Emerging opportunity to raise nutrition to high global political and fiscal priority

Edward Frongillo
Health Promotion, Education, and Behavior
February 25, 2011

Nutrition in 20th century

1912	“Vitamin”, a vital factor in the diet, coined from words "vital" and "amine”
1941	First Recommended Dietary Allowances (RDAs) established by the National Research Council
1950-1973	Protein era, which ended with downward revision of estimated protein requirements by WHO
1969-1977	First generation of data collection for INCAP Longitudinal Study
1974	Division of Nutritional Sciences formed at Cornell U.
1960-1979	Energy gap
1970-1989	Multisectoral nutrition planning, applied nutrition programs, and nutrition surveillance
1990-2000	Micronutrient deficiencies

Problems and causes, 2000 to present

- Growth faltering
- Low birth weight
- Maternal undernutrition
- Iodine
- Vitamin A
- Iron and zinc deficiencies
- Diarrhea
- HIV and other infectious diseases
- Inadequate infant and child feeding practices
- Female time constraints
- Limited household income and agricultural production
- Food insecurity
- Environmental degradation
- Urbanization

Pelletier, Olson, Frongillo (2011)

Partial solutions, 2000 to present

- Growth monitoring
- Supplementary feeding
- Exclusive breast-feeding
- Complementary feeding
- Nutrition education
- Behavior change communications
- Oral rehydration
- Child spacing
- Fortification
- Vitamin A
- Iron and multiple micronutrient supplementation
- Income generation
- Food aid
- Home gardening
- Agricultural intensification
- Ready-to-use foods

Pelletier, Olson, Frongillo (2011)

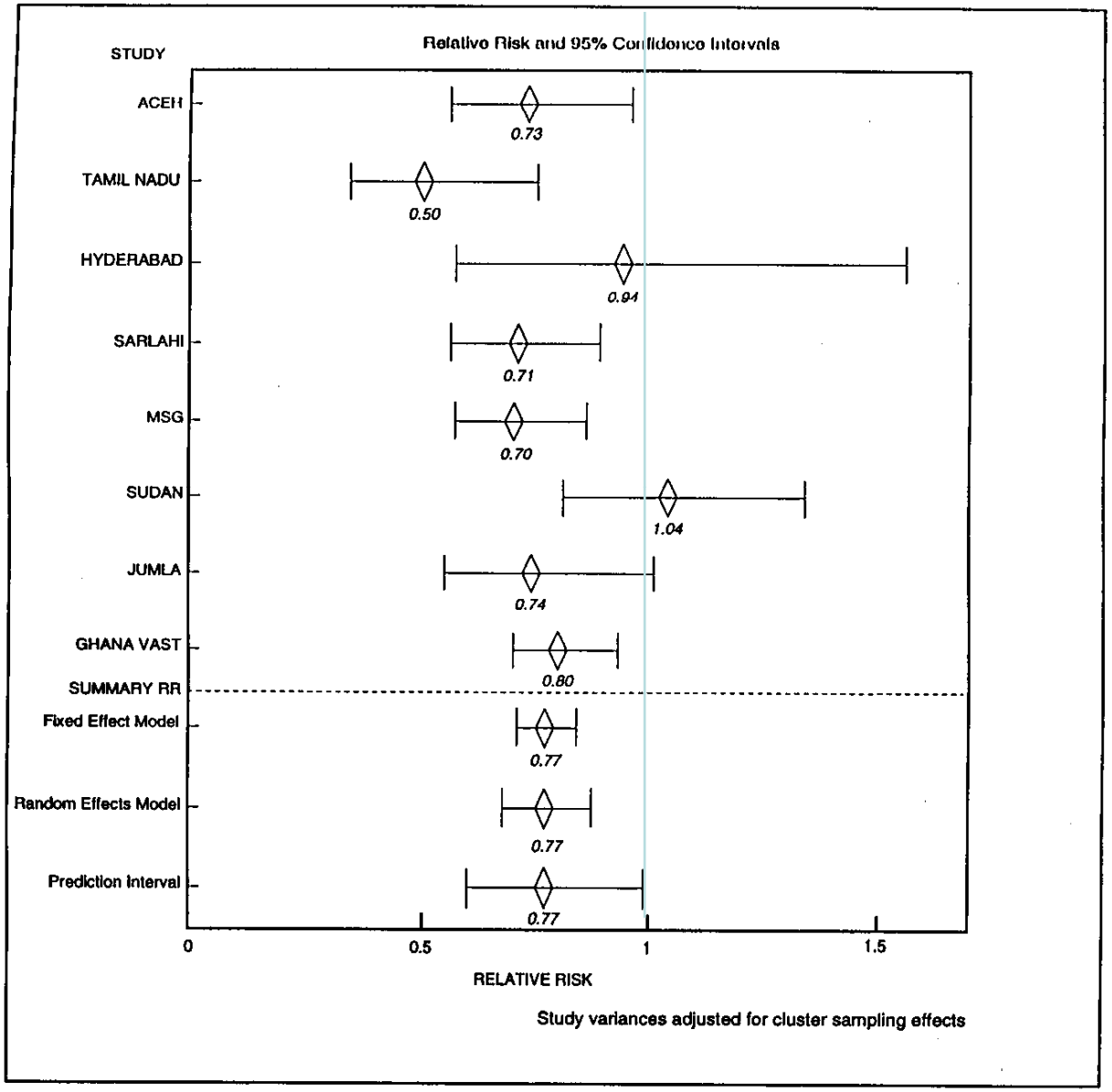
Use and interpretation of anthropometry

1992	First Report of the World Nutrition Situation from SCN using underweight prevalence
1991-1995	WHO review of uses and interpretations
1996	Multicentre Growth Reference Study designed
1997	Third Report of the World Nutrition Situation from SCN using stunting prevalence
1997	Multicentre Growth Reference Study starts in Brazil
2006	WHO Growth Standards released

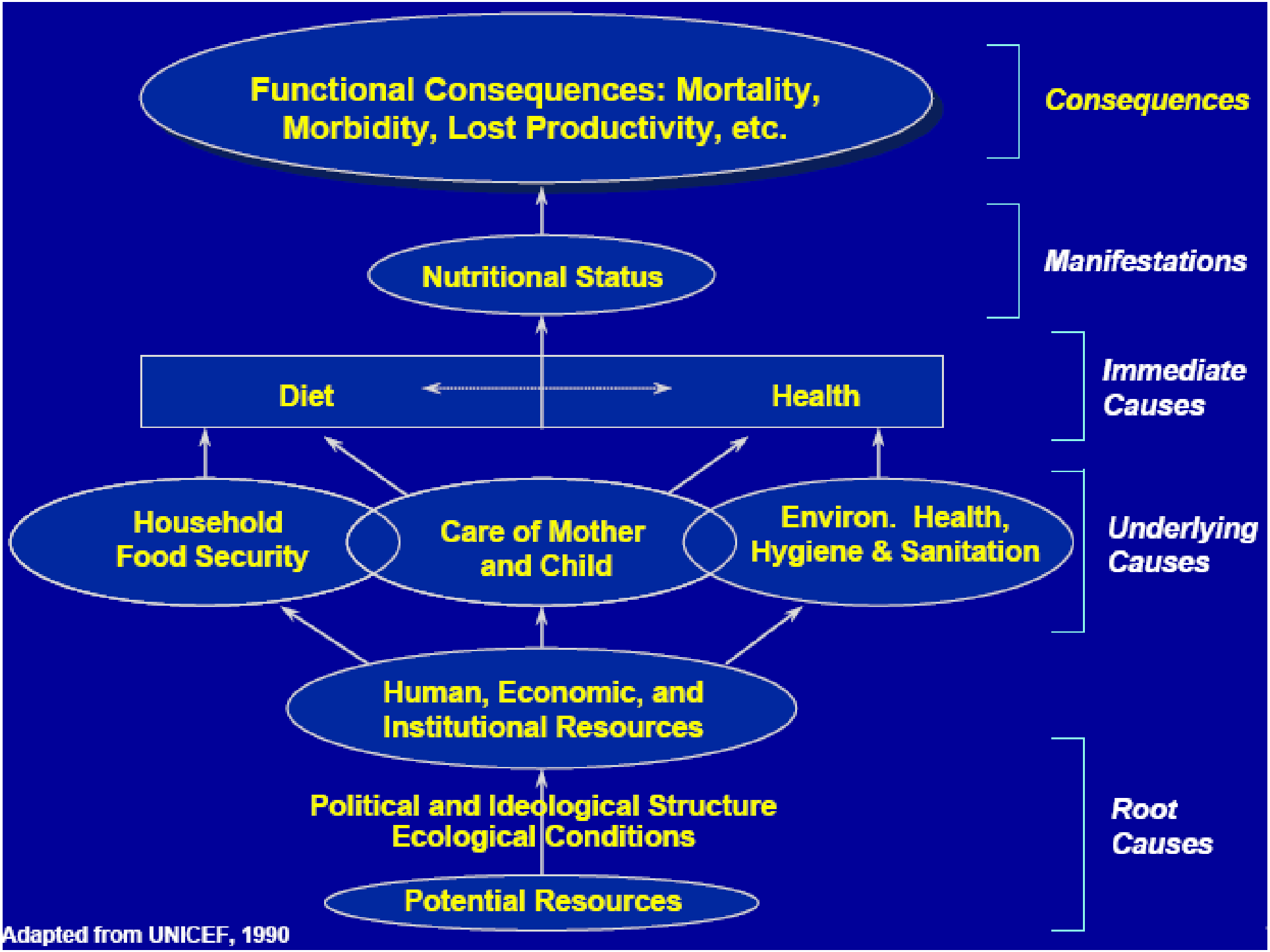
Nutrition Milestones

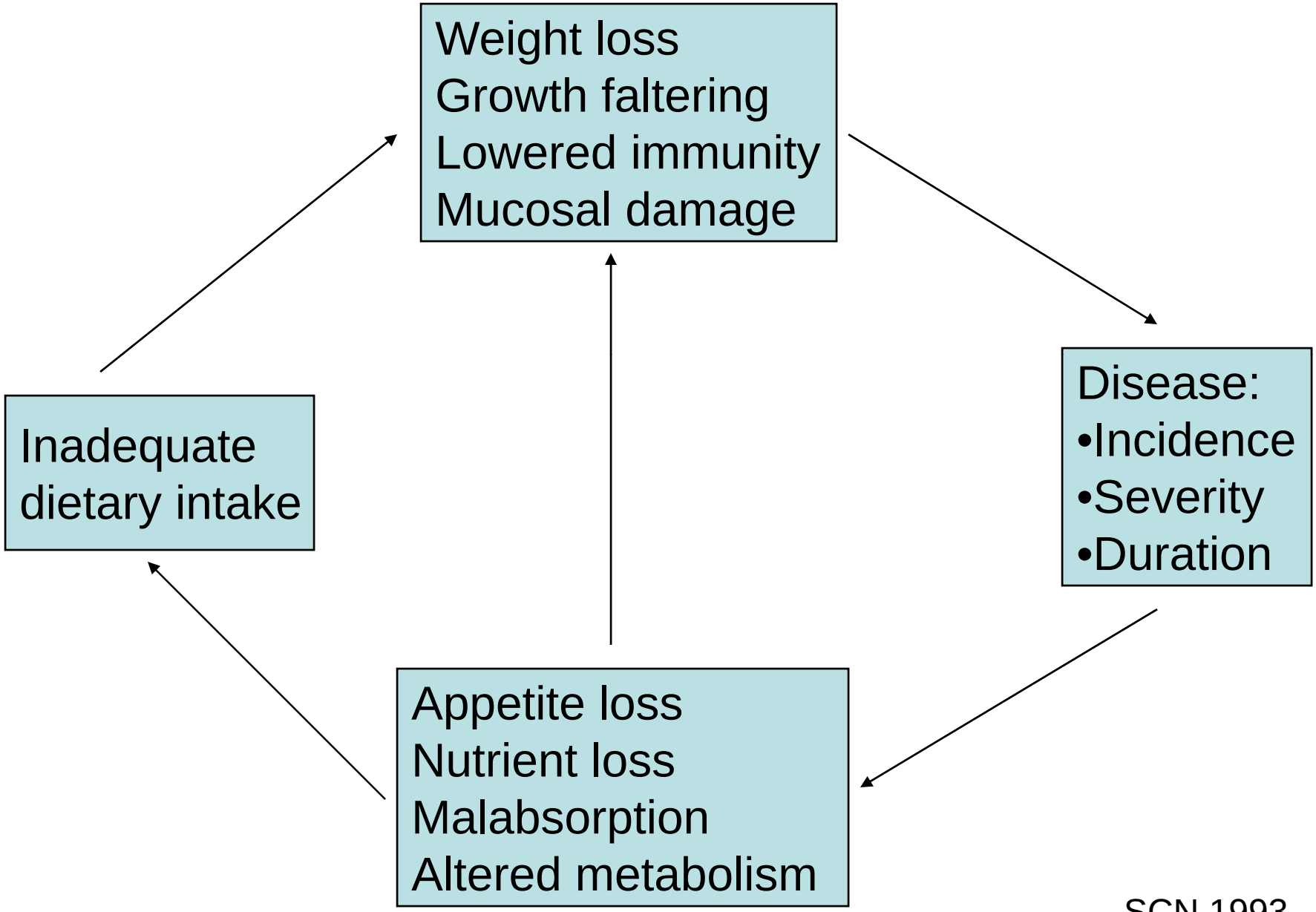
Milestone	Year
Vitamin A reduces mortality	1988
UNICEF conceptual model	1990
Malnutrition, infection, and mortality	1993
Global burden of disease	1996
Lancet survival series	2003
Copenhagen consensus of economists	2006, 2008
World Bank repositioning statement	2006
Lancet child development series	2007
Lancet nutrition series	2008

Figure S.1 Impact of Vitamin A Supplementation on Mortality of Infants and Children Six Months to Five Years



Note: Shown are the point estimates and 95% Confidence Intervals for the eight original studies reviewed in detail. Also shown are two summary estimates for the relative effect, taking into account all 8 studies. These have the same point estimates, a 23% reduction in mortality, but differ in the estimated Confidence Intervals. The second estimate (*random effects*) takes into account the between study variation that we believe exists. The first estimate (*fixed effect*) assumes that there is a single true RR for all studies. The Prediction Interval for a future programme or study is also presented. Again the predicted average effect is 23% but the interval describing possible actual effects is greatly expanded (see text for explanation).


Functional Consequences: Mortality, Morbidity, Lost Productivity, etc.
Consequences
Nutritional Status
Manifestations
Diet
Health
Immediate Causes
Household Food Security
Care of Mother and Child
Environ. Health, Hygiene & Sanitation
Underlying Causes
Human, Economic, and Institutional Resources
Political and Ideological Structure
Ecological Conditions
Potential Resources
Root Causes
Adapted from UNICEF, 1990


Weight loss
Growth faltering
Lowered immunity
Mucosal damage
Disease:
•Incidence
•Severity
•Duration
Appetite loss
Nutrient loss
Malabsorption
Altered metabolism
Inadequate
dietary intake

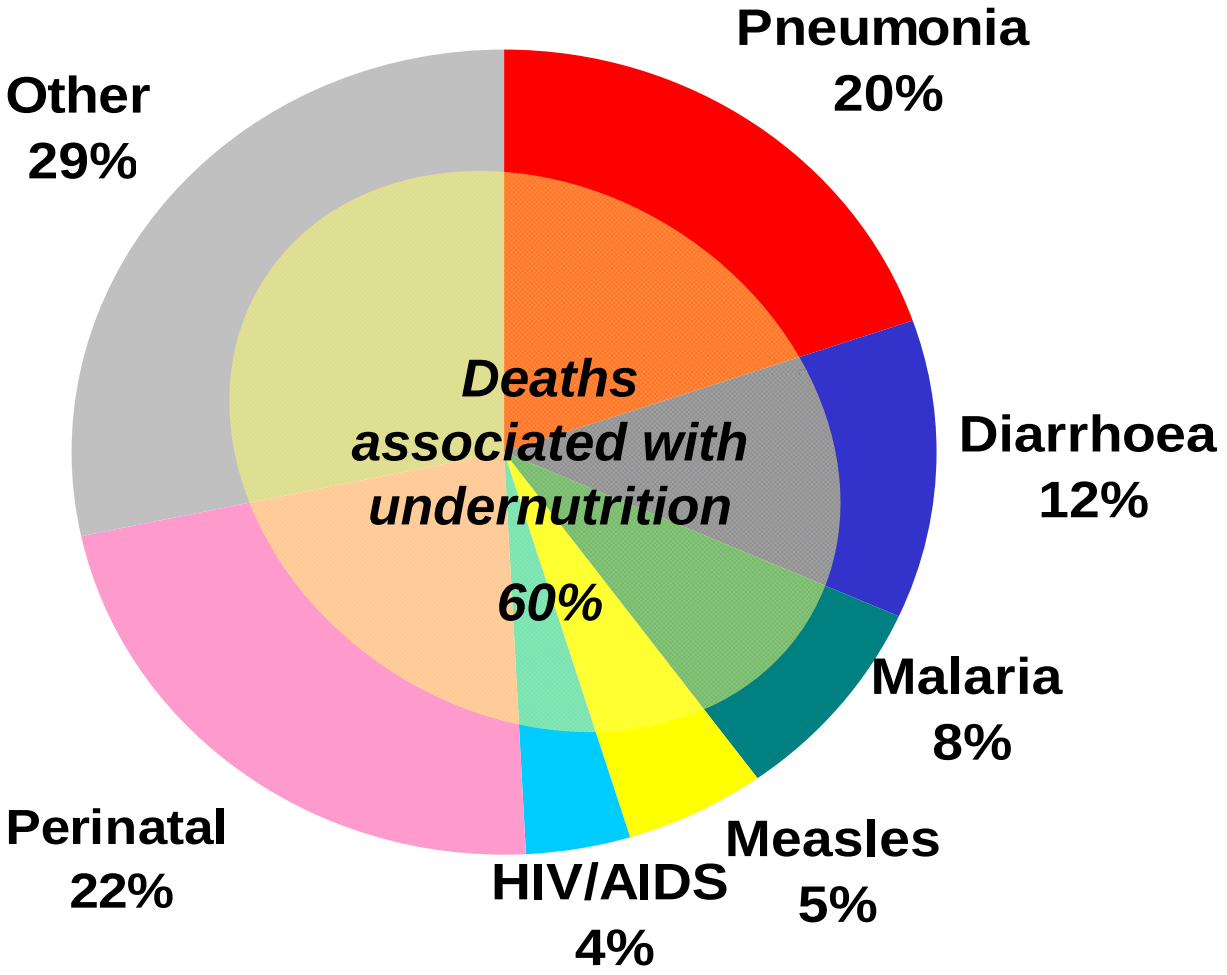
SCN 1993

Malnutrition-Infection Synergy

- Malnutrition increases case-fatality rate of infection
- Malnutrition **directly** results in more than ½ of child deaths through potentiating effect of infection
- Majority of these child deaths result from mild-to-moderate malnutrition

Pelletier, Frongillo, and Habicht (1993-1995)

Major causes of death among children under five, world, 2000



Sources:

For cause-specific mortality: EIP/WHO.

For deaths associated with malnutrition: Caulfield LE et al., Am J Clin Nutr, Am J Trop Hyg, 2004.

Child Survival (<5 y age)

- Annual global child deaths 10.8 million
  - 20 per minute
  - 29,000 or 200 airplane crashes per day
- 3/4 of child deaths occur in sub-Saharan Africa and south Asia
- 2/3 of child deaths could be prevented by interventions that are
  - available today
  - are feasible for implementation in low-income countries at high levels of population coverage

Lancet Child Survival series (2003)

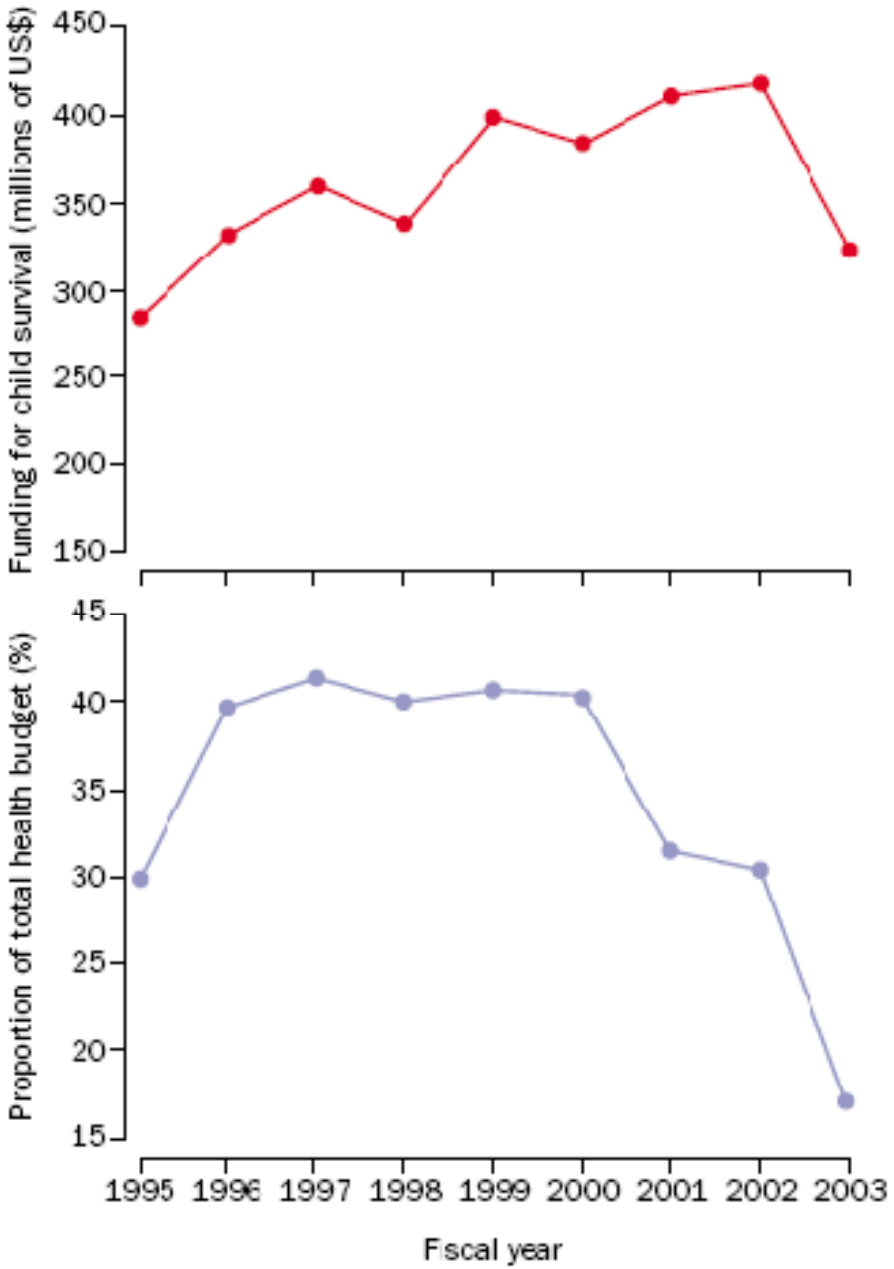
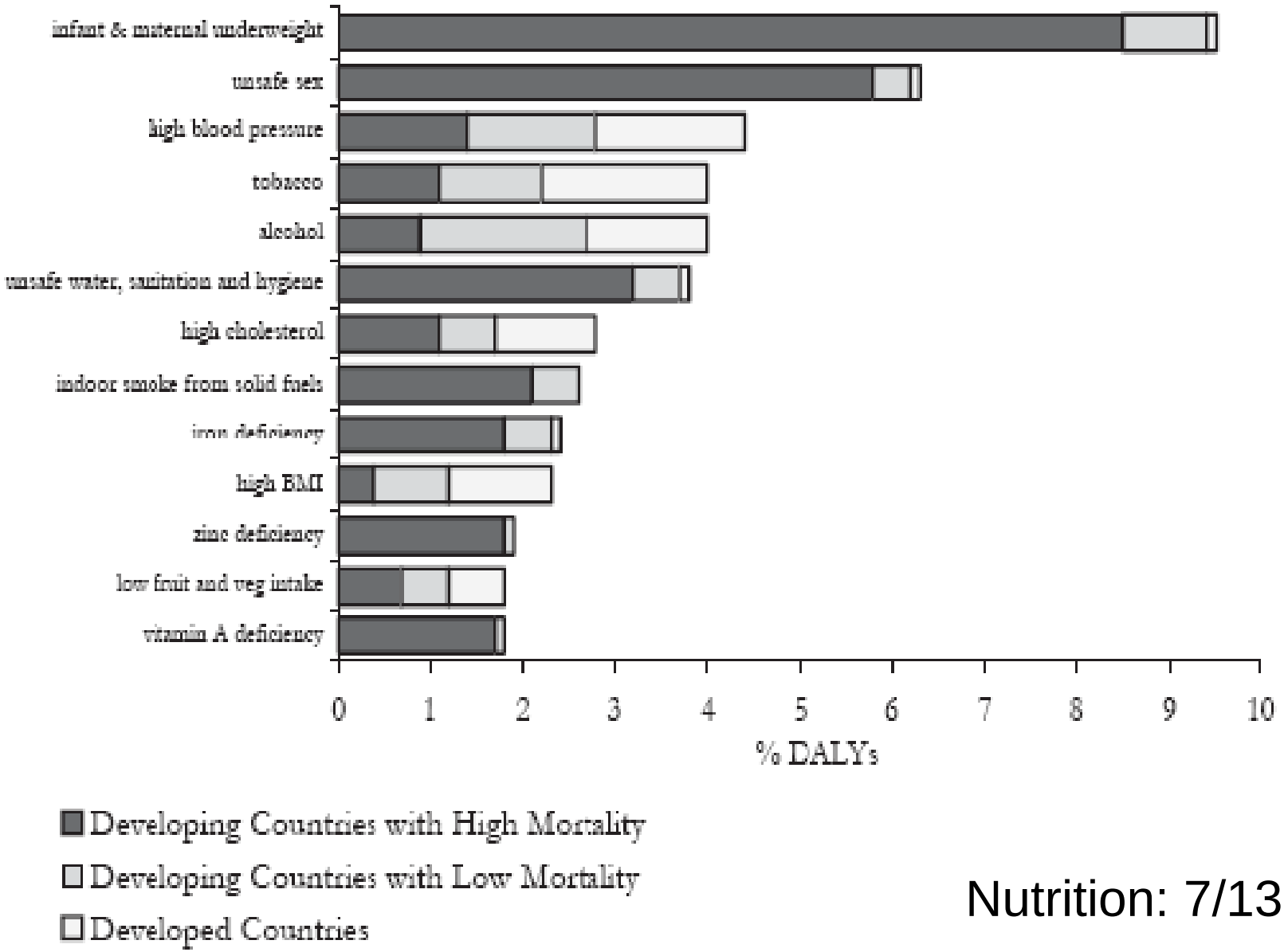


Figure 2: **Funding for child survival by the US Agency for International Development (USAID)**
Data are millions of US$ and proportion of total USAID health budget. Data taken from reference 21. Values for 2003 are planning levels.

Figure 8 Leading global risk factors and contributions to global burden of disease



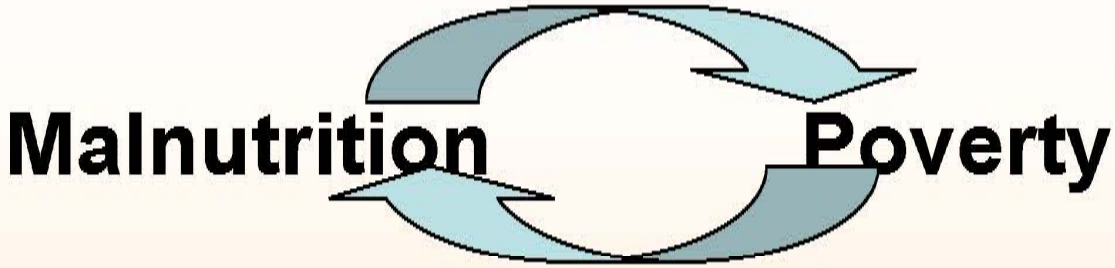
Copenhagen Consensus 2008

	SOLUTION
1	Micronutrient supplements for children (vitamin A and zinc)
2	The Doha development agenda
3	Micronutrient fortification (iron and salt iodization)
4	Expanded immunization coverage for children
5	Biofortification
6	Deworming and other nutrition programs at school
7	Lowering the price of schooling
8	Increase and improve girls' schooling
9	Community-based nutrition promotion

Top 9 of 30 solutions ranked

Nutrition: 5/9.

Reducing Malnutrition is essential to poverty reduction



- GDP losses ≥ 2-3%
- Leads to a >10% potential reduction in lifetime earnings for each malnourished individual
- Malnutrition (stunting) in early years linked to a
  - 4.6 cm loss of height in adolescence
  - 0.7 grades loss of schooling
  - 7 month delay in starting school

(Improved nutrition can be a driver of growth)

Source: Alderman et al (2003)

How Can we Improve Nutrition?

Short routes:
Exclusive breast-feeding, appropriate complementary feeding, ante-natal care for mothers,… (*Knowledge, behavior change/demand side interventions*); gender interventions, micronutrient supplementation & fortification

Long routes:
Income growth, women's education, agriculture and food production interventions, trade policies, macro-economic policies…

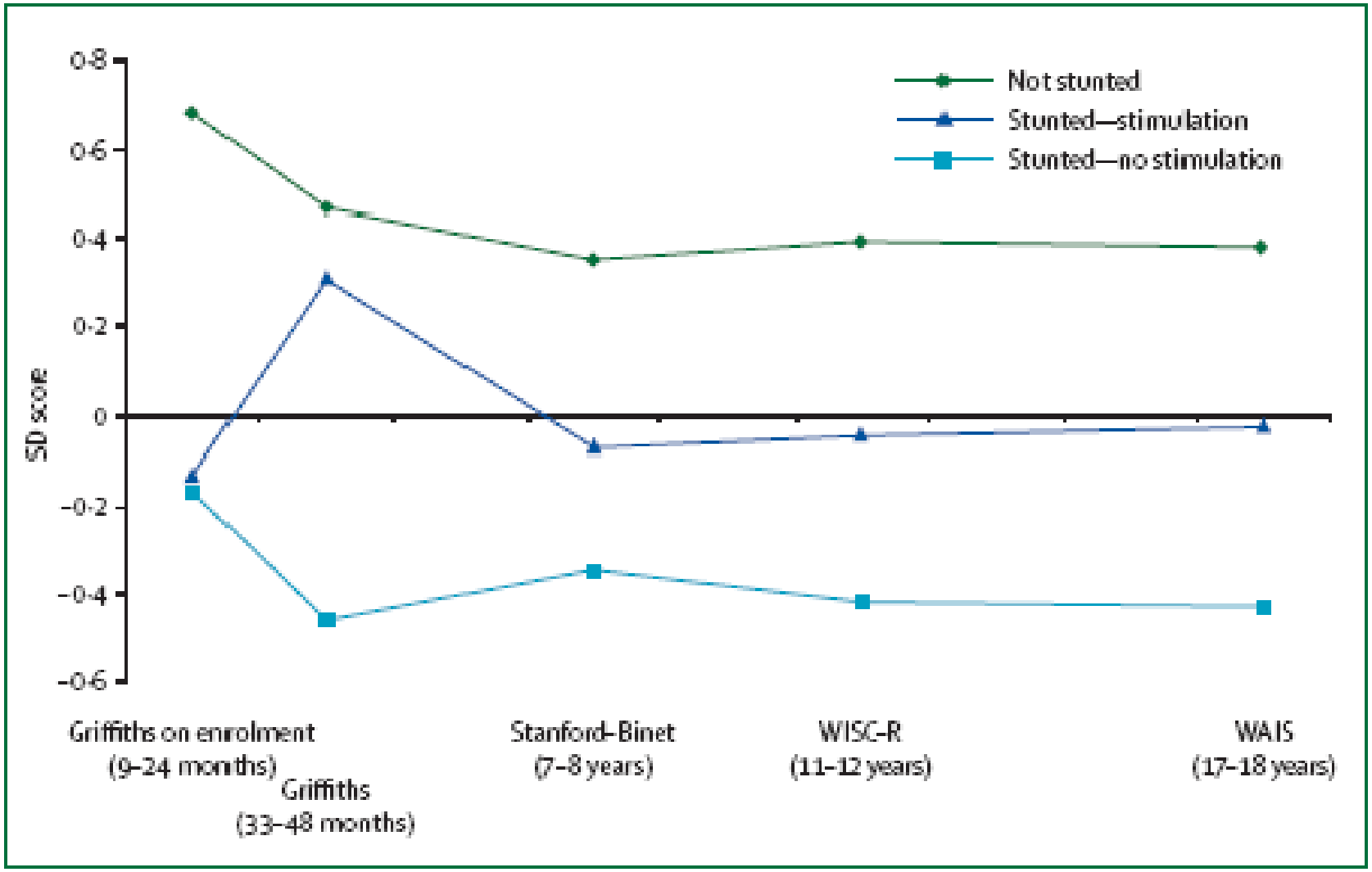


Figure 4: DQ or IQ scores of stunted and non-stunted Jamaican children from age 9–24 months to 17–18 years
Figure shows long-term deficits associated with stunting and the sustained benefits to stunted children who received a home-visiting programme providing early childhood stimulation. WISC-R=Wechsler Intelligence Scale for Children—revised. WAIS=Wechsler Adult Intelligence Scale. Reproduced with permission from Walker SP, Chang SM, Powell CA, Grantham-McGregor SM. Effects of early childhood psychosocial stimulation and nutritional supplementation on cognition and education in growth-stunted Jamaican children: prospective cohort study. *Lancet* 2005; 366: 1804–07.

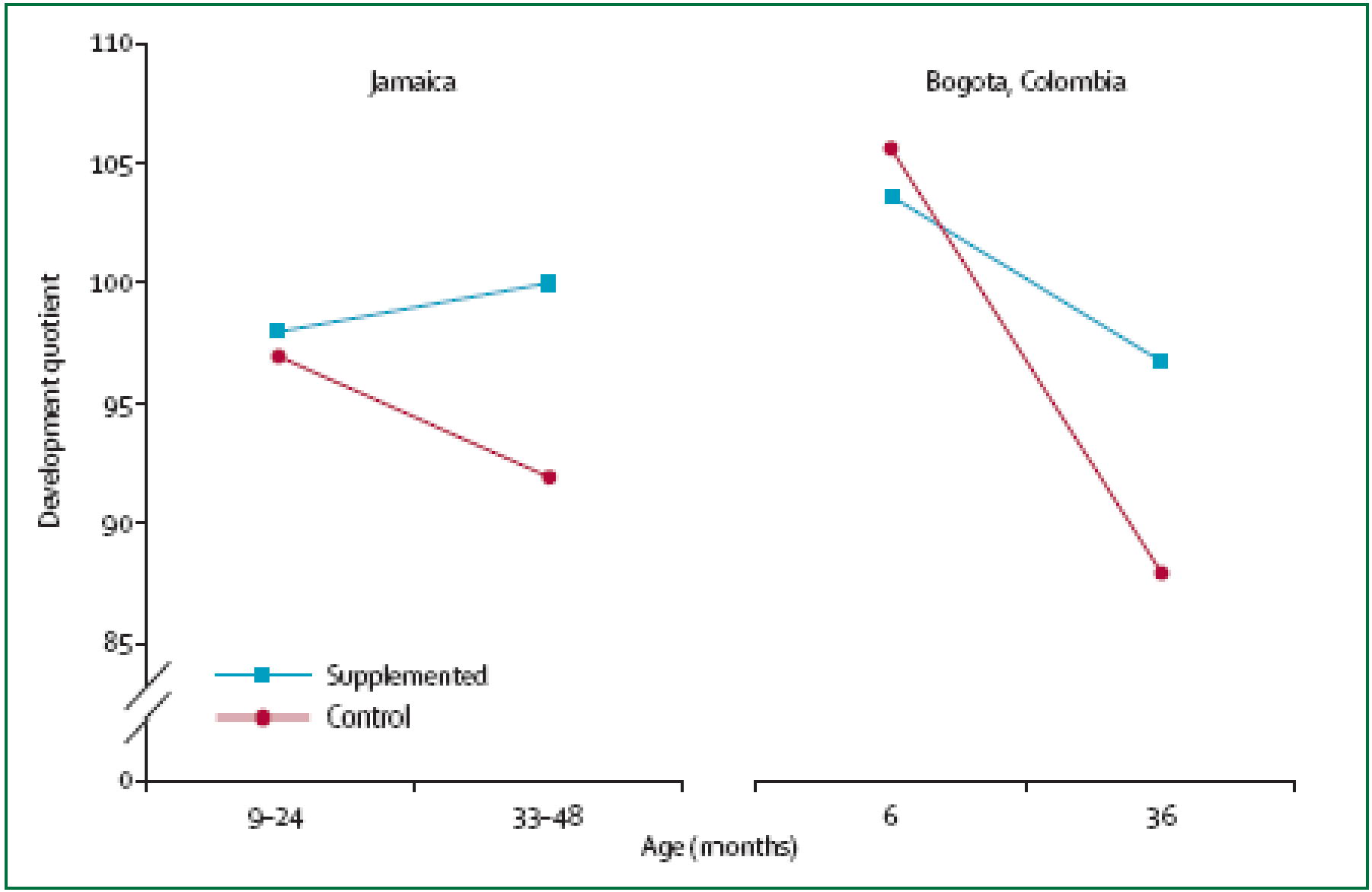


Figure 5: Effects of food supplementation given to stunted children (Jamaica[33]) or to pregnant women and their offspring through age 3 years (Bogota, Colombia[34]) on developmental levels (DQ)
Data points represent mean values reported in the papers.

NUTRITION | Building a Healthy Foundation for the Future

Lancet Nutrition Series 2008

About the Series

Paper 1: prevalence and short-term consequences (deaths and disease burden)

Paper 2: long-term educational and economic effects and associations with adult chronic diseases

Paper 3: evidence-based interventions to significantly reduce the effects of undernutrition

Papers 4 & 5: scaling up interventions through actions at national and global levels

www.GlobalNutritionSeries.org

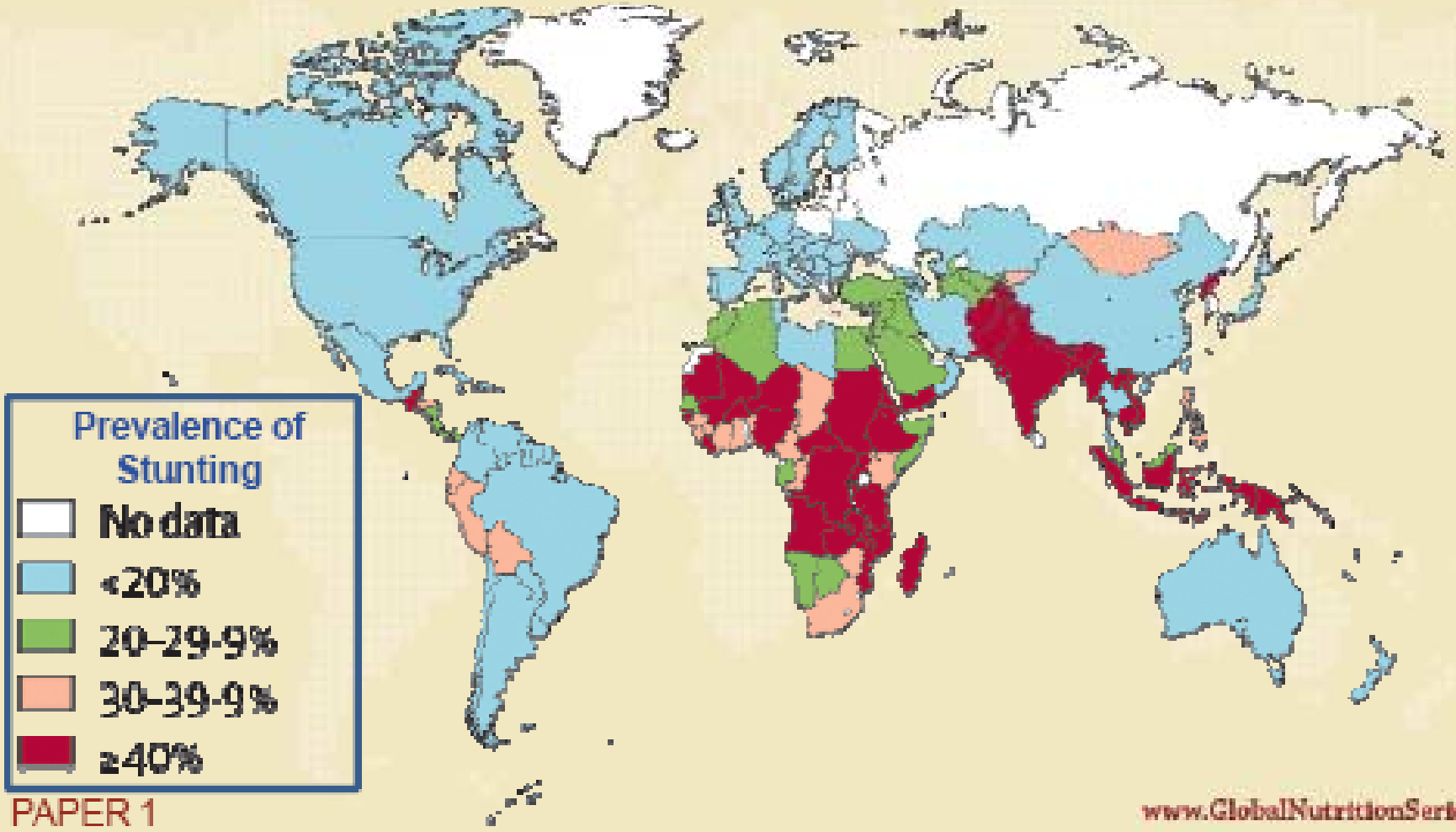
Prevalence of stunting

UN regions	1990	1995	2000	2007
All of Africa	40.3	39.8	39.3	38.5
North	29.4	27.4	25.5	23.0
East	48.1	47.4	46.7	45.7
West	38.1	38.1	38.1	38.1
Middle	45.3	43.8	42.3	40.3
South	35.4	34.7	34.1	33.3
All of Asia	48.6	43.1	37.7	30.6
East	35.9	28.2	21.7	14.4
South-central	60.7	54.6	48.4	39.9
South-east	47.0	41.5	36.2	29.4
West	28.2	25.9	23.7	20.9
LA and C	23.7	20.9	18.1	14.8
All	44.4	40.1	36.1	32.5

SCN (2010)

NUTRITION | *Building a Healthy Foundation for the Future*

178 Million Children Under 5 Suffer from Stunting

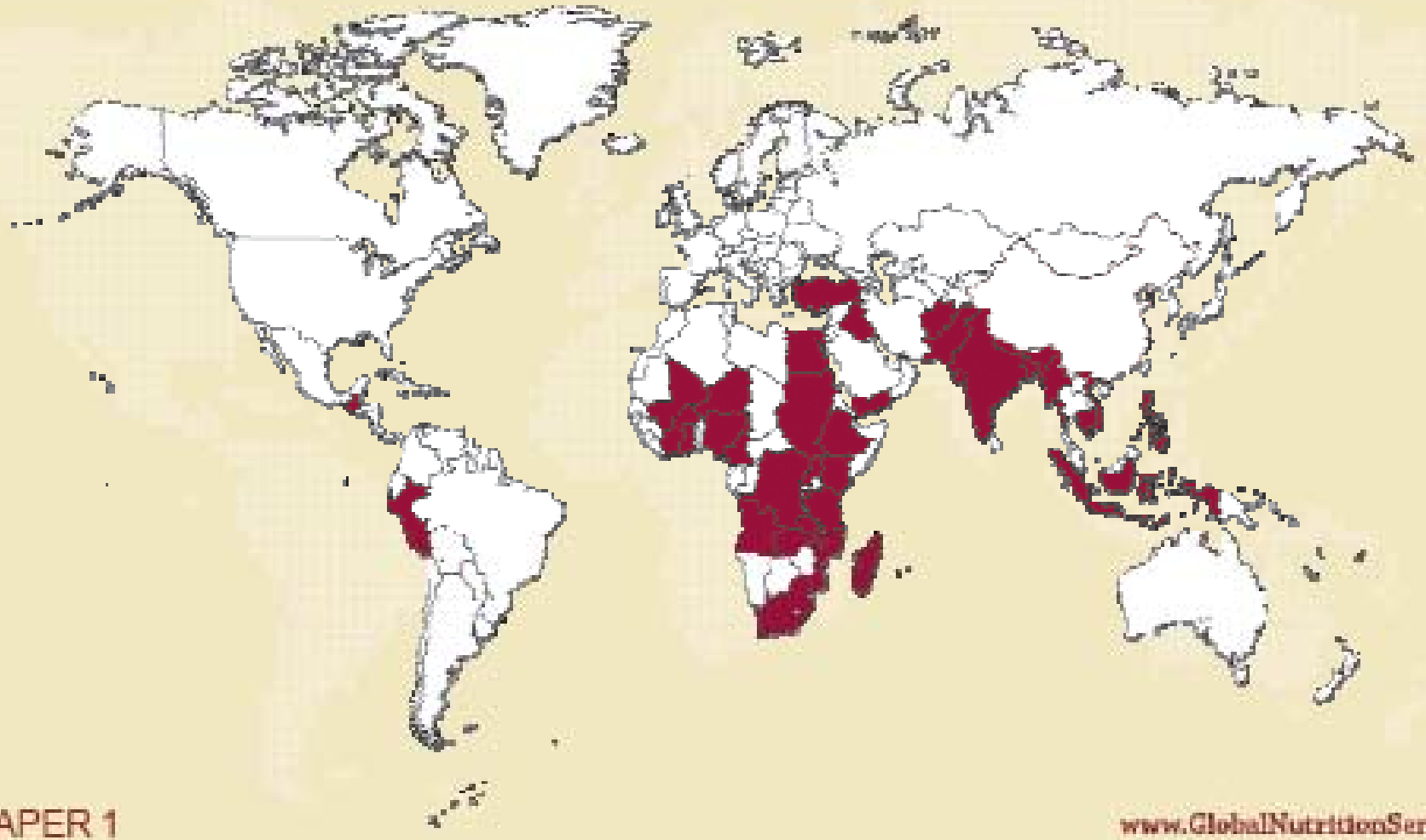


PAPER 1

www.GlobalNutritionSeries.org

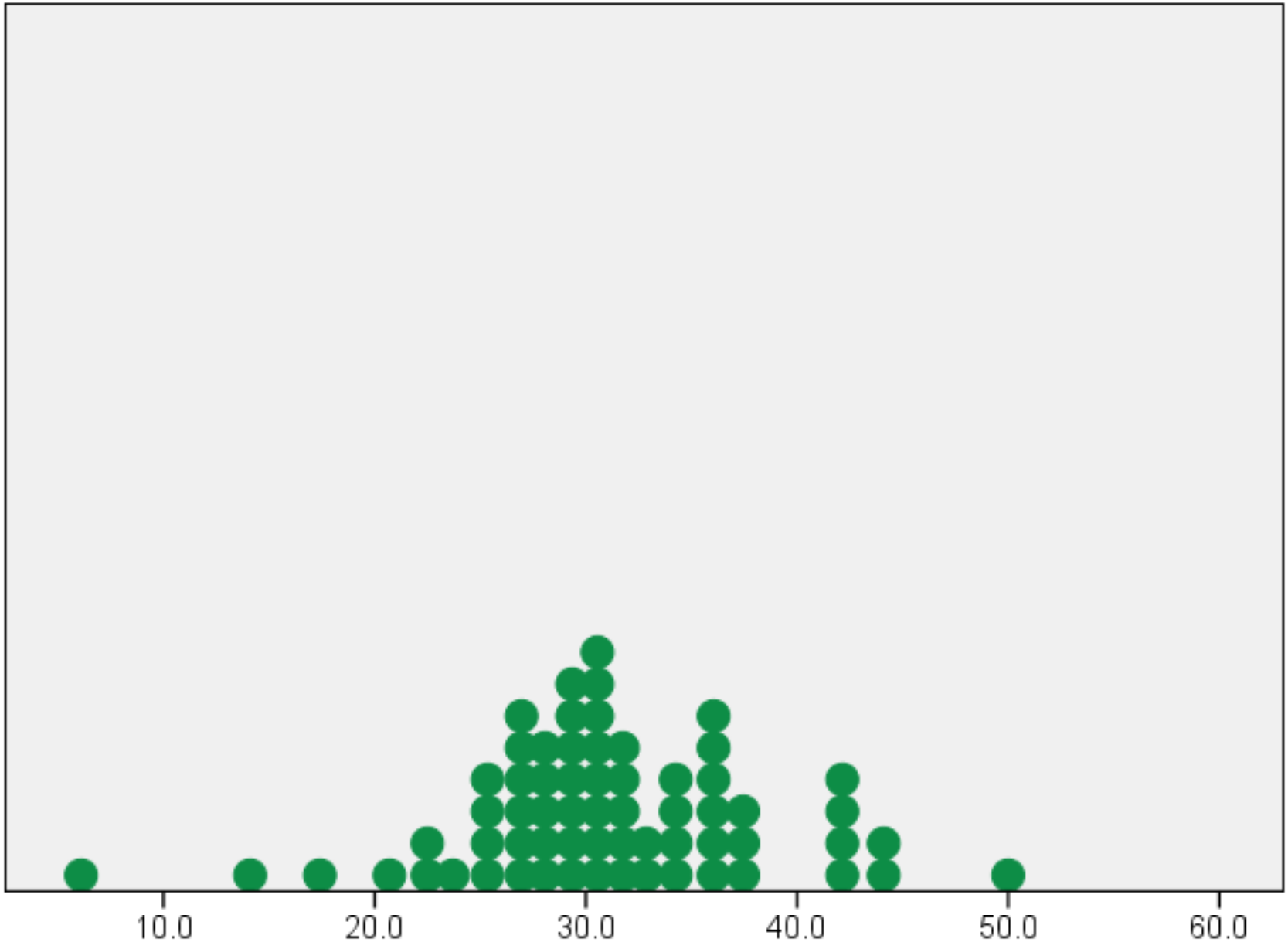
NUTRITION | *Building a Healthy Foundation for the Future*

90% of All Stunted Children Live in Just 36 Countries

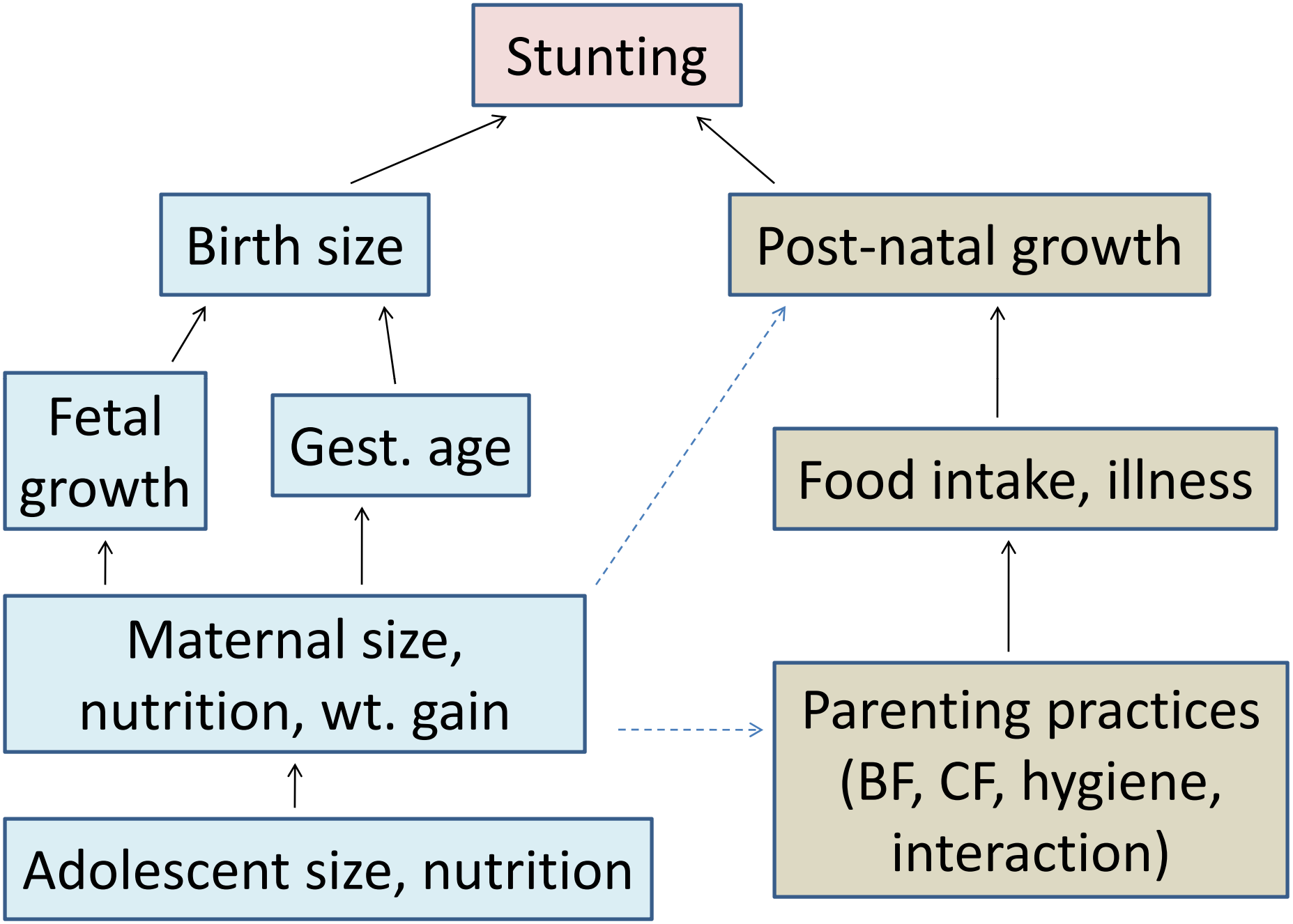


PAPER 1

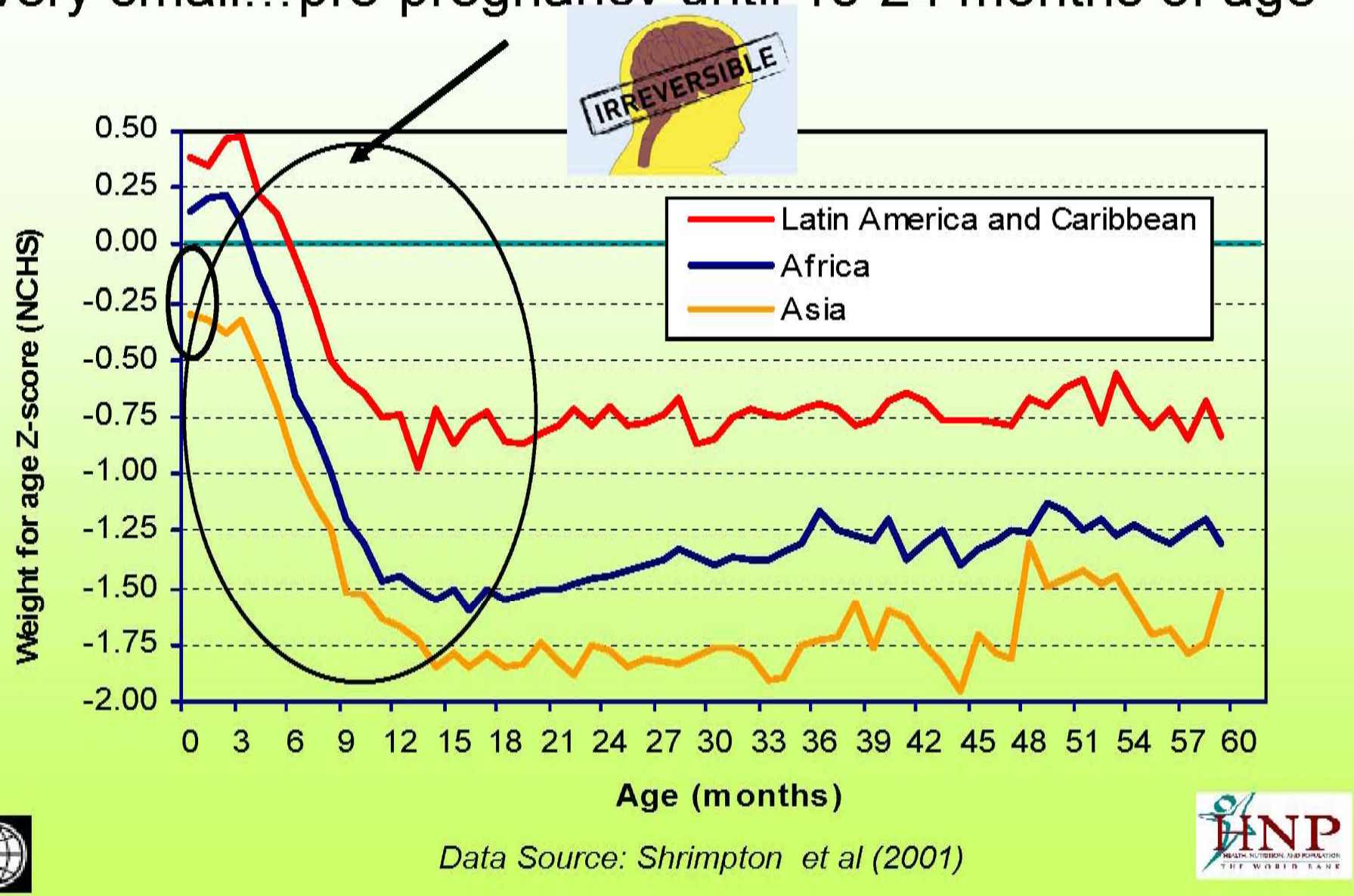
www.GlobalNutritionSeries.org



Vietnam stunting prevalence by province 2005


Stunting
Birth size
Post-natal growth
Fetal growth
Gest. age
Food intake, illness
Maternal size, nutrition, wt. gain
Parenting practices (BF, CF, hygiene, interaction)
Adolescent size, nutrition

The "**Window of Opportunity**" for Improving Nutrition is very small…pre-pregnancy until 18-24 months of age



Data Source: Shrimpton et al (2001)

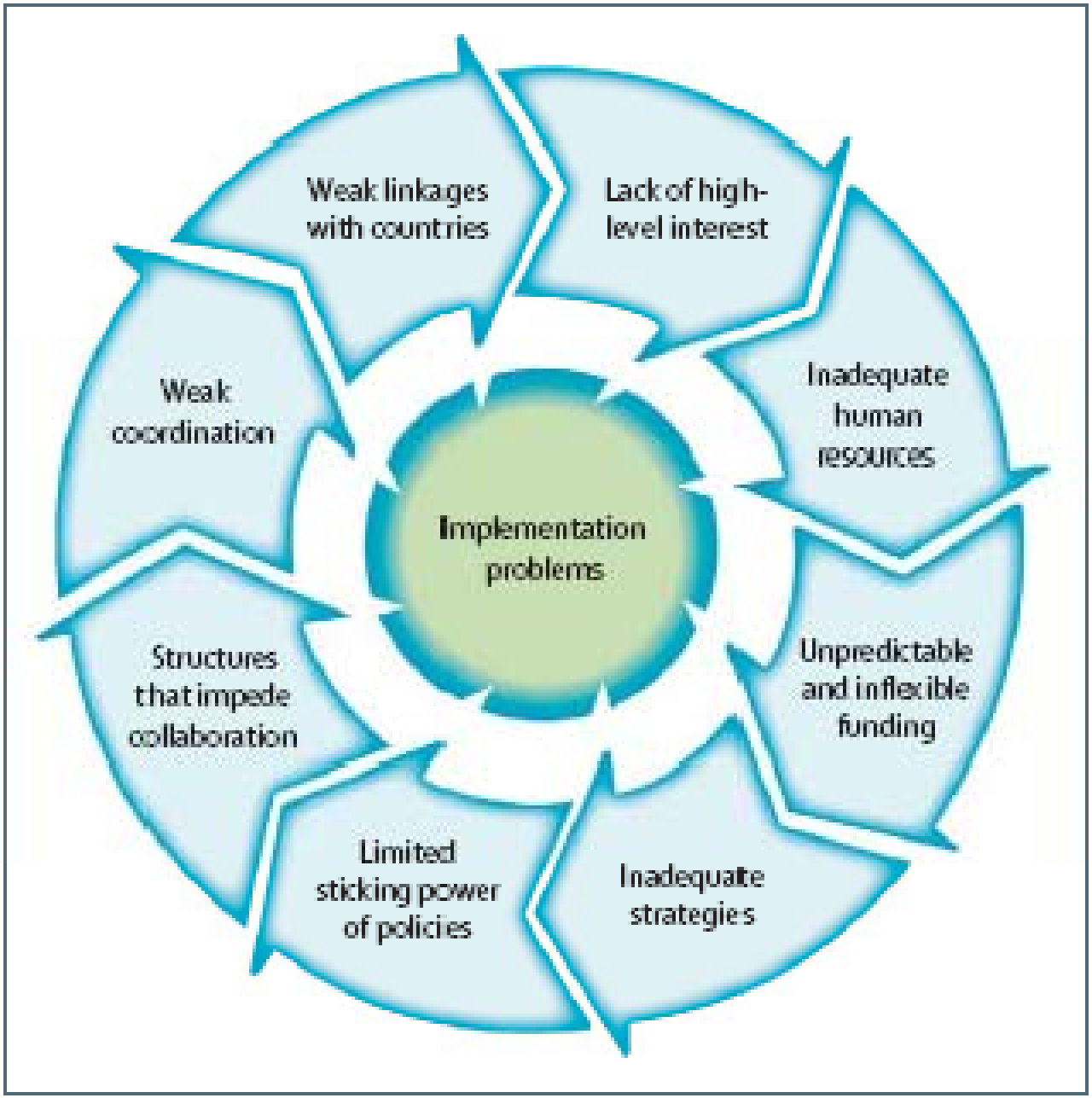
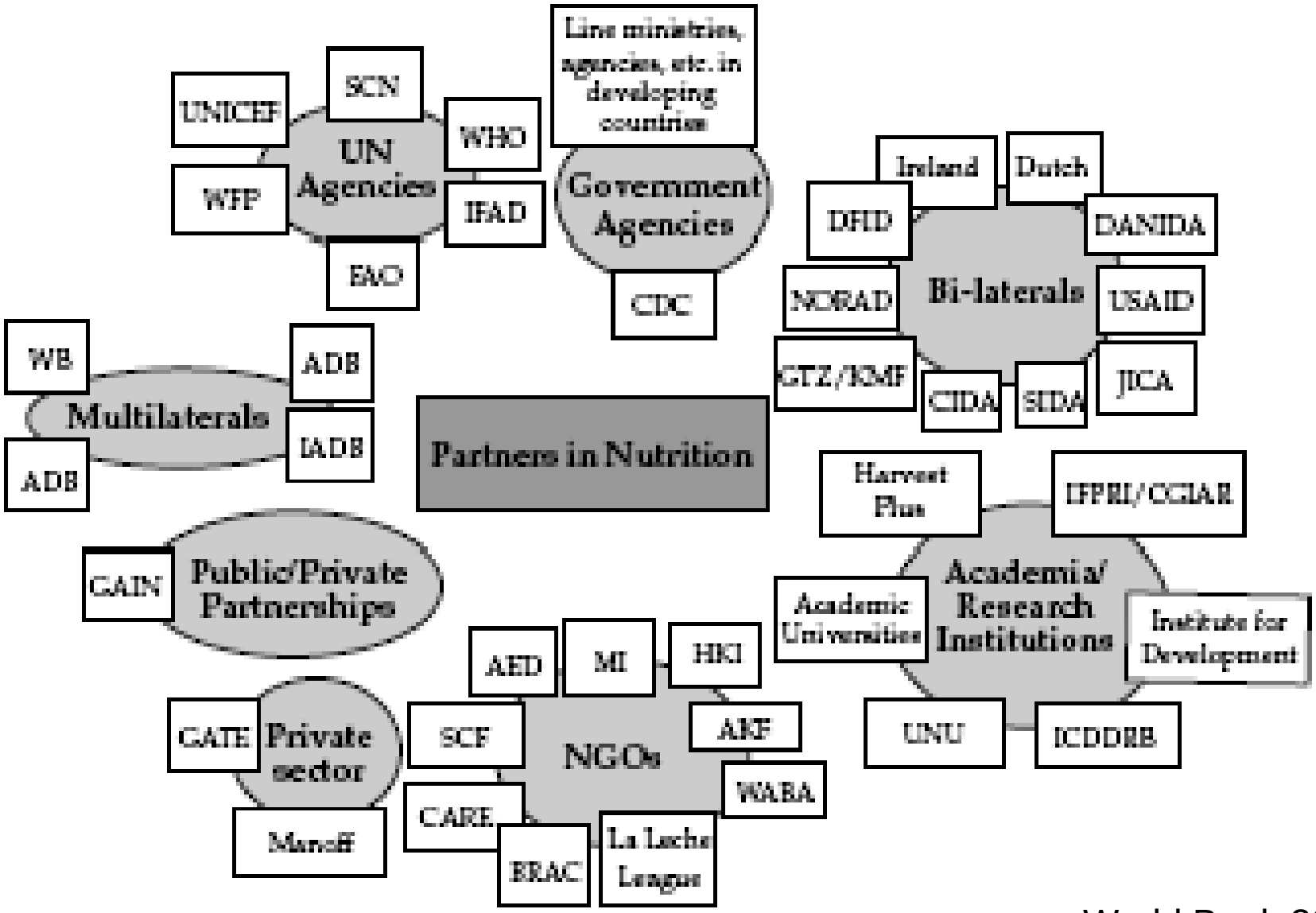


Figure 2: Core problems reducing the effectiveness of the international nutrition system

Lancet Nutrition Series 2008 Paper 5

Figure 5.1 Principal development partners supporting nutrition

Fragmentation and Rivalry



World Bank 2006

Key Challenges at National Level

1. Getting nutrition on the national agenda
   - Build stable nutrition agenda that survives political and administrative changes
   - Build recognition that nutrition determines human, social, and economic development

Lancet Nutrition Series 2008 Paper 4

Key Challenges at National Level

2. Doing the right things
   - Implement high-impact actions at high coverage
   - Incorporate nutrition into economic and social policies (i.e., poverty, trade, agriculture)
3. Not doing the wrong things

Key Challenges at National Level

4. Acting at scale
   - Scale up delivery and strengthen health systems
   - Think in new ways about the private sector
5. Reaching those in need

Key Challenges at National Level

6. Using data for decision making
   - Monitoring and assessment of process and results
   - Public accountability
7. Building strategic and operational capacity
   - Be location-specific
   - Build institutions (i.e., training is not enough)

Sector Approach

- Nutrition not well placed (or not at all) in most countries
- Power and money flow through various sectors
- Attempts to get sectors to work together for nutrition is not the solution
- Converge nutrition into each relevant sector
- World Bank: start with health sector

Need to build:

- Consensus (through sociopolitical processes)
- Capacity (to make strategic policy decisions and implement them)
- Commitment (through enhancing and supporting motivation)

Global Change in MNCH

What did it take to be successful?

Past global nutrition initiatives have been successful:

- Breastfeeding promotion
- Diarrheal disease management

Motivation

What motivates people?

Knowledge and Skills

What knowledge and skills do people need?

Supportive Institutional and System Structures

What institutional and system structures support change?

Strategies are different at every level:

- policy makers
- program providers
- health workers
- population

Involves changes at every level – from policy through programs to front-line workers and population behavior – comprising a ***movement***

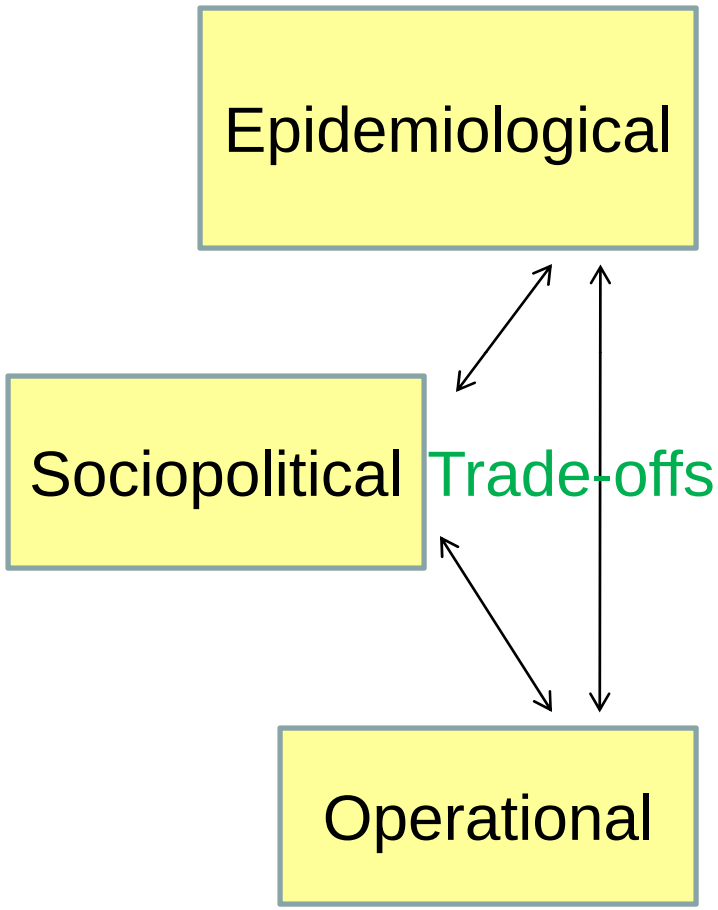
Responding to Challenges

Milestone	Year
Mainstreaming Nutrition Initiative	2006-2010
Gates Foundation nutrition strategy	2006
Standing Committee on Nutrition meeting (Rome)	2007
Gates Foundation Alive & Thrive Program	2008-2013
Standing Committee on Nutrition meeting (Hanoi)	2008
Session on policy processes at ICN (Bangkok)	2009
Reach Initiative (UNICEF, WFP)	2009-present
Global Action Plan for Nutrition	2009-2010
Discussion at G8 meeting in Canada	2010
Scaling Up Nutrition and 1,000 Days	2010-present

Locus of decisions & action

- National Government
- Ministries
- Regional Teams
- District Teams
- NGO's
- International Agencies
- Development Partners

Core Domains



Policy Stages

- Agenda-Setting
- Policy Choice
- Instrument Design
- Implementation
- Monitoring & Evaluation
- Modification

Menon, Pelletier, Frongillo, Stoltzfus, Ahmed, Ahmed. Mainstreaming Nutrition Initiative (FNB, in press)

Epidemiological

- ***What*** nutrition interventions are critical to deliver?
- ***When*** during the lifecycle?

Operational

- ***How*** can the delivery of nutrition interventions be integrated with other MCH programs, services, and initiatives?
- ***Who*** can deliver interventions?
- ***How much*** will delivering key interventions cost?

Sociopolitical

- ***How*** is the nutrition problem perceived?
- ***What*** are the values and interests of people and organizations who will need to take action to move the nutrition agenda?
- ***Why*** might organizations buy into the nutrition agenda (or not)?

Lapping, Frongillo, Studdert, Menon, Coates, Webb (HPP, 2011)

Key Strategies and Actions

1. Placement of the researcher as a participating observer
2. Orientation meetings with key Vietnamese entities and international agencies to galvanize support for the work and to ensure efforts were vetted and informed by local partners
3. Site visits to remote and ethnic minority areas of Viet Nam to better understand the implementation issues around translating policy into better nutrition outcomes
4. Formation of the Nutrition Partnership Group
5. Targeted meetings

Key Factors

1. Creation of a cohesive policy community
2. Clearly defined internal and external frames articulated through a series of
3. High-profile events that functioned as policy windows

Key Drivers of Process

1. Importance of personal relationships with people in key institutions
2. Ability to identify, create, and make use of opportunities that catalyzed the process

Key results from MNI work in five countries*

1. Strengthening the full spectrum of policy activities is necessary if large-scale and sustained reductions in undernutrition are to be achieved
2. High priority should be given to strengthening strategic capacities because these are fundamental for…a long-term nutrition agenda at country level

*Bangladesh, Bolivia, Guatemala, Peru, Vietnam

Pelletier, Frongillo, Gervais, Hoey, Menon, Ngo, Stoltzfus, Ahmed, Ahmed (HPP, 2011)

Key results from MNI work in five countries

3. These conclusions are especially relevant for major global initiatives currently under development that seek to address nutrition through country-led processes and convergence among multiple organizations
4. The extensive investments in documenting the efficacy of nutrition interventions are unlikely to produce sustainable reductions in undernutrition unless or until these weaknesses in the policy spectrum are better understood and addressed

Responding to Challenges

Milestone	Year
Mainstreaming Nutrition Initiative	2006-2010
Gates Foundation nutrition strategy	2006
Standing Committee on Nutrition meeting (Rome)	2007
Gates Foundation Alive & Thrive Program	2008-2013
Standing Committee on Nutrition meeting (Hanoi)	2008
Session on policy processes at ICN (Bangkok)	2009
Reach Initiative (UNICEF, WFP)	2009-present
Global Action Plan for Nutrition	2009-2010
Discussion at G8 meeting in Canada	2010
Scaling Up Nutrition and 1,000 Days	2010-present

SUN Framework for Action

- Start from the principle that what ultimately matters is what happens at the country level.
  - Individual country nutrition strategies and program, while drawing on international evidence of good practice, must be country-"owned" and built on the country's specific needs and capacities.
- Sharply scale up evidence-based cost-effective interventions to prevent and treat undernutrition, with highest priority to the minus 9 to 24 month window of opportunity where we get the highest returns from investments.
  - A conservative global estimate of financing needs for these interventions is $10+ billion per year.

SUN Framework for Action

- Take a multi-sectoral approach that includes integrating nutrition in related sectors and using indicators of undernutrition as one of the key measures of overall progress in these sectors.
  - **food security** (including agriculture)
  - **social protection** (including emergency relief)
  - **health** (including maternal and child health care, immunization and family planning)
  - education
  - water-supply and sanitation
  - gender equality
  - governance (including accountability and corruption)
  - state fragility
- Provide substantially scaled up domestic and external assistance for country-owned nutrition program and capacity

SUN Task Forces

A	Strengthen in-country capacity
B	Communication for scaling up nutrition
C	Civil society participation
D	Engagement of development partners
E	Engagement of business community
F	Monitoring and evaluation and reporting

“Need for studies on governance options and processes that lead to the emergence and empowerment of nutrition leaders”

What we can contribute through research

- How to achieve strategic capacity: individual and institutional capacity to:
  - Broker agreements
  - Resolve conflicts
  - Build relationships
  - Respond to recurring challenges and opportunities
  - Undertake strategic communications
- Sociopolitical processes, especially understanding how to build at all levels:
  - Awareness
  - Consensus
  - Commitment
  - Planning and design
  - Implementation
  - Evaluation, learning, and modification

What we can contribute through research

- Operational processes, especially understanding:
  - Worker and recipient motivations, demands, and capabilities
  - Contact points and delivery mechanisms
  - Integration into health systems
- Epidemiological, especially understanding how responses to actions depend on conditions:
  - Biological
  - Behavioral
  - Social
  - Physical

What we can contribute through building capacity

- Strategic (individual and institutional) capacity
- Operational
  - Understand opportunities and constraints from insider's view
  - Motivate workers and recipients and help balance their demands and capabilities
  - Choose or design contact points and delivery mechanisms
  - Integrate new actions into health systems without harming them
- Epidemiological

Relative advantages of USC

- Capabilities for working together in collaborative and interdisciplinary ways
- Interest and experience on both problem and solutions sides, and capable investigators working across both sides
- Expertise in biological, behavioral, social, and physical conditions

Further information

- 1000 days
  http://www.state.gov/secretary/rm/2010/09/147512.htm
- Scaling Up Nutrition
  http://www.unscn.org/en/scaling_up_nutrition_sun/sun_purpose.php