Looking Back to Look Forward-
Lessons from USAID investments in
reducing micronutrient deficiencies

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A2Z Technical Director
Johns Hopkins School of Public Health
What has been the return on USAID’s Micronutrient investments?
Key Factors

- Bold Leadership (combined with)......
  - Investments in 3D’s
    - Discovery $\rightarrow$ Development $\rightarrow$ Deployment
    - Credible inter-disciplinary expert groups
    - Evidence summits
  - “Luck”?
THE LANCET, JULY 13, 1974

Dogma Disputed

THE GREAT PROTEIN FIASCO
DONALD S. MCCLAREN

Nutrition Research Laboratory, School of Medicine, American University of Beirut, Beirut, Lebanon

Summary
The concept of the much-publicised world protein “gap”, “crisis”, or “problem” arose from the description of kwashiorkor in Africa in the 1930s and the assumption, which has turned out to be wrong, that malnutrition in children takes this form throughout the world. As a result, measures to detect protein deficiency and treat and prevent it by dietary means have been pursued until the present time. The price that has had to be paid for these mistakes is only beginning to be realised.

You see, but you do not observe.


There is mounting recognition that the emphasis which has been given to the role of protein in human
1974

Petroleum Crisis

Ethiopian Famine

Flooding in Bangladesh

First World Conference on Nutrition, Rome, 1974
“Today we must proclaim a bold objective—that within a decade NO CHILD WILL GO TO BED HUNGRY, that no family will fear for its next day’s bread, and that no human being’s future and capacities will be stunted by malnutrition”

Henry Kissinger, World Food Conference, 1974
1st Success Factor

Bold Leadership......
Leadership and Nutrition Champions

Martin Forman, USAID
James Grant, UNICEF
Alfred Sommer, Johns Hopkins Leadership and Nutrition Champions
Frances Davidson USAID
Ernest Loevinsohn CIDA
Emorn Wasantwisut, Mahidol University
Melinda Gates
Hillary Clinton
Howdy Boius, Harvest Plus
Meera Shekar, World Bank
Duff Gillespie, USAID
Ernest Loevinsohn, CIDA
Institutional Champions

...and many others
2nd Success Factor
Investments in the 3D’s

Discovery → Development → Deployment

Why?  Acceptable?  How to delivery at scale?
Where?  Affordable?  *Assessments
What solution— Delivery  *Logistics/Supplies
dose, frequency?  Mechanism?  *Mgmt

*Capability
*Communications
*Monitoring
*Evaluation
Discovery.......
Vitamin A Reduces Preschool Child Mortality

~23% reduction
Therapeutic Effects of Zinc on Duration of Acute Diarrhea

* India, 1988
* Bangladesh, 1999
* India, 2000
* Brazil, 2000
* India, 2001
* Indonesia, 1998
* India, 1995
* Bangladesh, 1997
* India, 2001
* Nepal, 2001
* Bangladesh, 2001

Pooled

*Difference in mean and 95% CI
Relative Hazards and 95% CI
Development of Solutions
Home-based Fortification-Micronutrient “Sprinkles”

Microencapsulated ferrous fumerate in powdered form are as effective as ferrous sulphate drops in treating anemia in infants 6-18 mo.

Zlotkin, AJCN, 2001
Zlotkin, J Nutr, 2003
Bio-fortification

Tropical Maize varieties with high levels of beta-carotene

Orange-fleshy sweet potato
Sodium Iron EDTA
Deployment......
## Deployment—Using global lessons to move local programs

<table>
<thead>
<tr>
<th>Year</th>
<th>USAID-supported MN Projects</th>
<th>Focus</th>
<th>$/yr Million</th>
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<tr>
<td>2005-2011</td>
<td>&quot;A2Z“ (AED)</td>
<td>Sustaining VAS coverage, Food Fortification, Maternal Anemia, Newborn VA</td>
<td>~8</td>
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<td>1998-2005</td>
<td>“MOST” (ISTI)</td>
<td>VAS Child Survival Weeks, VA in PL480 oil, Food-based interventions, MN indicators in DHS</td>
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<td>1993-1998</td>
<td>“OMNI” (JSI)</td>
<td>VAS, wheat flour &amp; sugar fortification, salt iodization, IFA</td>
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<tr>
<td>1989-1994</td>
<td>“VITAL” (ISTI)</td>
<td>Expand known methodologies to combat VA deficiency</td>
<td>?</td>
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Example: VA Supplementation
Fortification Publications

The Food Fortification Formulator:
Technical Determination of Fortification Levels and Standards for Mass Fortification
Omar Dary and Michael Hainsworth
April 2008

Monitoring and Evaluating Food Fortification Programs:
General Overview
Technical Consultation July 7, 2006
February 2008
## Program Components for Successful Micronutrient Intervention Implementation

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Process</th>
<th>Outputs</th>
<th>Outcomes</th>
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<td>Assessment</td>
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<td>Capacity Building</td>
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<td>Communications</td>
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</table>

- **Process**
  - Process Monitoring
  - Effectiveness Evaluation
3rd Success Factor

Credible Inter-disciplinary Expert Groups

IVACG

INACG
Interdisciplinary Expert Groups-
IVACG, INACG, MF

IVACG Statement

The Annecy Accords to Assess and Control Vitamin A Deficiency

Summary of Recommendations and Clarifications

The International Vitamin A Consultative Group (IVACG) undertook a comprehensive review of recommendations for the control of vitamin A deficiency developed over the last 20 years, the first such review in as many years. IVACG commissioned a series of expert papers that were presented at an expert panel meeting in Annecy, France, in October 2000. The recommendations, with supporting evidence, were refined based on feedback from the meeting.

INACG Consensus Statement

SAFETY OF IRON SUPPLEMENTATION PROGRAMS IN MALARIA-ENDEMIC REGIONS

Problem Statement

Iron deficiency affects more than 2 billion people and, on a global basis, is the most common cause of anemia. Programs to control iron deficiency anemia (IDA) may yield numerous benefits to public health, including improved health and development in children, reduced mortality in pregnant women and young children, and increased work productivity in all individuals. A reduction in IDA by the year 2000 was adopted by the World Summit for Children in 1990 and the International Conference of Nutrition in 1992. In anemia control programs, oral iron supplementation is important in almost all contexts.

IDA occurs in areas where malaria transmission is endemic, most notably sub-Saharan Africa. Severe anemia is increasingly recognized as an important manifestation of severe malaria in young children. Laboratory evidence and early evidence from clinical trials had suggested that certain interactions occur with iron status and malaria such...
Innocenti Process, 2008

Evidence-based stock-taking of performance and effectiveness of micronutrient interventions at scale
4th Success Factor
“Evidence Summits”
IVACG, INACG & MF meetings
Vitamin A Supplementation
Simple
Visible
Inexpensive
Life-saving results

Iodine Fortification
Excellent food vehicle
Simple technology
Inexpensive
Visible results

“Luck”? 
Lessons

• Bold Leadership & Powerful Champions
• Investment in the 3’Ds
  – Evidence is not enough.
• Credible cross-disciplinary expert groups to accelerate the filling of the “Know-Do” gap
• Evidence summits to rapidly promote & disseminate evidence-based findings/practices
• “Luck”? 
Remaining Challenges

• Sustaining gains of previous investments
• Moving from Donorship to Ownership
• Reducing anemia in women and children
• Delivery at-scale of efficacious interventions
• Investment in how to move from “Farm-to-Fork” to enhance nutrient content & diversity of diets
• Maintaining visibility of MNs because preventing “non-events” make it difficult sustain MN investments
• New discoveries for other MNs (e.g. vitamin D) & enhanced discoveries of “old” MNs (e.g. long-term effects)
Thank you!