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

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Undernutrition Begins with the Mother

Maternal undernutrition: underweight for height (low body mass index)

Less visible micronutrient deficiencies

May lead to health problems for the mother and intrauterine growth restriction (IUGR)
Stunting & Wasting Begin Early in Childhood

**Stunting** – a chronic restriction of vertical growth indicated by a low height for age

**Wasting** – acute weight loss indicated by a low weight for height

**Usually caused by** - diets that do not provide sufficient nutrients and by high rates of infectious diseases
178 Million Children Under 5 Suffer from Stunting

Prevalence of Stunting
- No data
- <20%
- 20–29.9%
- 30–39.9%
- ≥40%

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90% of All Stunted Children Live in Just 36 Countries
High Prevalence of IUGR, Stunting and Severe Wasting in Children Under 5

- 13 million babies are born each year with intrauterine growth restriction
- 178 million children are stunted; 32% of all children
- 19 million children are severely wasted
Attributing Deaths and Disease Burden to Undernutrition and Suboptimal Breastfeeding

**Health consequences** measured in deaths, contribution to overall rates of disease, and number of life years diminished by disease or disability.

**Disability-adjusted life years (DALYs):** burden of disease measures the gap between the current health of population and ideal situation (living into old age w/ full health).

One DALY = one lost year of “healthy” life.
The Burden of Maternal and Child Undernutrition

IUGR, stunting and severe wasting together are responsible for 2.2 million deaths and 91 million DALYS, 21% of the total for children under 5

Represents 7% of the total global disease burden for any age group, the highest for any risk factor for disease burden
Micronutrient Deficiencies

Vitamin A and zinc deficiencies account for the largest remaining disease burden among the micronutrient deficiencies – a combined 9.85% of global childhood DALYs.

Iron deficiency is a risk factor for maternal mortality, responsible for 115,000 deaths per year, 20% of maternal mortality.
Suboptimal Breastfeeding

Increases the risk of poor nutrient intake and illness

Estimated to be responsible for 1.4 million child deaths and 44 million global childhood DALYs (10% of all childhood DALYs)
Paper 1 Key Messages

Together these risk factors were responsible for more than one-third—about 35%—of child deaths and 11% of the global total disease burden.

More than 3.6 million mothers and children die each year as a result of undernutrition.

The very high mortality and disease burden resulting from these nutrition-related factors make a compelling case for the urgent implementation of proven interventions.
Long-Term Effects on Development and Health

New analyses of relationships between indices of maternal and child undernutrition (maternal height, birthweight, IUGR, and weight, height, and body-mass index at 2 years) and adult outcomes (height, schooling, income, offspring bodyweight, body-mass index, glucose concentrations, blood pressure)

Systematic review of studies from low-and middle-income countries for these relationships and for those related to blood lipids, cardiovascular disease, lung and immune function, cancers, osteoporosis and mental illness
Damage Suffered in Early Life Leads to Permanent Impairment

Undernourished children are more likely to become short adults and to give birth to smaller babies.

Evidence links stunting to cognitive development, school performance and educational achievement.

Poor fetal growth or stunting in the first 2 years of life leads to reduced economic productivity in adulthood.

Child’s height for age is best predictor of human capital.
Rapid Weight Gain After Being Undernourished Increases Chronic Disease Risk as Adults

Children whose early growth is restricted and gain weight rapidly later are more likely to have high blood pressure, diabetes and both cardiovascular and metabolic disease.

No evidence that rapid weight or length gain in first 2 years increases risk of chronic disease.

By supporting early nutrition and growth, incidence of chronic disease could be reduced.
Paper 2 Key Messages

- Stunting in the first 2 years leads to irreversible damage into adult life
- Young children who are undernourished and gain weight rapidly later are at high risk of nutrition-related chronic diseases
- No evidence that rapid weight or length gain in first 2 years of life increases the risk of chronic disease
- The prevention of maternal and child undernutrition is a long-term investment that will benefit the current generation and their children
Evidence-Based Interventions

Systematic review of efficacy or effectiveness of 45 possible interventions that affect maternal and child undernutrition and nutrition-related outcomes, including:

- Breastfeeding promotion
- Complementary feeding promotion strategies with or without provision of food supplements
- Micronutrient interventions (fortification & supplementation)
- General supportive strategies for improving family and community nutrition and disease burden reduction
- Interventions for the treatment of severe acute malnutrition

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Interventions with Sufficient Evidence to Implement in All Countries

**Maternal and Birth Outcomes**
- Iron folate supplementation
- Maternal supplements of multiple micronutrients
- Maternal iodine through iodization of salt
- Maternal calcium supplementation
- Interventions to reduce tobacco consumption or indoor air pollution

**Newborn Babies**
- Promotion of breastfeeding (individual and group counseling)

**Infants and Children**
- Promotion of breastfeeding (individual and group counseling)
- Behavior change communication for improved complementary feeding
- Zinc supplementation
- Zinc in management of diarrhea
- Vitamin A fortification or supplementation
- Universal salt iodization
- Handwashing or hygiene interventions
- Treatment of SAM

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Interventions with Sufficient Evidence to Implement in Specific Situational Contexts

**Maternal and Birth Outcomes**
- Maternal supplements of balanced energy and protein
- Maternal iodine supplements
- Maternal deworming in pregnancy
- Intermittent preventative treatment for malaria
- Insecticide-treated bednets

**Newborn Babies**
- Neonatal vitamin A supplementation
- Delayed cord clamping

**Infants and Children**
- Conditional cash transfer programs (with nutritional education)
- Deworming
- Iron fortification and supplementation programs
- Insecticide-treated bednets
Evidence-Based Interventions

Effective interventions are available to reduce stunting, micronutrient deficiencies and child deaths and nutrition-related disability.

Interventions showing the most promise for reducing child deaths and future disease burden include:

- Breastfeeding promotion
- Appropriate complementary feeding
- Supplementation with vitamin A and zinc
- Appropriate management of severe acute malnutrition
Paper 3 Key Messages

We have evidence-based interventions that work

If implemented at scale, these interventions would:

- Reduce all child deaths by one-quarter in the short term
- Reduce prevalence of stunting at 36 months by one-third, averting 60 million DALYs

Conception through 24 months is the critical window of opportunity to prevent and intervene to reduce stunting
National Efforts

Most countries with high levels of undernutrition are failing to reach undernourished mothers and children with effective interventions.

<table>
<thead>
<tr>
<th>Intervention Indicator (Measurement Years)</th>
<th>Median Coverage and Range</th>
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<tbody>
<tr>
<td>Malaria prevention</td>
<td>Proportion under 5s sleeping under a treated mosquito net (2000-2004)*</td>
</tr>
<tr>
<td>Vitamin A supplementation</td>
<td>Proportion children aged 6-59 months who received two doses of vitamin A in the past 12 months (2004)</td>
</tr>
<tr>
<td>Complementary feeding</td>
<td>Proportion of children aged 6-9 months who are breastfed and receive complementary food (1995-2004)</td>
</tr>
<tr>
<td>Hygiene</td>
<td>Proportion of population using adequate sanitation facilities (2004* )</td>
</tr>
</tbody>
</table>

Figure 2: Best available estimates of coverage with effective interventions in the 20 countries with the highest burden of undernutrition.

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Key Challenges at National Level

1. Getting Nutrition on the National Agenda
   - Most high-burden countries have a nutrition policy or plan
   - Need to build stable nutrition agenda that can survive political and administrative changes
   - Build recognition that nutrition determines human, social and economic development

2. Doing the Right Things
   - Few countries with high levels of undernutrition are implementing the high-impact interventions and strategies at high coverage
   - Nutrition should also be incorporated into economic and social policies addressing poverty, trade and agriculture
Key Challenges at National Level

3. Not Doing the Wrong Things

- Nutrition leaders at should examine “nutrition” actions and the extent to which they are likely to improve nutritional status among mothers and children under 24 months of age.
- 10 of 20 countries implementing feeding programs for preschool children >24 months old and all 20 implementing school feeding programs.
- These programs will not prevent or reverse undernutrition and should be refocused to children <24 months old.
Key Challenges at National Level

4. Acting at Scale
   - Integrate nutrition into the global scale-up to achieve the health MDGs
   - Country-specific approaches that simultaneously scale-up delivery and strengthen health systems
   - Think in new ways about the private sector

5. Reaching Those in Need
   - Programs must be targeted to those most in need: women, young children (especially those under two) and the poor
Key Challenges at National Level

6. Using Data for Nutrition Decision Making
   - Monitoring and assessment of both process and results
   - Public accountability, including tracking of financial flows

7. Building Strategic and Operational Capacity
   - Self-assessments reveal inadequate capacity at country level for leadership and strategic management of the national nutrition agenda
   - Capacity building must be regional- and country-specific
   - Training is not enough! Must build institutions
National nutrition programs should effectively monitor and evaluate target populations that benefit most from interventions—pregnant women and children under 2

Countries should focus resources on interventions with proven effectiveness and implement them at scale as quickly as possible

Economic and social policies addressing poverty, trade and agriculture associated with rapid improvements in nutritional status should also be implemented

Governments should look to incorporate nutrition goals into programs that may not directly address health, but that could benefit from improved national nutrition
International Efforts to Improve Undernutrition

Fifth and final paper looks specifically at the “international nutrition system”

Asks:
- What are the components?
- What would we reasonably expect them to be achieving?
- How does actual performance meet expectations?
- What are the root problems behind any shortcomings?
Four Functions of a Nutrition System

- **Stewardship**: Regulating, Setting standards, Identifying priorities
- **Service provision**: Nutrition actions (where state actors are unable or unwilling to operate)
- **Capacity**: Training, Organizational strengthening, R & D
- **Resources**: Mobilization, Pooling, Distribution
Current International “System”

Numerous international agencies, development banks, regional organizations, bilateral donors, NGOs, foundations, etc. involved

Current processes fail to produce normative guidance that is prioritized and evidence-based

Program evaluation is weak; insufficient analysis of global challenges; too little investment in human and institutional capacity

Funding grossly insufficient, poorly targeted and too dominated by food aid and technical assistance
How Can International Aid Organizations Better Support National Nutrition Efforts?

- A new global governance structure
- A more effective United Nations
- Fewer parallel organizations, but also fewer mandate gaps
- More investment in capacity strengthening in high-burden countries
- Research leadership in areas that matter
The international nutrition system is fragmented and dysfunctional; reform is needed to be effective.

Problems are long-standing and deeply embedded in organizational structures and norms. A new global governance structure is needed to provide greater accountability.

Funding provided by international donors to combat undernutrition is grossly insufficient and poorly targeted.
Progress is Possible, If Nutrition Becomes a Priority

Nutrition is a central component for human, social and economic development

Intensified nutrition action in high-burdened countries can lead to the achievement of the Millennium Development Goal of halving hunger by 2015 (MDG 1) and greatly increase the chances of achieving goals for child and maternal mortality (MDGs 4 & 5)
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