Preventing disease
Promoting and protecting health
Governments Responding to the Epidemic of NCDs

Dr C. James Hospedales
Executive Director  CARPHA

Preventing disease, promoting and protecting health
Presentation Outline

• The Epidemic of NCDs and risk factors
• Governments responding to NCDs
• Way forward all of society
NCDs: What are they?

NCDs 4 by 4

Preventing disease, promoting and protecting health
4 x 4 + Obesity

The Americas: Fattest Region In the World

Preventing disease, promoting and protecting health
Mortality from NCDs
NCDs present a rising challenge in all middle- and low-income country regions

Deaths from NCDs as a share of total deaths, 2008-2030

<table>
<thead>
<tr>
<th>Region</th>
<th>All ages, percent</th>
<th>Ages 15-59, percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-income countries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>89% (+1%)</td>
<td>70% (-5%)</td>
</tr>
<tr>
<td>East Asia and Pacific</td>
<td>85% (+4%)</td>
<td>66% (+1%)</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>81% (+12%)</td>
<td>59% (+3%)</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>78% (+13%)</td>
<td>65% (+5%)</td>
</tr>
<tr>
<td>South Asia</td>
<td>72% (+12%)</td>
<td>62% (+17%)</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>46% (+64%)</td>
<td>28% (+44%)</td>
</tr>
<tr>
<td>Middle- and low-income countries</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:  
1 Analysis by region uses WHO updated estimates for 2008 and baseline projections for 2030; analysis by income group uses WHO 2008-2030 baseline projections.

Leading Causes of Death
CARPHA Member States*, 2000-2012

* Excluding Haiti
Broad Groupings of Conditions Causing Death in CARPHA Member States

I. Communicable, Maternal, Perinatal and Nutritional Conditions
II. Non-communicable Diseases
III. Injuries
Symptoms, Signs and Ill-Defined Conditions
Crude mortality rates for select Non-Communicable Diseases for deaths among persons 65 years or younger, English- and Dutch-speaking Caribbean, 2000-2012

- Cardiovascular Diseases
- Malignant Neoplasms
- Diabetes Mellitus
- Respiratory Diseases
- Injuries with undetermined intent
- Intentional Injuries
- Unintentional Injuries

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Risk Factors for NCDs
Prevalence of current smokers and current daily smokers, including 95% confidence intervals

- % Females
- % Males
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Prevalence of overweight and obesity

- Overweight (BMI ≥ 25.0 kg/m²)
- Obese (BMI ≥ 30.0 kg/m²)
Trends in Feeding the “Human Herd”

• In 10 years, packaged food sales worldwide jumped 92%, to $2.2 trillion
• Brazil, China, Russia sales are 3-4 times their 2002 level
• Coke & Pepsi control 40% of global market for fizzy-drinks
• Soft drink sales worldwide doubled in past 10yrs to $532 billion; quadrupled in India, Brazil and China
• These impressive sales figures look set to rise further!

• Sugary drinks accounted for at least 20% of America’s weight gain between 1977 and 2007

• >1 Billion people worldwide now overweight or obese

The Economist, Dec 15, 2012
**Gulp!**

Soft-drink sales
2011, $bn*

- **Coca-Cola**
- **PepsiCo**
- **Dr Pepper**
- **Others**

**United States**: 0 - 20 - 40 - 60 - 80 - 100

**China**: 0 - 20 - 40 - 60 - 80 - 100

**Mexico**: 0 - 20 - 40 - 60 - 80 - 100

**Brazil**: 0 - 20 - 40 - 60 - 80 - 100

**Russia**: 0 - 20 - 40 - 60 - 80 - 100

**South Africa**: 0 - 20 - 40 - 60 - 80 - 100

**India**: 0 - 20 - 40 - 60 - 80 - 100

*Trade value at current prices and exchange rates*
The Economist, Dec 15, 2012

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Growth area
Packaged-food sales*, $trn

Source: Euromonitor International
*Trade value at current prices and current exchange rates
†Estimate
Caterers to the world

Number of establishments*

'000

<table>
<thead>
<tr>
<th>Restaurant</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subway</td>
<td>40</td>
</tr>
<tr>
<td>McDonald’s</td>
<td>30</td>
</tr>
<tr>
<td>KFC</td>
<td>20</td>
</tr>
<tr>
<td>Starbucks</td>
<td>15</td>
</tr>
<tr>
<td>Pizza Hut</td>
<td>10</td>
</tr>
<tr>
<td>Burger King</td>
<td>10</td>
</tr>
<tr>
<td>Domino’s Pizza</td>
<td>5</td>
</tr>
<tr>
<td>Taco Bell</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Company reports

*September 30th 2012 or latest
Cheap cars, traffic jams, global warming, hard to walk/exercise, stress
Consequences of Obesity: A “Metabolic Malignancy”

- Increased ill health: Diabetes, Cancer, Cardiovascular disease, dementia
- Mental health: depression, anxiety
- Psycho sexual issues
- 50% higher lifetime direct health care costs; Indirect costs X2 direct costs
- Employment issues: lower productivity, higher absenteeism and presenteeism
Mean daily servings of fruits and vegetables

<table>
<thead>
<tr>
<th>Country</th>
<th>Fruits</th>
<th>Vegetables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grenada</td>
<td>2.1</td>
<td>1.5</td>
</tr>
<tr>
<td>St. Lucia</td>
<td>1.3</td>
<td>1.2</td>
</tr>
<tr>
<td>Cayman Islands</td>
<td>1.2</td>
<td>1.0</td>
</tr>
<tr>
<td>Dominica</td>
<td>1.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Aruba</td>
<td>1.0</td>
<td>0.7</td>
</tr>
<tr>
<td>Bahamas</td>
<td>0.9</td>
<td>0.6</td>
</tr>
<tr>
<td>Trinidad &amp; Tobago</td>
<td>0.8</td>
<td>0.5</td>
</tr>
<tr>
<td>BVI</td>
<td>0.7</td>
<td>0.4</td>
</tr>
<tr>
<td>Barbados</td>
<td>0.6</td>
<td>0.3</td>
</tr>
<tr>
<td>St. Kitts</td>
<td>0.5</td>
<td>0.2</td>
</tr>
</tbody>
</table>

CARPHA

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NCDs and the economy

- **Lost productivity:** NCDs strike people in LMICs during their prime; younger than in high-income countries

- **Household poverty:** Out-of-pocket payments for NCD treatment and care trap poor households in cycles of catastrophic expenditure and impoverishment, particularly in LMICs that lack universal health coverage
Health spending on diabetes ranges from 6% of all health costs in China to 15% in Mexico. 

*Source: P. Zhang, et al, 2010*

Each 10% increase in NCD burden is associated with a 0.5% reduction in annual economic growth. 

*Source: WHO*

23 high burden countries are projected to lose $84 billion in GDP between 2005-2015 from 3 NCDs. 

*Source: Abegunde, et al, 2007*

NCDs will cost more than $47 trillion globally between now and 2030. 

*Source: D. Bloom, 2011*
### Estimated Economic Burden ($US Million, 2001)

<table>
<thead>
<tr>
<th>Disease</th>
<th>BAH</th>
<th>BAR</th>
<th>JAM</th>
<th>TRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>27</td>
<td>38</td>
<td>221</td>
<td>467</td>
</tr>
<tr>
<td>Hypertension</td>
<td>46</td>
<td>73</td>
<td>266</td>
<td>250</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>73</td>
<td>111</td>
<td>487</td>
<td>717</td>
</tr>
<tr>
<td><strong>% GDP</strong></td>
<td>1.4</td>
<td>5.3</td>
<td>5.8</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Cost Effective Interventions
What steps can Caribbean countries take to delay onset of NCDs?

Non-modifiable risk factors (age, genes, fetal origins*)

Behavioural risk factors
- Smoking
- Alcohol misuse
- Poor dietary quality
- Physical inactivity

Physiological risk factors
- Obesity
- High LDL and low HDL cholesterol†
- High blood pressure†

Major NCDs
- Heart disease
- Stroke
- Cancers
- Chronic long-term disease
- Diabetes‡

Major injuries
- Transport (built environment, alcohol)
- Intentional (alcohol)
- Other

Environmental risk factors
- Air pollution
- Unsafe roads and vehicles
- Built environment that impedes physical activity

Relations between key risk factors for major NCDs and injuries
† Amenable to drug therapy

Preventing disease, promoting and protecting health
**A thought experiment**

You are the minister of health in a Caribbean country. You have **$35 million** to spend on NCDs. Which of these do you choose? **Who is covered for what?**

<table>
<thead>
<tr>
<th>Population prevention</th>
<th>Population screening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-cost: Tobacco taxation</td>
<td>What diseases? HTN?, DM?</td>
</tr>
<tr>
<td>High-cost: food regulations</td>
<td>What target groups? [unclear guidelines, costly]</td>
</tr>
<tr>
<td>[pushback from industry]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individual prevention</th>
<th>Individual treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which meds are covered?</td>
<td>Low-cost: ACEI, BB, ASA?</td>
</tr>
<tr>
<td>How do you deliver care?</td>
<td>High-cost:</td>
</tr>
<tr>
<td>- Buy more HCWs?</td>
<td>- Acute, e.g., CABG</td>
</tr>
<tr>
<td>- Redistribute HCWs?</td>
<td>- Chronic, e.g., dialysis??</td>
</tr>
</tbody>
</table>

Some data snippets (Caribbean)
- 27% of men and 12% of women use tobacco
- Hypertension prevalence: 27% (23%-50%)
- Diabetes prevalence: 10% (4%-22%)
- CAD, CKD prevalence not available

## WHO Best Buys for prevention and control of NCDs

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Cost per person per year ($US)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>China</strong></td>
<td><strong>India</strong></td>
</tr>
<tr>
<td>1. Tobacco Use</td>
<td>0.14</td>
</tr>
<tr>
<td>2. Dietary Salt</td>
<td>0.05</td>
</tr>
<tr>
<td>3. Obesity, unhealthy diets and physical inactivity</td>
<td>0.43</td>
</tr>
<tr>
<td>4. Harmful Alcohol Intake</td>
<td>0.07</td>
</tr>
<tr>
<td>5. Cardiovascular risk reduction</td>
<td>1.02</td>
</tr>
</tbody>
</table>

**Total cost per person:**

- **China:** $1.72
- **India:** $1.52
- **Russia:** $4.08
Taxes: the single greatest opportunity is tobacco

50% rise in tobacco price from tax increases in China

- prevents 20 million deaths + generates extra $20 billion/y in next 50 y
- additional tax revenue would fall over time but would be higher than current levels even after 50 y
- largest share of life-years gained is in bottom income quintile
Reduction of Alcohol Consumption

- Increases in Taxation on Alcohol
- Bans on Alcohol Advertising

– Global Strategy to Reduce the Harmful Use of Alcohol was endorsed By 63rd World Health Assembly (2010)
Lessons from taxing tobacco and alcohol

- Taxes must be **large** to change consumption
- Must prevent **tax avoidance** (loopholes) and **tax evasion** (smuggling, bootlegging)
- Design taxes to **avoid substitution**
- **Young/low-income groups** respond most
Salt reduction

<table>
<thead>
<tr>
<th>Priority Area</th>
<th>Indicative Benefit-Cost Ratio</th>
<th>Annual Costs ($ billions)</th>
<th>Annual Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart disease, strokes: salt reduction</td>
<td>20:1</td>
<td>1</td>
<td>1 million deaths averted or 20 million DALYs</td>
</tr>
</tbody>
</table>

Source: Gaziano TA. Tax on salt and voluntary industry reductions in salt content could reduce deaths from cardiovascular disease by 3 percent in developing countries. World Congress of Cardiology Presentation, 2012
Elimination of Trans Fats

- 2% energy from trans fats replaced with polyunsaturated fats
- Cardiovascular diseases reduced 7-40%
- Reductions in Type 2 Diabetes
- Cost per person US$0.50
## Essential package of clinical interventions

### WHO “best buys”

<table>
<thead>
<tr>
<th>NCD</th>
<th>Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver cancer</td>
<td>Hepatitis B vaccine</td>
</tr>
<tr>
<td>Cervical cancer</td>
<td>Screening (HPV/ PAP/ VIA) and treatment of pre-cancerous lesions, HPV Vaccination</td>
</tr>
<tr>
<td>CVD and diabetes</td>
<td>Counselling and multi-drug therapy for high-risk patients, Good glycaemic control</td>
</tr>
<tr>
<td>Heart attack</td>
<td>Aspirin</td>
</tr>
</tbody>
</table>

Preventing disease, promoting and protecting health
Taking Action in the Caribbean
Collective Action by Governments

- Port of Spain Declaration on NCDs signed in 2007
  - 27 commitments for prevention and control of NCDs
  - Annual monitoring shows diet-related indicators have moved the least
  - Evaluation in progress
  - Results will be used to facilitate acceleration of implementation

- 14/15 countries have signed & ratified FCTC
  - Countries obliged to fully implement the articles of the FCTC

- CARICOM Advocacy for global level attention; Summit of the Americas 2009; CHOGM 2009

- UN High Level Meeting on NCDs 2011, 2014
The CARICOM Heads Summit on NCDs, 2007.

- “We, the Heads of State of the Caribbean Community….”
- 15-point, 27 commitment “Port of Spain Declaration”; multi-sectoral
- **Tobacco** – Ratify and implement the WHO FCTC: taxes, packaging, earmark some revenue for health promotion & disease prevention, ban smoking in public places
- **Alcohol**- use alcohol taxes to finance NCD prevention and control
- **Healthy Diet** - Trade policies on food imports, agriculture policies, Healthy school meals, Food labeling, reduce or eliminate trans fats
- **Physical activity**- physical education in schools; physical activity in work places; improve public facilities for physical activity
- **Health services** - screening and management of NCDs to achieve 80% coverage by 2012; primary and secondary prevention, comprehensive health education
- **Monitoring** - Surveillance of risk factors; monitoring of the actions agreed upon in Declaration (CARICOM Secretariat, CAREC, UWI & PAHO/WHO)
- **Mobilizing Society** - National Commissions on NCDs; including public, private sector and civil society, media and communications industry
- **Caribbean Wellness Day** – Second Saturdays in September
CARIBBEAN NCD SCORECARD:
- 20 Countries
- 26 Indicators
- Issues
Definitions?
Validation?
Right indicators?
- Evaluation
commencing

<table>
<thead>
<tr>
<th>POS NCD #</th>
<th>NCD Progress Indicator</th>
<th>COMMITMENT</th>
<th>TOBACCO</th>
<th>NUTRITION</th>
<th>PHYSICAL ACTIVITY</th>
<th>EDUCATION / PROMOTION</th>
<th>SURVEILLANCE</th>
<th>TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.14</td>
<td>NCD Plan</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>4</td>
<td>NCD Budget</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>NCD Summit convened</td>
<td></td>
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<tr>
<td>2</td>
<td>Multi-sectoral NCD Commission appointed and functional</td>
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<td></td>
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<td>3</td>
<td>FOTO certified</td>
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<td></td>
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<tr>
<td>3</td>
<td>Tobacco taxes &gt;60% sale price</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td>3</td>
<td>Smoke Free indoor public places</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Advertising, promotion &amp; sponsorship bans</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>7</td>
<td>Multi-sector Food &amp; Nutrition plan implemented</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>7</td>
<td>Trans fat free food supply</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>7</td>
<td>Policy &amp; standards promoting healthy eating in schools implemented</td>
<td></td>
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<tr>
<td>8</td>
<td>Trade agreements utilized to meet national food security &amp; health goals</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>9</td>
<td>Mandatory labeling of packaged foods for nutrition content</td>
<td></td>
<td></td>
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<tr>
<td>8</td>
<td>Mandatory PA in all grades in schools</td>
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<tr>
<td>10</td>
<td>Mandatory provision for PA in new housing developments</td>
<td></td>
<td></td>
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<tr>
<td>10</td>
<td>Ongoing, mass Physical Activity or New public PA spaces</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>12</td>
<td>NCD Communications plan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>CWD multi-sectoral, multi-focal celebrations</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>≥50% of public and private institutions with physical activity and healthy eating programmes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>≥30 days media broadcasts on NCD control/ risk factors and treatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11, 13, 14</td>
<td>Surveillance: STEPS or equivalent survey</td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>Chronic Care Model / NCD treatment protocols in ≥ 50% PHC facilities</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>QOC CVD or diabetes demonstration project</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Reducing Obesity and Overweight
CARPHA Initiatives

- Plan of Action for Preventing and Controlling Childhood Obesity 2014-2019
  - Distributed to countries
  - Available on CARPHA website

- Policy/regulation
- Education
- Monitoring /surveillance
- Management of overweight in HS
- Training
Promoting healthy diets and reducing the burden of obesity and diet-related NCDs

- 6-Point Core Policy Package; Evidence informed
  - To be signed by countries at joint COHSOD/COTED November 2015
  - Mandatory nutritional labelling of foods
  - Regulate school feeding environment
  - Reduce marketing of food to children
  - Product reformulation to reduce fat, salt, sugar levels
  - Fiscal and Trade measures
  - Promote Fruit and vegetable consumption

- Legislative briefs and training to support implementation of country actions for NCD prevention and control (CARPHA/IDLO)
No country was found to have comprehensive Legislation for NCDs and Obesity
Summary and Way Forward

- We have a very big problem with NCDs and related risks
- Governments are acting, though room for improvement
- Costs not sustainable – governments, families, businesses
- There are a range of cost effective solutions (political feasibility, barriers to uptake)
- Capacity to measure, legislative and regulatory capacity
Way Forward

- Accelerate multi-sector actions; all of society approach – governments, civil society, academia, private sector, international partners

- Include NCDs in Caribbean Cooperation in Health, Phase 4

- Pursue Global level indicators and targets of the UNHLM and inclusion in the post-2015 sustainable development agenda

- Keep NCDs on Political agenda; innovative resourcing

- Engaging people at all levels, mobile health
Set of 9 voluntary global NCD targets for 2025

1. Premature mortality from NCDs 25% reduction
2. Essential NCD medicines and technologies 80% coverage
3. Drug therapy and counseling 50% coverage
4. Diabetes/obesity 0% increase
5. Raised blood pressure 25% reduction
6. Tobacco use 30% reduction
7. Salt/sodium intake 30% reduction
8. Physical inactivity 10% reduction
9. Harmful use of alcohol 10% reduction
Global Monitoring Framework

Mortality & Morbidity
Unconditional probability of dying between ages 30 and 70 years from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases
Cancer incidence by type of cancer

Risk Factors
Harmful use of alcohol (3)
Low fruit and vegetable intake
Physical inactivity (2)
Salt intake
Saturated fat intake
Tobacco use (2)
Raised blood glucose/diabetes
Raised blood pressure
Overweight and obesity (2)
Raised total cholesterol

National Systems Response
Cervical cancer screening
Drug therapy and counseling
Essential NCD medicines & technologies
Hepatitis B vaccine
Human Papilloma Virus vaccine
Marketing to children
Access to palliative care
Policies to limit saturated fats and virtually eliminate trans fats

Total number of related indicators in brackets

25 Indicators
Acknowledgments

“Global Problems, Smart Solutions – Costs and Benefits”
Cambridge University Press, 2013

Prabhat Jha
Rachel Nugent
David Bloom
Stephane Verguet

“Global Health 2035”
Lancet Commission in Investing in Health
Lawrence Summers
Dean Jamison

Preventing disease, promoting health