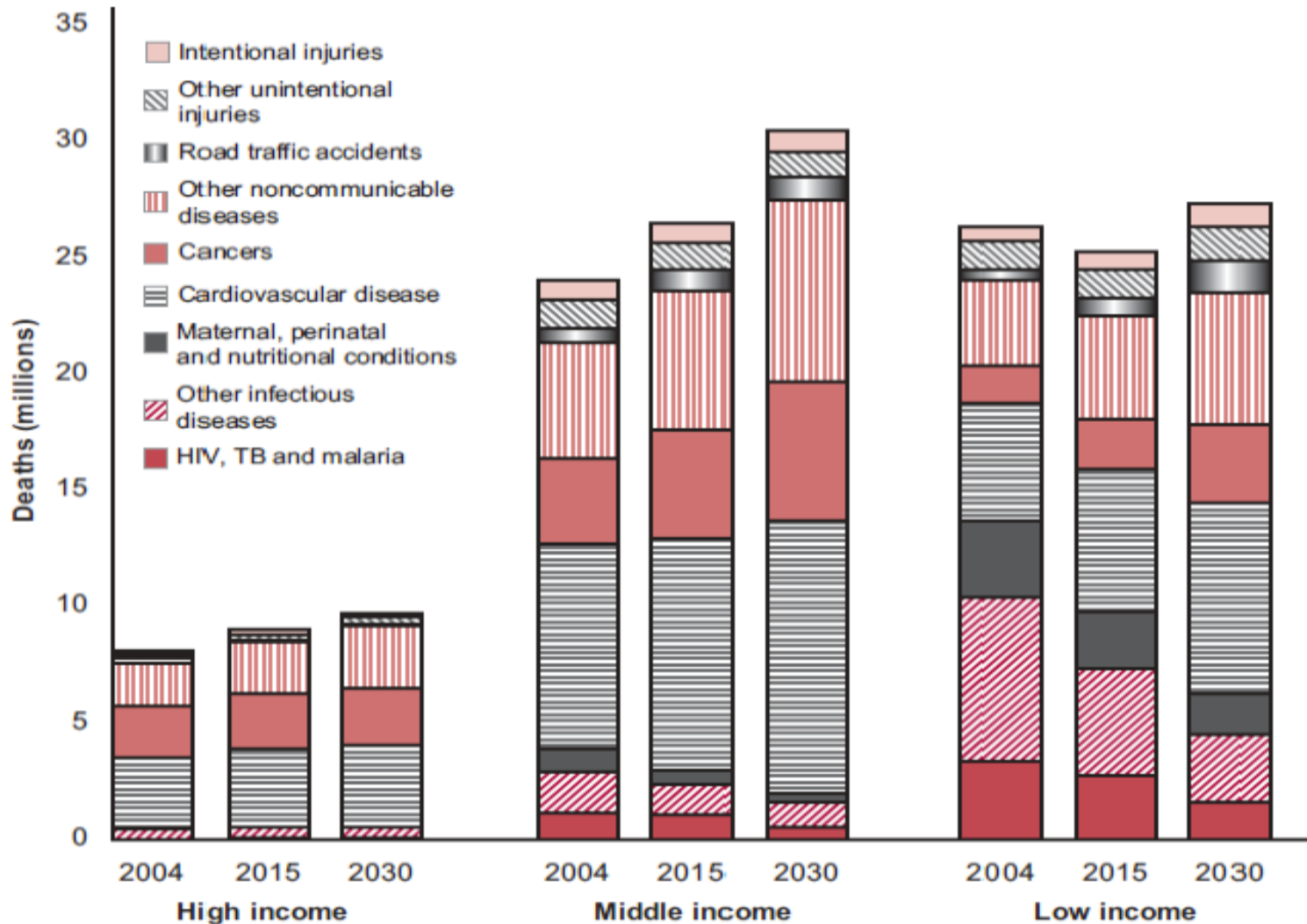
How Can the Impact of Combination Polypharmacy be Maximized?

- Impact in Developing Countries

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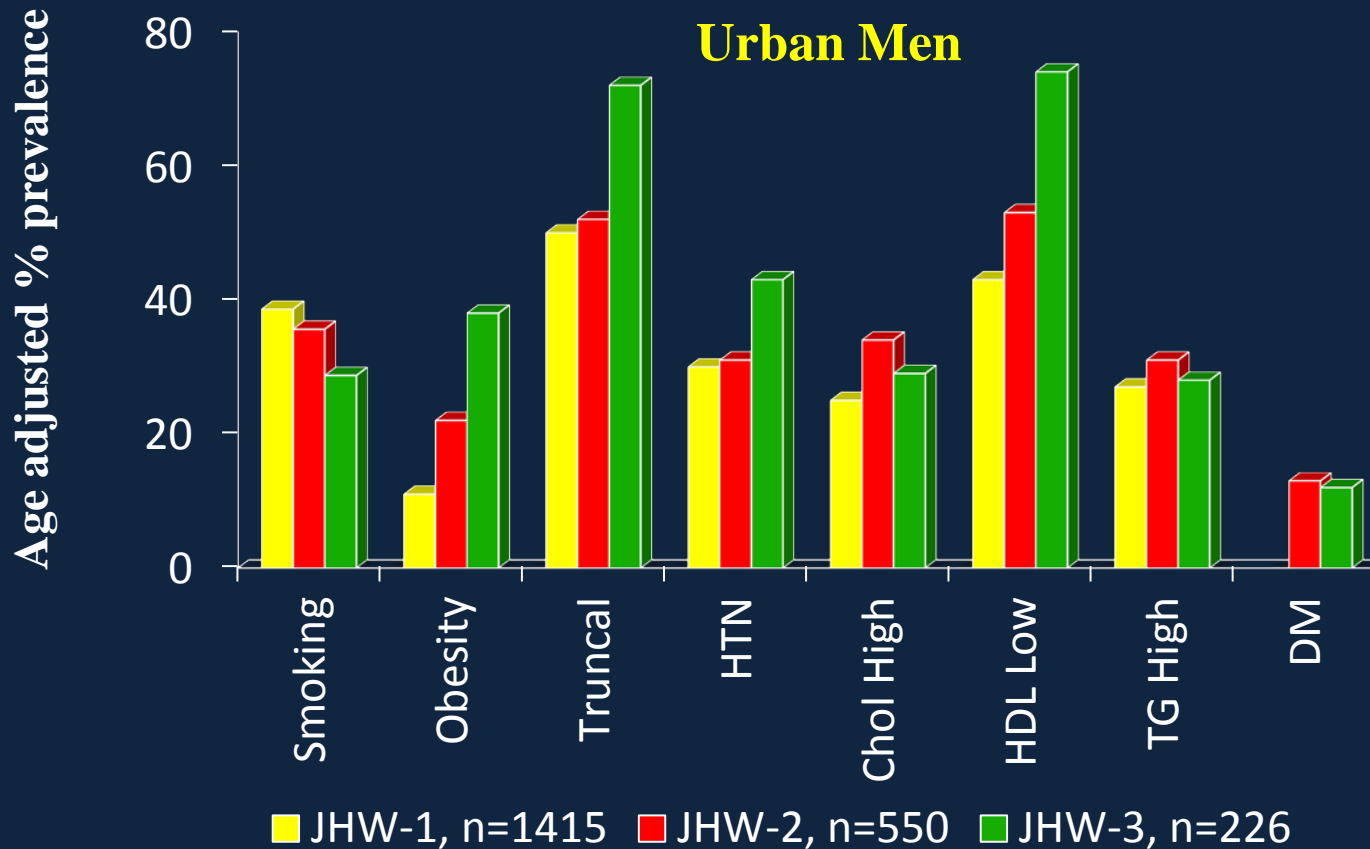
**Bernard Lown Professor of Cardiovascular Health,
Harvard School of Public Health**



Projected global numbers of deaths by cause for high, middle and low income countries (WHO, 2008)

Trends in Coronary Risk Factors in India

Jaipur Heart Watch Studies (1995, 2002, 2005)



Gupta R et al. Ind Heart J 1995
Gupta R et al. Ind Heart J 2002
Gupta R et al. J Hum Ecol 2005

RESPONSE TO HEALTH TRANSITION

POPULATIONS

Demographic and Social Determinants

Low Risk

High Risk

Public Health Interventions

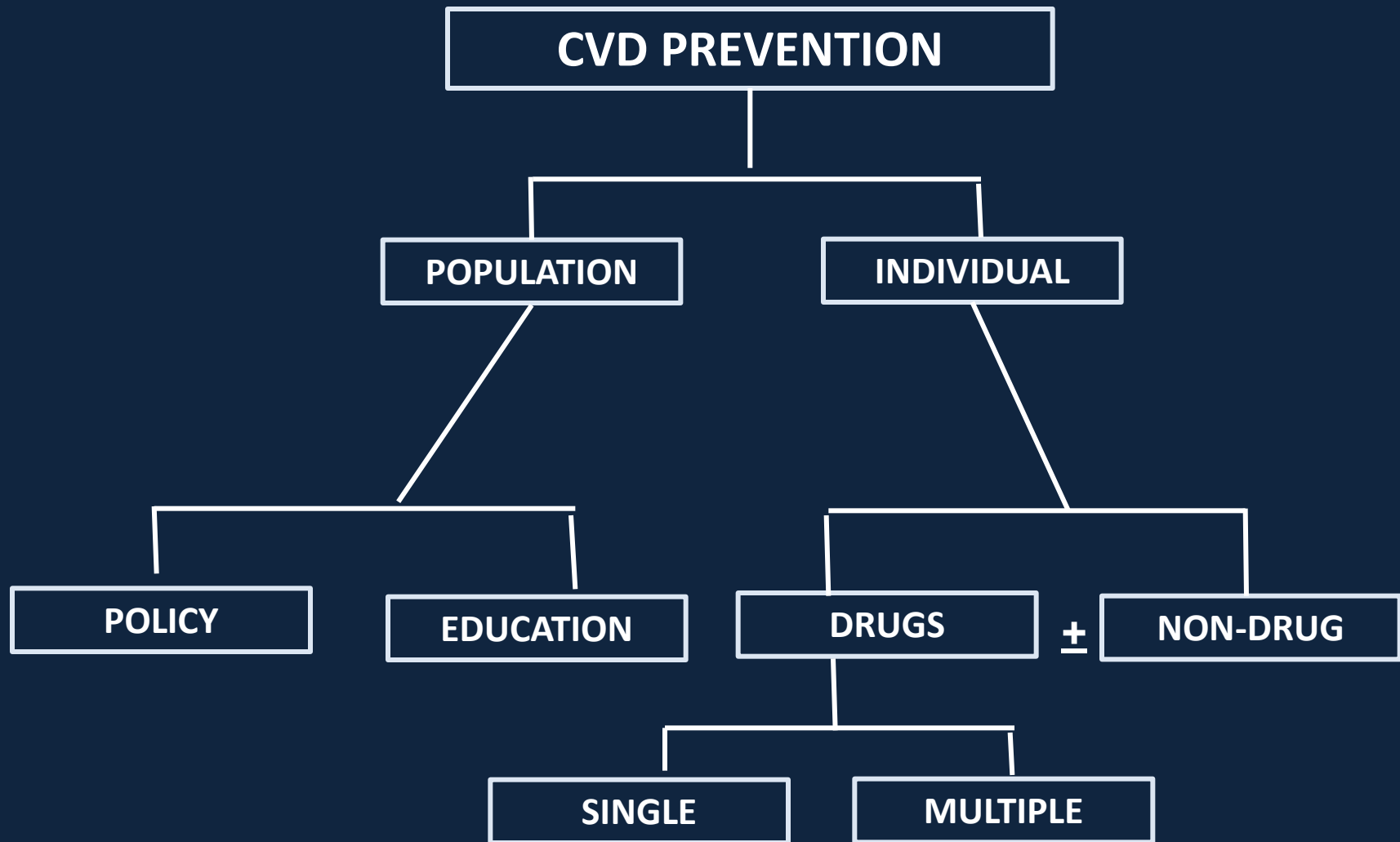
INDIVIDUALS

Biology + Beliefs + Behaviors

Low Risk

High Risk

Clinical + Behavioral Interventions



Are affordable cost-effective interventions available? YES!

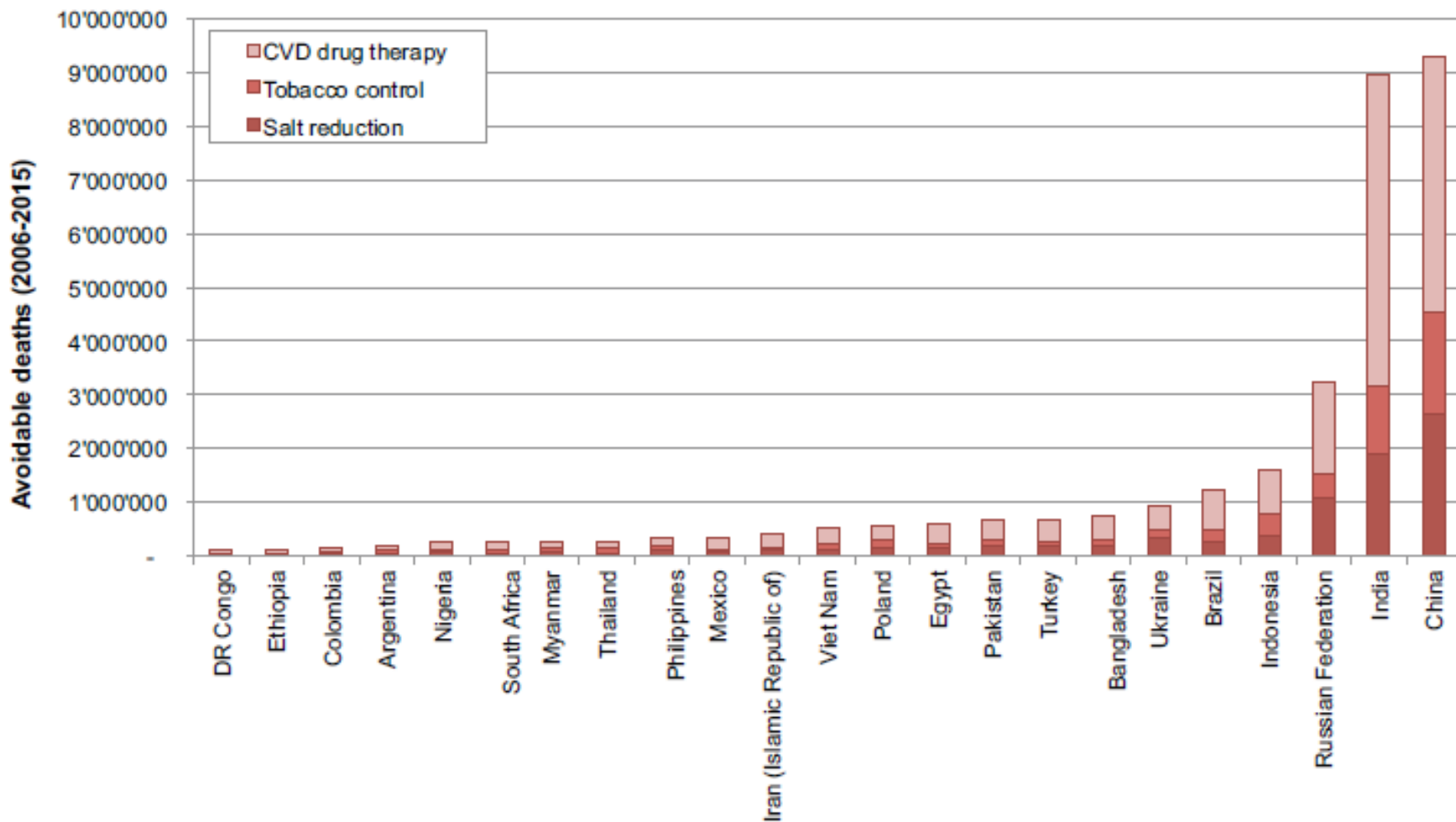
	Interventions	Cost per person per year (US\$)		
		China	India	Russia
1. Tobacco use	Accelerated implementation of the WHO Framework Convention on Tobacco Control ⁹	0.14	0.16	0.49
2. Dietary salt	Mass-media campaigns and voluntary action by food industry to reduce consumption ⁹	0.05	0.06	0.16
3. Obesity, unhealthy diet, and physical inactivity	Mass-media campaigns, food taxes, subsidies, labelling, and marketing restrictions ¹⁶	0.43	0.35	1.18
4. Harmful alcohol intake	Tax increases, advertising bans, and restricted access ¹³	0.07	0.05	0.52
5. Cardiovascular risk reduction	Combination of drugs for individuals at high risk of NCDs ¹⁰	1.02	0.90	1.73
Total cost per person*	..	1.72	1.52	4.08

*Excludes any cost synergies or future treatment cost savings.

Table: Estimated costs of five priority interventions for non-communicable diseases (NCDs) in three countries¹⁶

Source: Cecchini M, Sassi F, Lauer J et al. Tackling unhealthy diets, physical inactivity and obesity: health effects and cost-effectiveness. Lancet 2010

Avoidable Deaths from A Scaled Up Chronic Disease Package in 23 LMICs (2006-2015)

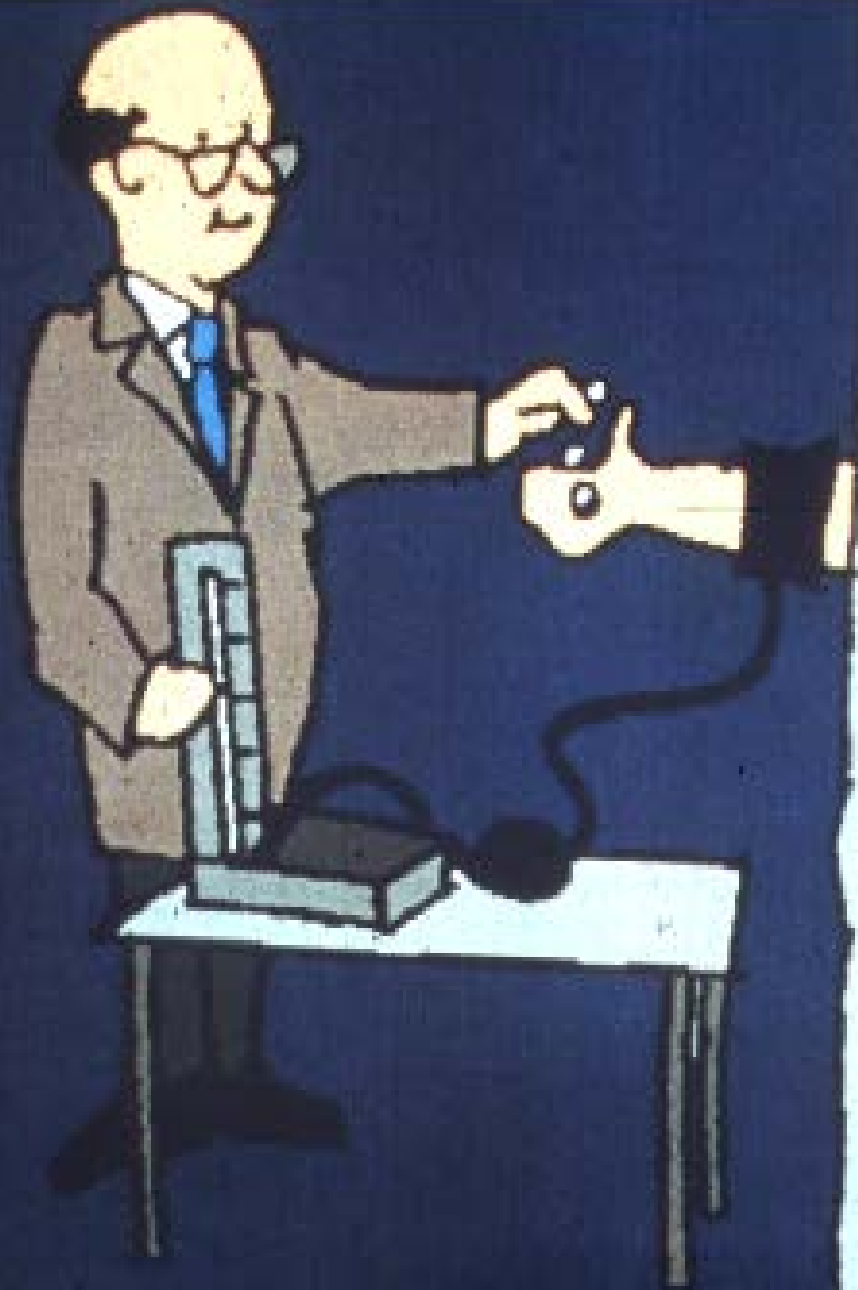


Polypharmacy: Rationale

- Antihypertensive, lipid lowering and anti-platelet drugs are proven to reduce CVD events when used in primary and secondary prevention
- **BUT** their use is sub-optimal globally, particularly in LMICs where most CVD occurs
- CVD patients often require multiple drugs
- Leading to decreased compliance and increased costs
- Polypill may improve compliance, reduce costs
- Non-physician health workers in LMICs could potentially screen and treat high risk people

Questions

- Dose adjustment
- Actual rate of side effects (on long term treatment and adequate adherence)
- Cost effectiveness
- Registration of products: Criteria would be more stringent in primary prevention
- Evaluation of polypill based therapy Vs. usual therapy for CVD
- Interference with lifestyle: neglect of exercise and healthy diet?



Polypill: Limitations for Prevention

- **Life time exposure to risk not addressed –**
- Intervention comes late in life
- Does not reduce the risk of diabetes (while diet & physical activity do)
- **No inter-generational benefits –**
- Does not create a healthy society where the next generation can grow up without acquiring risk
- Even in secondary prevention – **Protection starts after the event**

Statins For Children!

- American Academy of Paediatrics recommends statins for children as young as 8 years.

(Gaurdian; July 9, 2008)

- Use of statins in childhood debated.

(LA Times; July 9, 2008)

Storm Over Statins

“The intense media coverage of the new statin policy may have shined a light on the profound cultural disconnect between our willingness to treat disease with drugs and our reluctance to institute preventive measures”

- De Ferranti S, Ludwig DS, NEJM; Sept 25, 2008

Competing Visions

Do We Want:

- A society where every succeeding generation has lower risk of CVD due to an enabling social environment?

OR

- A society where every succeeding generation has a larger number of persons at high risk, acquired at even younger ages, needing multi-drug therapy for most of life?

Complementary Strategies

- **Create a society where social conditions help to reduce the acquisition or augmentation of risk over the life course.**
- **Use pharmacotherapy (including MDT) judiciously to reduce CVD risk in individuals at high risk.**

Polypill for Prevention

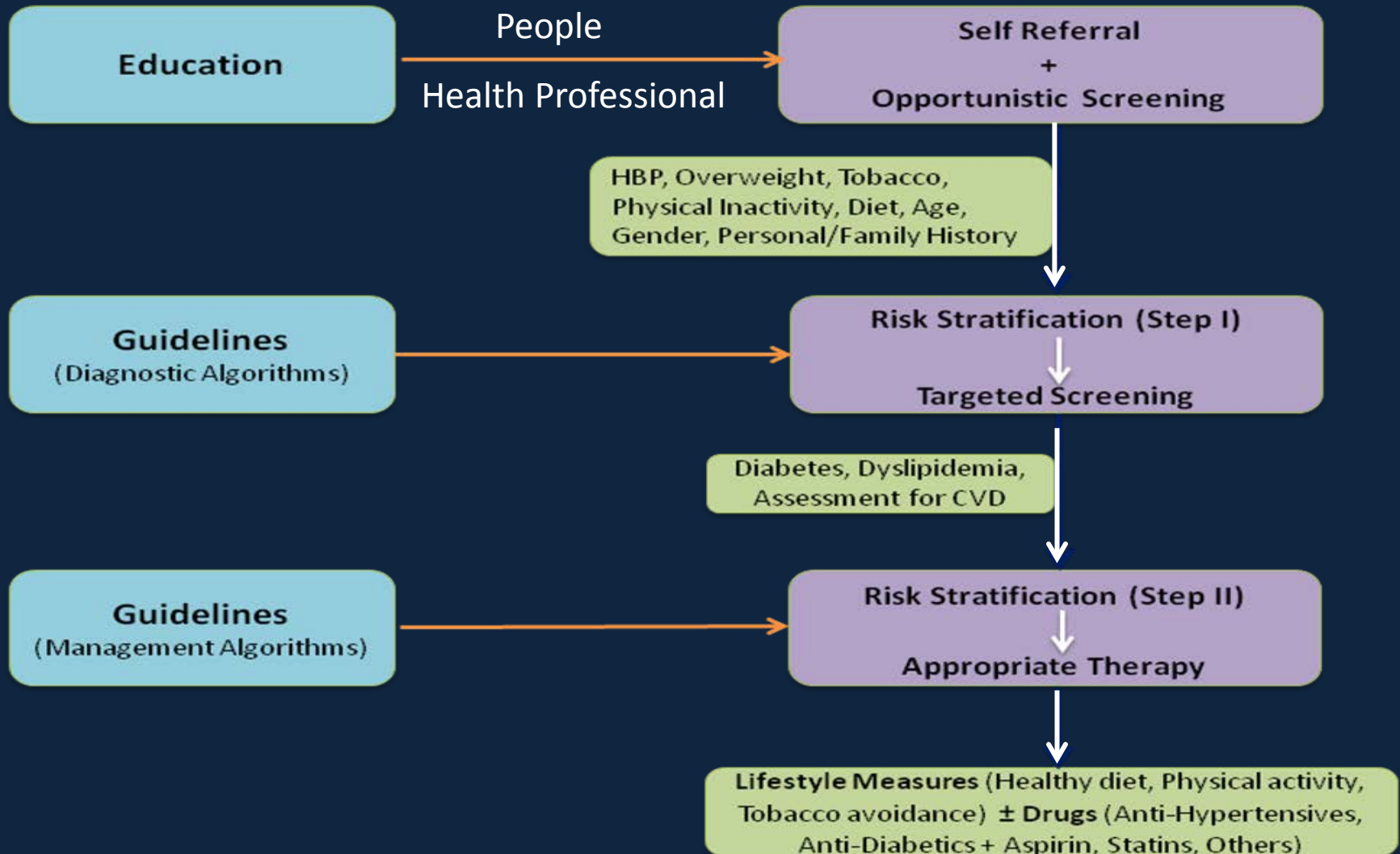
- **Secondary Prevention:**

Strong rationale; Enough evidence of multidrug therapy on outcomes; Drug development and trials needed for evaluating impact on intermediate variables, adherence, safety and cost-effectiveness

- **Primary Prevention:**

Sufficient rationale to permit trials; Outcome based trials needed; Comparison and combination with lifestyle interventions needed

Primary Prevention



Secondary Prevention: Moving From Efficacy To Effectiveness

- **IMPROVING PRACTICE PATTERNS OF HEALTH CARE PROVIDERS** – *Integrating effective secondary prevention into primary health care*
- **ENABLING UPTAKE & ADHERENCE BY PATIENTS** – *Availability; affordability; knowledge; motivation; support systems; simplified regimens*
- **STRENGTHENING HEALTH SYSTEMS FOR CHRONIC CARE** – *Referral & follow-up; vascular clinics; Involvement of non-physician health care providers; monitoring and evaluation*

CHALLENGES

- **Screening**
- **Weak Health Systems**
- **Physicians (Awareness, Acceptance, Practice)**
- **Drug Price (Affordability)**

OPPORTUNITIES

- **Health System Strengthening**
- **Non-Physician Care Providers**
- **Point of Care Diagnostics**
- **IT – Enabled Outreach**
- **Universal Health Coverage**