Current Status of Rice Fortification

International Rice Congress 2014
31st October 2014, Bangkok

Karen Codling
Executive Officer, Asia Secretariat
Food Fortification Initiative (FFI)
Karen.codling@ffinetwork.org
GLOBAL EXPERIENCE WITH FOOD FORTIFICATION
80 countries have mandatory wheat flour fortification

* Legislation has the effect of mandating grain fortification with at least iron or folic acid. This does not reflect how much grain is available in that country. Grain availability data from the Food and Agriculture Organization (2009). Legislation status from the Food Fortification Initiative (www.FFInetwork.org).
Folic acid fortification of wheat and maize flour reduces neural tube defects

![Graph showing Neural Tube Defects (per 10,000): Pre and Post Fortification with Folic Acid](image)

- Prefortification NTD per 10,000
- Postfortification NTD per 10,000

Adapted from FFI 2013. Folic acid in flour ranged from 1.2-2.2 mg/kg.
Globally, three out of four households consume adequately iodised salt.

Ref: UNICEF State of the World’s Children 2014
No of iodine deficient countries has been reduced from 110 in 2003 to 31 today

Ref: ICCIDD Global Network
Selection of food vehicles for food fortification

**Suitable Vehicle**
May include cereals (wheat, corn, rice), oils, dairy products, beverages and condiments such as salt, sauces (e.g. soy sauce) and sugar

- Consumed by a large proportion of the population
- Consumed on a regular basis
- Centrally processed
- Premix can be added easily and cheaply

Ref: Adapted from WHO, 2006
Lessons Learned on Flour and Salt Fortification

- Industry consolidation is a key driver of success

- National partnership and long-term industry and government commitment underpin successful programs

- Mandatory legislation, based on evidence-based standards, yields best results but needs to be accompanied by adequate regulatory monitoring

- Communication is important but cannot replace regulatory monitoring in the context of mandatory legislation
CURRENT STATUS OF RICE FORTIFICATION
Fortified Rice Delivery Options

• Mandatory rice fortification
  ▪ Required by national legislation and enforced; all rice is fortified thus no issue of choice; price passed onto consumer; high potential for public health impact

• Voluntary rice fortification
  ▪ Choice of producers; both fortified and fortified available and consumers must choose; price passed onto consumers; low potential for public health impact

• Social safety net rice fortification
  ▪ Rice distributed through social safety nets (eg. school feeding, rice distributed to the poor) is fortified on policy basis, cost bourne by safety net implementer; high potential for public health benefit
## Current Status of Mandatory Rice Fortification

<table>
<thead>
<tr>
<th>Country</th>
<th>Legislation year</th>
<th>Rice Source, Fortified Kernel Source &amp; Milling Industry</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costa Rica</td>
<td>2001</td>
<td>40% imported; 2 domestic fortified kernel producers; 11 mills</td>
<td>100% fortified</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>2009</td>
<td>80% rice domestically grown; 40+ mills, many small</td>
<td>Limited implementation</td>
</tr>
<tr>
<td>Panama</td>
<td>2009</td>
<td>40% rice imported; initial plan for govt to pay for kernels</td>
<td>Not being implemented yet</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>2007</td>
<td>All rice imported; fortified with imported kernels or in country of origin</td>
<td>At least 80% fortified (market share of largest importer)</td>
</tr>
<tr>
<td>Philippines</td>
<td>2001</td>
<td>13% imported; ~11,000 mills. Fortified kernels imported plus 3 domestic producers. SSN rice</td>
<td>1-2% total rice fortified 2006-2013. Currently &lt;1%</td>
</tr>
</tbody>
</table>
## Current Status of Voluntary Rice Fortification

<table>
<thead>
<tr>
<th>Country</th>
<th>Start Year</th>
<th>Rice, Kernel Source &amp; Milling Industry</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>2006</td>
<td>0 imports; 2 domestic producers of kernels; multiple rice millers</td>
<td>About 1-2% coverage</td>
</tr>
<tr>
<td>Colombia</td>
<td>2002</td>
<td>20% rice imported; rice is sprayed with vitamins; &lt;100 millers; ~7 have ~75% market share</td>
<td>Several brands fortifying; about 50% total rice</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>2011</td>
<td>3% imported; unknown kernel source; assume multiple rice millers</td>
<td>Unknown</td>
</tr>
<tr>
<td>South Africa</td>
<td>2011-2014</td>
<td>100% imported rice; imported fortified kernels; multiple large mills</td>
<td>1 brand fortifying about 4% of total rice</td>
</tr>
<tr>
<td>USA</td>
<td>1998</td>
<td>21% imported; multiple large millers</td>
<td>About 90% coverage Mandatory in 6 states</td>
</tr>
</tbody>
</table>
Current Status of Social Safety Net

Rice Fortification

• Bangladesh
  – Govt programmes: Vulnerable Group Feeding/Development
  – WFP school feeding
  – Garment factory rice ration for workers
• Indonesia: RASKIN rice for the poor (pilot)
• Philippines: National Food Authority sells lower grade subsidised rice, intended for poor
• School feeding programme in India
Lessons Learned about Rice Fortification Delivery Options

• Mandatory rice fortification offers the best opportunity for achieving high coverage and a public health benefit.

• Voluntary rice fortification has only achieved high coverage in special circumstances.

• Social safety nets that distribute rice provide an excellent opportunity to reach vulnerable groups with fortified rice.

• However considerations of feasibility of implementation are important for both mandatory and social safety
Global guidelines/recommendations on food fortification

- Global guidelines current available on:
  - Food fortification in general
  - Wheat and maize flour
  - Salt fortified with iodine
- WHO guidelines/recommendations on food fortification as a public health strategy (not for marketing purposes)....aim to ensure equitable access, esp for vulnerable populations
- All publications containing WHO recommendations are approved by the WHO Guidelines Review Committee.
Why Develop Guidelines for Rice Fortification?

- Vitamin and mineral deficiencies are important public health concerns worldwide.
- Food fortification is an effective and cost-effective intervention.
- Rice represents a suitable vehicle for fortification.

- No systematic assessment of benefits and harms of rice fortification has been conducted to inform policy making.
WHO Evidence-Informed Guideline Development Process

1. Establishment of the WHO Steering Committee
   Determining the scope of the guideline

2. Identifying the guideline development group
   Identifying the external review group

3. Obtaining disclosures of interests and manage conflicts of interest

4. Formulating questions for the evidence reviews in PICOT format (Population, Intervention/Exposure, Comparator, Outcomes, Timing)
   Choosing important outcomes

5. Evidence retrieval, assessment and synthesis

6. Formulation of recommendations and determination of their strength
   Plans for updating

7. Peer-review of draft guideline by external review group

8. Publication
   Dissemination
   Adaptation

9. Evaluation

10. Final guideline approval

11. Initial guideline approval
Cochrane Review on Rice Fortification

To determine the benefits and harms of rice fortification with vitamins and minerals (iron, vitamin A, zinc, folic acid) on micronutrient status and health-related outcomes

WHO rice fortification guidelines expected in 2015