The case for investment in nutrition as part of global and national development agendas

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Declaration of conflicts

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Outline

• Investing in nutrition has human benefits: 45% of child deaths could be prevented by improved nutrition – 3 million deaths annually

• There are also economic losses due to:
  – Iron deficiency anemia
  – Iodine deficiency
  – Folate deficiency
  – Stunting
Nutrition – top priority for developing countries

Copenhagen Consensus 2008 – 8 top economists, including 5 Nobel laureates
Copenhagen Consensus results

• 2004: providing micronutrients was ranked #2 (second only to fighting HIV-AIDS)
• 2008: providing micronutrients was ranked #1 (supplements) and #3 (fortification)
• 2012: providing micronutrients (with other interventions for preschoolers) ranked #1
Costs of deficiency: iron

• Iron: in developing countries anemia is associated with
  – 5% lower productivity (light manual labour)
  – 17% lower productivity (heavy manual labour)
  – 4% lower productivity (other work) – related to one-half standard deviation LOWER score on cognitive tests (7-8 IQ points)
Costs of deficiency: folate

• Human costs are paramount;
• Economic costs also large: Yi et al (2011) review:
  – Annual direct cost/patient/year $51,600 in 2003 for NTDs and $11,000-$65,000 for spina bifida in US
  – Other costs for spina bifida are at least twice this (special education, lost productivity of individual)
  – Parents also less able to work, lose additional income
Prevalence of NTDs, 2001

Rates per 1000 births: data from March of Dimes
Costs of deficiency: iodine

- Mild iodine deficiency: IQ loss of 1-2 points
- Moderate deficiency: IQ loss of 2-3 points
- Severe: IQ loss of 13.5 points
- Lower IQ is associated with lower years of schooling completed, and lower earnings (Zimmermann et al)
Degree of public health significance of iodine nutrition based on median urinary iodine: 1993-2006

Source: WHO (2013b)
Fortification is inexpensive

- Cost of wheat flour fortification with iron is about $0.17/person/year
- Cost of adding folic acid is $0.01-0.02
- Cost of salt iodization is about $0.05/person/year
- Supplements cost a little more but are essential for pregnant women (esp iron)
Benefits and costs of fortification

• B:C ratio for 10 developing countries, for iron fortification was 8.7:1 (Horton and Ross, 2003)

• Studies in 6 countries (US, Netherlands, Australia, New Zealand, Chile and South Africa) suggested in all but one case, fortification with folic acid was cost-saving, even if only health costs are considered (Yi et al, 2011)

• B:C ratio for salt iodization was estimated as 30:1 (Horton et al, 2008)
Costs of stunting

• Hoddinott et al (2011) longitudinal study in Guatemala: for those who were stunted at age 3:
  – Their wages were 51% lower (as adult men)
  – They completed 3.6 fewer years of school
  – Per capita consumption lower by 66% as adults (more likely to be poor)
  – They had 1.86 more pregnancies (for women)
Countries with 90% of world stunting (34) for Lancet 2013
Addressing stunting is affordable: 11 priority interventions: Lancet 2013

- Iron-folate fortification of staples
- Salt iodization
- Multiple micronutrient supplements, pregnancy
- Calcium supplements, pregnancy
- Balanced energy-protein supplements, pregnancy (selected)
- Breastfeeding promotion
- Complementary feeding education
- Vitamin A supplements, children
- Zinc supplements, children
- Complementary food supplements, children (selected)
- Community-based management of severe-acute malnutrition
Annual cost of 11 interventions (US $10bn)

By expenditure type:
- Consumables (nutrients, food)
- Personnel (direct cost)
- Other direct costs
- Indirect costs

By program type:
- fortification/salt iodization
- maternal micronutrients/food
- nutrition education
- child micronutrients/food
- Management of SAM

By region:
- Africa (20 countries)
- South/Southeast Asia (5)
- Latin America (1)
- Eastern Mediterranean (5)
- Western Pacific (2)
Benefits from this package of interventions

- Under-5 deaths would decrease by 15% - equivalent in 2013 to saving a million lives!
- Stunting would decrease by a quarter – equivalent to 40 million fewer stunted children in 2013
The costs of inaction are high

- We live in a globalized world
- Education and innovation help countries compete
- The 165 million stunted children reach school less prepared to learn
- They leave school earlier, and achieve less
- They contribute less to their nation and their family
- Stunted girls risk being too thin or overweight as mothers, and perpetuate the cycle
Summary

• Nutrition interventions (especially in the “1000 days”) are a great investment
• $10 bn/year will reduce U5 deaths (15%), stunting (25%) and increase productivity and national income
• $10 bn is large – but affordable when divided up
• Nutrition is on the international agenda in 2013! The SUN movement has mobilized support
Photos: GAIN website (http://www.gainhealth.org)
Sources/References


• Zimmermann et al: estimates for Global Burden of Disease (forthcoming)