Mainstreaming Health in All Public Policies For Reducing the Burden of Non-Communicable Diseases

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President, World Heart Federation
PUBLIC HEALTH INTERVENTIONS

Policy Interventions
- Enabling Environment (Financial, Social, Physical)

Educational Interventions
- Health Beliefs and Behaviours (Community; Individual)

Desired Change
GBD 2010

Risk Factors
(Top Contributors to DALYs)

1. High Blood Pressure
2. Smoking (excluding SHS)
3. Alcohol Use
4. Household Air Pollution
5. Low Fruit
6. High Body Mass Index
7. High Fasting Plasma Glucose
8. Childhood Underweight
9. Ambient PM Pollution
10. Physical Inactivity

Diet & Physical Inactivity Cluster Responsible For Largest Global Disease Burden

Lancet 2012
UN-WHO Targets For NCDs
25 by 25

√ Each of these has a policy dimension
√ Most of these demand multisectoral action
Power of Policy

- Modifies social and economic determinants of behaviours
  - Influences how people Eat, Smoke, Drink, Move
- Creates enabling environment to initiate & maintain behaviour change in communities and individuals
- Can impact on multiple risk factors simultaneously
- Reduces population risk in short time
- Cost effective
- Relatively easy to implement
- Has intergenerational benefit
Positioning NCD Prevention And Control In All Policies

Multi-Sectoral Actions

- Across The Health Sector
- Concerted Actions
- Other Sectors Impacting On Health
Health System Challenges

- Health Workforce
- Health Care Services
- Drugs & Technologies
- Health Financing
- Integration Among NCDs
- Integration with Other Health Programs
- Coordination with Other Sectors
NON PHYSICIAN HEALTH WORKERS FOR NCD MANAGEMENT: EVIDENCE OF EFFECTIVENESS

- **Kwazulu Natal - Nurses were able to control:**
  - 68% patients with diabetes
  - 82% patients with Hypertension
  - 84% patients with asthma
  - Treatment adherence increased from 79% to 87%

- **Iran – Behvarz (Rural Primary Health Care) Workers**
  - Each additional Behvarz worker was associated with 0.09 mmol/L (0.01-0.18) lower FPG & 0.53 mm Hg (-0.44 – 1.50) lower SBP

- **India & Pakistan**
  - NPHWs reliably and effectively apply WHO Cardiovascular Risk Management Package (80% a priori agreement with physicians)

(Sources: Coleman et al. 1998; Farzadfar et al. 2012; Abegunde et al. 2006)
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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>1.</strong> Enhancing capacity for generic substitution</td>
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<tr>
<td><strong>2.</strong> Expediting generic availability by overcoming legal barriers related to patents licenses</td>
<td></td>
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<tr>
<td><strong>3.</strong> Optimizing local procurement practices in the public sector</td>
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<td><strong>4.</strong> Broadening global procurement via third-party price negotiations</td>
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<td><strong>5.</strong> Engaging the private sector to differentially price CVD medicines in LMICs</td>
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<td><strong>6.</strong> Regulating retail mark-ups in the supply chain</td>
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<td><strong>7.</strong> Eliminating tariffs on medicines</td>
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<tr>
<td><strong>8.</strong> Developing a fixed-dose combination (FDC) for CVD (the ‘Polypill’)</td>
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</table>
GLOBAL RESPONSE

- Strengthen NCD Surveillance
  - Disease Burden
  - Risk Factors
  - Health Literacy
  - Macro Policies

- Multi-Sectoral Action For Prevention

- NCD Related Health Services
  - Work Force
  - Drugs
  - Technologies

- NCDs in UHC
  - 1st Care
  - 2nd Care
  - 3rd Care
POLICY APPROACHES (Global; National; Local)

Financial
Legal
Regulatory
Trade

Environment To Enable Individuals To Make and Maintain Healthy Choices

Individually
Family
Neighborhood, Community

Enhancement of Knowledge, Motivation, and Skills of Individuals

WIDER SOCIETY

Preventive, Diagnostic, Therapeutic, Rehabilitative Services

Health Care Delivery

Determinants

Globalization
Demographic Change
Social Determinants
Health Inequities
Education
Cultural and Social Norms

Biological Risk
Behavioral Risk

Health Workforce
Access to Care
Systems Infrastructure

Health Communication

Media
Community Interventions
Settings Based
HEALTH BEYOND HEALTH CARE

“Health leaps out of Science and draws nourishment from the totality of society”

- Gunnar Myrdal
  (Swedish Economist, Nobel Laureate)

POLICIES AND PROGRAMMES IN

- Finance
- Water
- Sanitation
- Agriculture
- Food Processing
- Education
- Rural Development
- Urban Design
- Transport
- Communications
- Trade
- Environment

NEED TO BECOME SENSITIVE AND RESPONSIVE TO PUBLIC HEALTH CONCERNS!
### TOBACCO
A Global Thrust To Counter
A Global Threat : FCTC + MPOWER

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<tbody>
<tr>
<td><strong>FCTC (2003)</strong></td>
<td>Now 178 Countries Subscribe To The Treaty</td>
</tr>
<tr>
<td><strong>MPOWER (2008)</strong></td>
<td>Monitoring; Protect Against 2o Smoke; Offer Help to Quit; Warnings; Enforce Ad Bans; Raise Tobacco Taxes</td>
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<tr>
<td>Evidence is available from many countries (including LMIC) that</td>
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<tr>
<td>---------------------------------------------------------------</td>
<td></td>
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<tr>
<td>- Taxation</td>
<td></td>
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<tr>
<td>- Ad Bans</td>
<td></td>
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<tr>
<td>- Smoke Free Policies</td>
<td></td>
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<tr>
<td>- Health Warnings</td>
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</tbody>
</table>

**ARE EFFECTIVE**

48.1% of mortality averted in UK (1981-2000) is attributable to reduced smoking

*(Unal B et al. Circulation 2004)*
‘’Triple-Halve-Double”; Tripling of cigarette prices halved the consumption and doubled the inflation adjusted Government revenue.

## Smoke Free Policies and Myocardial Infarction (MI)

<table>
<thead>
<tr>
<th>Study and location</th>
<th>% decrease in MI admission rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sargent et al, 2004, Helena, USA</td>
<td>40</td>
</tr>
<tr>
<td>Bartecchi et al, 2006, Pueblo, USA</td>
<td>27</td>
</tr>
<tr>
<td>Barone –Adesi et al, 2006, Piedmont, Italy</td>
<td>11</td>
</tr>
<tr>
<td>Seo et al, 2007, Monroe, Indiana, USA</td>
<td>29</td>
</tr>
<tr>
<td>Khuder et al, 2007, Bowling Green, Ohio, USA</td>
<td>47</td>
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<tr>
<td>Juster et al, 2007, New York, USA</td>
<td>8</td>
</tr>
<tr>
<td>Lemstra et al, 2008, Saskatoon, Canada</td>
<td>13</td>
</tr>
<tr>
<td>Cesaroni et al, 2008, Rome, Italy</td>
<td>8</td>
</tr>
<tr>
<td>Pell et al, 2008, Scotland</td>
<td>17</td>
</tr>
<tr>
<td>Edwards et al, 2008, New Zealand</td>
<td>No change</td>
</tr>
<tr>
<td>Vasseli et al, 2008, Four regions of Italy</td>
<td>13</td>
</tr>
<tr>
<td>CDC, 2009, Pueblo, USA</td>
<td>41</td>
</tr>
<tr>
<td>Meyers et al., 2009, Meta-analysis</td>
<td>17</td>
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</tbody>
</table>
Impact of Tobacco Control Measures in India: Modelling Study

- **Smoke-free laws and increased taxation** - the most effective strategies for reducing heart attacks and strokes
- Both together **could avert 25% of heart attacks and strokes over 2013-2022**
- If effects are additive, they could avert 9 million deaths, i.e., a quarter of expected heart attacks and strokes over 2013-2022
- **Effect larger than from use of drug therapies** (aspirin, anti-hypertensives, statins), under current health system conditions (limited treatment access and adherence)
- **Tobacco control plus drug therapy could avert a third of expected heart attacks and strokes among 20-79 year olds over 2013-2022**
- Accelerated tobacco control remains a potent intervention to reduce CVD mortality

Effectiveness of Tobacco Control and Pharmacological Interventions in reducing Heart Attack and Stroke Deaths in India, 2013–2022

<table>
<thead>
<tr>
<th>Category</th>
<th>Intervention</th>
<th>MI Deaths Averted (95% CI)</th>
<th>Percent Reduction in MI Deaths</th>
<th>Stroke deaths Averted (95% CI)</th>
<th>Percent Reduction in Stroke Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco control</td>
<td>Smoke-free legislation</td>
<td>734,000 (487,000–981,000)</td>
<td>3.7</td>
<td>435,000 (289,000–581,000)</td>
<td>3.8</td>
</tr>
<tr>
<td></td>
<td>Brief cessation advice</td>
<td>64,000 (40,000–88,000)</td>
<td>0.3</td>
<td>41,000 (25,000–57,000)</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Mass media</td>
<td>320,000 (233,000–407,000)</td>
<td>1.6</td>
<td>205,000 (149,000–261,000)</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td>Advertising ban</td>
<td>384,000 (305,000–463,000)</td>
<td>1.9</td>
<td>246,000 (195,000–297,000)</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>300% bidi tax</td>
<td>787,000 (768,000–806,000)</td>
<td>4.0</td>
<td>507,000 (495,000–519,000)</td>
<td>4.0</td>
</tr>
<tr>
<td>Pharmacological</td>
<td>300% cigarette tax</td>
<td>965,000 (841,000–1,089,000)</td>
<td>4.9</td>
<td>617,000 (538,000–696,000)</td>
<td>5.0</td>
</tr>
<tr>
<td></td>
<td>300% bidi and cigarette tax</td>
<td>2,114,000 (1,843,000–2,385,000)</td>
<td>8.8</td>
<td>1,021,000 (890,000–1,152,000)</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>Aspirin</td>
<td>232,000 (225,000–239,000)</td>
<td>1.1</td>
<td>79,000 (77,000–81,000)</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>Anti-hypertensives</td>
<td>241,000 (230,000–252,000)</td>
<td>1.1</td>
<td>234,000 (224,000–244,000)</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>Statin</td>
<td>307,000 (290,000–324,000)</td>
<td>1.4</td>
<td>44,000 (42,000–46,000)</td>
<td>0.3</td>
</tr>
<tr>
<td>Combinations</td>
<td>All meds</td>
<td>769,000 (677,000–861,000)</td>
<td>3.5</td>
<td>852,000 (751,000–953,000)</td>
<td>5.6</td>
</tr>
<tr>
<td></td>
<td>All TC (no additive effects)</td>
<td>2,422,000 (1,501,000–3,343,000)</td>
<td>2.2</td>
<td>1,517,000 (940,000–2,094,000)</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>All TC (cumulative effects)</td>
<td>5,018,000 (4,097,000–5,939,000)</td>
<td>25.3</td>
<td>3,182,000 (2,598,000–3,766,000)</td>
<td>25.6</td>
</tr>
<tr>
<td></td>
<td>All TC (25% synergy)</td>
<td>6,272,000 (5,351,000–7,193,000)</td>
<td>31.6</td>
<td>3,978,000 (3,394,000–4,562,000)</td>
<td>32.3</td>
</tr>
<tr>
<td></td>
<td>All TC+all meds</td>
<td>5,954,000 (5,033,000–6,875,000)</td>
<td>30.0</td>
<td>3,736,000 (3,158,000–4,314,000)</td>
<td>30.3</td>
</tr>
</tbody>
</table>

“All meds” assumes that the effects of aspirin, antihypertensive drugs, and statins are additive. “All TC” refers to a combination of smoke-free legislation, brief cessation advice by clinicians, a mass media campaign, a ban on advertising, and a 300% tax rate increase on both bidi and cigarettes. “No additive effects” means that only the impact of the most effective tobacco control intervention produces the resulting effectiveness of the tobacco control package. “Cumulative effects” assumes that a combined package of tobacco control interventions would have an impact equal to 1−[(1−risk reduction from intervention A)×(1−risk reduction from intervention B), etc.]. “25% synergy” assumes that when the interventions are combined, the impact of each individual intervention is amplified by 25%.

MI, myocardial infarction; TC, tobacco control.

doi:10.1371/journal.pmed.1001480.t002
Breaking Barriers: Tobacco Control in India

**Industry Tactics**
- "Indispensable for economy"
- "Don't create unemployment"
- "Personal choice"
- "Don't curb creative freedom"
- Surrogate advertisement
- Litigation

**Check-Mate Measures**
- Economic Analyses
- Poverty Connection
- Societal Good
- "Don't subvert art"
- Counter-advertising
- Litigation
Alcohol Control

- Price (Taxation; Minimum Pricing)
- Sales (Minimum Age; Other Restrictions)
- Modifying the Drinking Environment
- Drunk Driving (Checks; Penalties)
- Public Education
- De-Addiction Services
Thailand – a case study

• An alternate taxation technique has been used in Thailand
• ‘Two-chosen-one’ (2C1) is a mix of specific taxation (as a function of the alcohol content) and ad valorem taxation (as a function of the price)
• Results in a tax that aims to increase tax on beverages which are popular amongst heavy drinkers along with beverages which may be preferred by young people, compared to either taxation system alone.
• 2C1 led to greater reduction in overall consumption of alcohol versus specific taxation or ad valorem alone
• Promotes abstention amongst vulnerable youth
• Currently rates of abstention in Thailand are much higher than expected (taking into consideration the economic wealth of the country)

Source: Sornpaosarn et al (2012)
## Power of Policy for Chronic Disease Prevention

### Diet

- Evidence of preventive potential of policy interventions available from:
  - Mauritius (Price of Edible Oils)
  - Poland (Import of F-V and Healthy Fats)
  - Finland (Farming; Marketing; Community Education)

### New Initiatives

- Food Labeling
- Reduced Salt in Processed Foods
- Ban on Trans-Fats
- Advertising Restrictions
Dietary Change and CHD Mortality in Poland

Zatonski W et al., *BMJ* 1998;316:1047-51

![Graph showing dietary changes and CHD mortality in Poland](image-url)
Reducing Obesity and Diabetes in India by Taxing Sugar-Sweetened Beverages (SSB)

- Modelling study
- SSB consumption, an independent risk for overweight/obesity and diabetes, is increasing in India
- If SSB sales continue current rate of increase, compared to no tax, a 20% tax is projected to reduce overweight/obesity by 3% and diabetes incidence by 1.6 over 2014-2023
  - i.e., 11.2 million cases of overweight/obesity and 400,000 cases of diabetes averted
- If SSB sales increase more steeply than currently predicted, a 20% tax will avert 15.8 million cases of overweight/obesity and 600,000 cases of diabetes
- Sustained high taxation on SSBs might help control obesity and diabetes

Basu S et al., PLOS Medicine 2014;11:e1001582
Agriculture And Food Systems

- Crop diversity
- Fruit and vegetable adequacy
- Healthy edible oils
- Fish vs Meat production
- Food processing
- Marketing practices
- Food pricing
- Neighbourhood availability
- Transnational trade
Global F-V Supply: Need Ratio

<table>
<thead>
<tr>
<th>Year</th>
<th>2009</th>
<th>2025</th>
<th>2050</th>
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<tr>
<td></td>
<td>0.78</td>
<td>0.66</td>
<td>0.57</td>
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</table>

Siegel K et al, PLOS ONE, Aug 6, 2014
Proposed approaches to reduce intake of SFA and TFA

Reformulation
- Replacement of TFA with unsaturated FA, esp. PUFA (legislation)
- Reduction of SFA and replacement with unsaturated FA, esp. PUFA
- Monitoring product composition

Labelling
- Policy action for mandatory labelling
- Scientifically based consumer friendly labelling schemes (nutrient profiling)

Pricing policies
- Differential taxation of products with reduced TFA and SFA content

Marketing restrictions
- Advertisements to children (developing nutrient profiling model - EURO)

Menu changes in public institutions

Public awareness and education campaigns
- FBDG
- Mass media
- School education -- NFSI

Evidence generation
- Measurement of intake of SFA and TFA
- Country experiences in taking action and its impacts

- WHO (2013)
Low birth weight and its consequences

- Rebound Adiposity
- Hypertension
- Coronary heart disease
- Atherosclerosis
- Stroke
- Type II Diabetes, Insulin resistance
- Adult lung function
- ? Cancer
EVOLUTION OF HOMO ROTUNDUS!
AGRICULTURE & FOOD SYSTEMS SHOULD ALIGN WITH GLOBAL & NATIONAL NUTRITION GOALS

To Ensure That Every Person Has Access To Calorically Adequate And Nutritionally Appropriate Diets Which Are Affordable – At Each Stage of Life
THREE MAJOR GLOBAL INITIATIVES

- UN Sustainable Development Goals (2015)
- High Level Global Panel On Agriculture & Food Systems For Nutrition & Health (DFID-BMGF)
- WHO Commission on Ending Child Obesity
Dedicated Shaded cycling paths will promote physical activity, prevent diseases, save fuel and promote safety of entire communities and populations.

Shaded pedestrian paths increases physical activity, promotes health, prevents diseases and decreases accidents.

Open green spaces promote communities and people of all ages and backgrounds to be physically active.

Source: Goenka S, Powering India’s Growth

9/13/2014
Regional or National Policy

- Transport systems
- Urban planning and architecture
- Parks and recreation sector
- Health sector
- Education and schools sector
- Organized sports sector
- National physical activity plans
- National physical activity advocacy
- Corporate sector
Urban Design And Planning

- Protected Pedestrian Paths
- Designated Cycling Lanes
- Community Recreational Spaces
- Integrated Transport Systems
- Vehicular Density and Emissions
- Traffic Flow and Regulation
- Land Use and Housing
- Accessible Food Markets
FACTORS INFLUENCING THE HEALTH OF CITIES

URBAN GOVERNANCE

Natural and built environment
Social and economic environment
Food security and quality
Services and health emergency management

POPULATION CHARACTERISTICS

Source: Hidden Cities; WHO-Kobe, 2010
Societal policies and processes influencing the population prevalence of obesity

INTERNATIONAL FACTORS
- Globalization of markets
- Development
- Media programs & advertising

NATIONAL/REGIONAL
- Transport
- Urbanization
- Health
- Social security
- Media & Culture
- Education
- Food & Nutrition

COMMUNITY LOCALITY
- Public Transport
- Public Safety
- Health Care
- Sanitation
- Manufactured/Imported Food
- Agricultural Gardens/Local markets

WORK/SCHOOL/HOME
- Leisure Activity/Facilities
- Labour
- Infections
- Worksite Food & Activity
- Family & Home
- School Food & Activity

INDIVIDUAL

POPULATION

Energy Expenditure

% OBESITY AND OVERWEIGHT

Food intake: Nutrient density
MOULDING THE MARKETS

INTERNATIONAL AGENCIES; TRANS-NATIONAL TRADE AND MEDIA

GLOBAL COVENANTS, COMMERCE & COMMUNICATIONS

NATIONAL POLICY FRAME WORK
Political, Economic, Social Motivators

CONSUMER CONCIOUSNESS
Health Professionals, Civil Society; Media

INDUSTRY PRACTICES
Private-Public Partnerships; Health Dividend
CHOICE?

Conscious
- Well Informed
- Ill Informed

Conditioned
- Marketing and Promotion
- Cultural Factors

Compelled
- Availability
- Affordability
Survival curves 18-100 years and estimated life expectancy (LE) for alternative excess risk assumptions.
Air Pollution and CVD
Risk estimates from cohort studies per increment of 10 μg/m3 in PM2.5 or PM10
Indoor (Household) Air Pollution

- Modified Cook Stoves: Not shown to be effective
- Induction Heaters: Challenges of access to electricity
- LPG/Natural Gas: Regular supply and pricing
Barriers to Multi-Sectoral Action

- Lack of awareness (information gaps)
- Lack of interest ("doesn't concern me")
- Territoriality ("who are you to tell me?")
- Financial control ("why should I spend my money on your priorities?")
- Lack of coordination ("who is in charge?")
Incentives for Multi-Sectoral Action

- Clear and regular communication
- Health impact assessment (effects on health, economy)
- "Co-producers and Co-beneficiaries of health"
- Demand from diverse constituencies
  (coalition of civil society groups)
- Shared ownership
- Joint accountability
- Public recognition of role (“Champions of Public Health”)
Recipe for Political Will

- Economy
- Equity
- Electability
NCDs: The Price of Inaction

• 47 Trillion Dollars Lost Due to NCDs + Mental Health (2011-2030)
  
  Harvard – WEF Study 2011

• Between 2010 & 2025, deaths from 4 main NCDs will rise from 28.3 million to 38.8 million;
  of the 10.5 Million Additional Deaths, 9.5 Million will be in LMICs.

  Kontis et al, Lancet; 2014

NCDs: The Prize of Action

• 37 Million Lives Will Be Saved If We Act On 6 Risk Factors
  (If NCD ‘25 by 25’ Targets Are Nearly Achieved)

• Gains Will Be Greater If Tobacco Use Prevalence Is Reduced By 50%
  (Instead of 30%)

• Gains Will Be Even Greater If, In Addition, Effective 1° & 2° Prevention Is Extended Through
  Clinical Care Of High Risk Persons (Coverage Through Essential Medicines)

Kontis et al, Lancet; 2014
Policy Measures (Usually) Do Not Cost The Government Money

- Tobacco Taxes
- Ad Bans
- Public Smoking Bans
- Regulation of Processed Food (eg., Salt, Trans Fats)
- Food Labeling
NCD AGENDA IS CORE TO SUSTAINABLE DEVELOPMENT

Source: NCD Alliance
GLOBAL CALL: END GAME FOR TOBACCO

1 Billion deaths in 21st century

Food Insecurity

Water Insecurity

Poverty

Air Pollution

Deforestation
(tobacco curing + paper use)
We Live In A World

Where Food Systems Are

Threatening The Environment

And

Environmental Degradation

(From A Variety of Sources)

Is Threatening Food Systems

This Will Get Worse If We Don’t CHANGE!
INDUSTRIAL SCALE LIVESTOCK BREEDING

- Obesity
- CVD
- Cancer

- Food Crisis
  - (Grain Diversion)

- Climate Change
  - (↑ Methane; Deforestation)

- Pandemics
  - (Zoonotic Diseases rising)
Future of Agriculture

The transformation of agriculture must deliver sufficient food and nutrition to the world. To meet the projected demands of population growth and increasing consumption, we must roughly double food supplies in the next few decades.

The transformation of agriculture should also

1. Cut greenhouse gas emission from land use and farming by at least 80%

1. Reduce biodiversity and habitat losses

2. Reduce unsustainable water withdrawals, especially where water has competing demands

3. Phase out water pollution from agriculture chemicals

Source: Foley JA et al, Nature 2011
MEDICINE & NUTRITION

20th Century

PUBLIC HEALTH

21st Century

SUSTAINABLE DEVELOPMENT
“Should medicine ever fulfill its great ends, it must enter into the larger political and social life of our time; it must indicate the barriers which obstruct the normal completion of the life cycle and remove them. Should this ever come to pass, Medicine, whatever it may then be, will become the common good of all”

- Rudolf Virchow
(1821-1902)