Estimating Fortification’s Costs and Economic Benefits

Presented by: Quentin Johnson
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Multiple Rationales for Investment in Flour Fortification

- **Moral**
  - Humanitarian Imperative
- **Good Governance**
  - Obligation to Citizen Rights to Nutrition
- **Economic Growth & Development**
  - National Development Investment

Willie Sutton: Infamous Bank Robber in 1930’s USA Depression Era.

**Question:** Why do you rob banks?

**Answer:** “That’s where the money is.”
Workshop Tool

- Excel software with multiple spreadsheets
- Fixed parameters used to determine **health** and **economic** related losses based on existing literature and economic studies.
- Anemia, iron deficiency, NTDs
- Specific data for countries can be used based on country official data and statistics.
Rationale

• Development of cost benefit case for flour fortification.
• Advocacy to private sector, milling industry etc.
• Allows economists to compare flour fortification to other government programmes and health interventions
• Use as advocacy tool for policy makers in government ministries and Prime Minister Office
Methodology

- Workshop Structure based on 4-5 days
- Country teams representing Industry, Ministry of Health, Ministry of Trade and/or Finance
- Country team 3 – 7 people ideal
- Data collection by country teams prior to the workshop – essential!
- Country teams need to reach consensus on their own country data and statistics.
Workshop Process

Determination of Economic Losses

• Objective: Determine the costs of doing nothing

• Estimate and validate country health statistics
  – Iron: Iron Deficiency, Iron Deficiency Anemia
  – Folic Acid: NTDs and deaths

• Estimate Economic Losses
  – Iron deficiencies cause loss in economic productivity
  – Folic Acid deficiencies cause increase health care costs and economic burden on families for additional healthcare costs

• Review spreadsheet calculations and revise if required
Examples of Economic losses
The National Burden of IDA, VAD & NTD

1. Child Mortality Cost of VAD
2. Neo-Natal Mortality Cost of IDA in Pregnant Women
3. Maternal Mortality Cost of IDA in Pregnant Women
4. Mortality & Disability Cost of NTDs
5. Future Productivity Loss Due to Cognitive Deficits in Children
6. Current Productivity Loss Due to Anemia in Adult Women and Men
7. Summary: Money, Mortality

Source: Jack Bagriansky
IDA = iron deficiency anemia
VAD = vitamin A deficiency
NTD = neural tube defect
Flour Fortification:
A Strategy to Lower the Burden

1. Coverage of Flour Consumption
2. Effectiveness Among Consumers
   • Flour Additional Rates
   • % RNI for Risk Groups
   • Projected Reduction in Baseline Prevalence
     • Explain why you chose that number
3. The Potential Benefits of Flour Fortification
   • Money and Lives
4. Cost of Flour Fortification
5. 10 Year Benefit Cost Ratio

Source: Jack Bagriansky
**Fortification For NTD Prevention**

**Examples of Health Impact**

| **Meta-analysis published in 2010:** |  
| **8** | Included 8 studies published between 2002 to 2008 by 8 different authors  
| **5** | Reflected studies using sub-national data in 5 countries: Argentina, Canada, Chile, South Africa, USA  
| **31 – 78%** | Neural tube defect reductions ranged from 31% to 78%  
| **46%** | Overall reduction in risk of neural tube defects was 46%  

## Effectiveness of National Flour Fortification Programmes

### National Programme Evaluations
**Prevalence of Iron Deficiency and Anemia**

<table>
<thead>
<tr>
<th>Country</th>
<th>Risk Group</th>
<th>Condition</th>
<th>Pre</th>
<th>Post</th>
<th>% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venezuela</td>
<td>Children &gt; 5yrs</td>
<td>Iron Deficiency</td>
<td>37.2%</td>
<td>15.5%</td>
<td>58.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anemia</td>
<td>18.1%</td>
<td>17.1%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>Adult Women</td>
<td>Anemia</td>
<td>18.4%</td>
<td>10.2%</td>
<td>45%</td>
</tr>
<tr>
<td>Kuwait</td>
<td></td>
<td></td>
<td>33%</td>
<td>24%</td>
<td>27%</td>
</tr>
<tr>
<td>Oman</td>
<td>Pregnant Women</td>
<td></td>
<td>49%</td>
<td>31%</td>
<td>37%</td>
</tr>
</tbody>
</table>
## Large Scale Effectiveness Trial
- **Darjeeling, India**

### Prevalence of Vitamin A Deficiency

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Pre</th>
<th>Post</th>
<th>% Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnant Women</td>
<td>24.5%</td>
<td>23.2%</td>
<td>5%</td>
</tr>
<tr>
<td>School Age Children</td>
<td>34.5%</td>
<td>18.7%</td>
<td>46%</td>
</tr>
<tr>
<td>Adolescent Girls</td>
<td>30.1%</td>
<td>12.5%</td>
<td>58%</td>
</tr>
<tr>
<td>Pre-School Children</td>
<td>26.5%</td>
<td>22.5%</td>
<td>15%</td>
</tr>
</tbody>
</table>

*(Serum Retinol < 0.70 umol/l)*
Cost Benefit Workshops
Completed

The following regions and countries have had CBA workshops:

- CEE and Eurasia
- Uzbekistan
- East Africa

- Participant responses have been very positive and the workshops have resulted in flour fortification being implemented
Cost Benefit Workshops
Planned for Africa 2015 - 2016

- French language version for Francophone countries
- English language version for Southern Africa countries.
For More Information

www.FFInetwork.org
www.Facebook.com/FFInetwork
https://twitter.com/FFINetwork

Join the Food Fortification Initiative group on [Linked In](https://www.linkedin.com/)

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