Micronutrient Fortification
Process and Challenges:
The Philippine Experience

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Policy on Food Fortification

1952 - Republic Act 832, Rice Enrichment Law
Rice Premix: Thiamin, Niacin & Iron
(Problem of Beriberi – Bataan Rice Study)

1995 - Republic Act 8172, An Act Promoting
Salt Iodization Nationwide (ASIN)

- DOH Admin. Order No.4 A s. 1995,
Guidelines on Micronutrient Fortification of Processed Foods
Sangkap Pinoy Seal (SPS) Program
(1993 National Nutrition Survey Results, FNRI, DOST – high prevalence of VAD, Anemia and IDD)
Added nutrients shall supply at least 1/3 of the RDA (now referred to as Recommended Energy and Nutrient Intakes/RENI) of the target consumer.

Reference RENI will be those for Filipino adult male 30 to 49 years old, for those intended for children, reference RENI will be for 4 – 6 years old.

Computation of the minimum fortification level:

Fortification level per 100 g = \((A/B \times C) \times 100\)

Where:
- \(A\) = 1/3 RDA of the target consumer
- \(B\) = no. of servings like to be consumed per day
- \(C\) = serving size (amount of food normally eaten at one time)
SPS Program - a strategy to encourage food manufacturers to fortify food products with one or more of the following micronutrients: vitamin A, iron, and/or iodine at levels approved by the DOH

FRAMEWORK OF THE GOAL & OBJECTIVES OF THE FOOD FORTIFICATION STRATEGIC PLAN 2000 - 2004

GOAL
50% RDA of Vitamin A, Iron and Iodine intake due to fortification

Public-Private-NGO Partnership

Environment conducive to fortification

Management
Research
Technology
Legislation
Program M&E
Regulatory Monitoring

Processed Foods with vit. A, Fe & I2 2000-2004

Salt with Iodine
Flour with Vit. A & Iron
Oil with Vit. A
Sugar with Vit. A
Rice with Iron

2000-

2004
Policy on Food Fortification

2000 - Republic Act 8976, “Food Fortification Law”

“An Act Establishing the Philippine Food Fortification Program and for other purposes”, mandates the fortification of four staples and promotes fortification of processed foods through the Sangkap Pinoy Seal to eliminate micronutrient deficiencies in the country.

REPUBLIC ACT NO. 8976
PHILIPPINE FOOD FORTIFICATION PROGRAM

MAJOR PROVISIONS

Mandatory fortification of the following commodities set by DOH thru BFAD by 2004

- rice with iron
- wheat flour with Vit A & iron
- refined sugar with Vit A
- cooking oil with Vit A
- other staples with nutrients as may be required by the NNC

Low applies to all imported and locally processed foods for sale and distribution in the Philippines.
## Standards for Flour Fortification

<table>
<thead>
<tr>
<th>Fortificant</th>
<th>Minimum Acceptable Level</th>
<th>Maximum Tolerable Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A Retinol as palmitate or acetate</td>
<td>3 mg/kg as retinol</td>
<td>6.5 mg/kg as retinol</td>
</tr>
<tr>
<td>Iron</td>
<td>70 mg Fe/kg</td>
<td>105 mg Fe/kg</td>
</tr>
<tr>
<td>Elemental iron (electrolytic or H reduced with particle size &lt;= 50 microns)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others approved by DOH/BFAD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Major Provisions**

- Voluntary fortification for processed foods under the Sangkap Pinoy Seal (SPS) Program of DOH
- Support to manufacturers provided by DOST (Technology Transfer), DTI and Land Bank (lands/financial assistance), other agencies (Technology Assistance)
- Administrative sanctions for non-compliance based on BFAD monitoring (fine, suspension, etc.)
**TYPES OF SEALS**

Mandatory Fortification

For mandatory fortification of staples, such as rice (iron), wheat flour (vit. A & iron), cooking oil and refined sugar (vit. A)

Voluntary Fortification

To encourage food processors to undertake food fortification on their own volition to enhance the nutrition content of their food products

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**REPUBLIC ACT NO. 8976**

**PHILIPPINE FOOD FORTIFICATION PROGRAM**

**MAJOR PROVISIONS**

DOH through BFAD, as the lead implementing agency shall be assisted in the monitoring and review of the FF Program by:

- Sugar Regulatory Administration (SRA) for sugar
- National Food Authority (NFA) for rice
- Philippine Coconut Authority for cooking oil
- Bureau of Customs for imported products
- Other agencies as DTI, DOST, DF, LBP and LIVECORP

BFAD shall monitor and review the fortification of flour
Food Fortification Framework 2005-2010

VISION
Every Filipino Family Consumed Fortified Foods Towards Improved Productivity and Quality of Life

MISSION
Dynamic Public-Private-NGO Partnership to Ensure Continuous Supply of Fortified Foods in Every Filipino Home

GOAL
Micronutrient Deficiencies are no Longer Public Health Problems

OBJECTIVE
To Increase the Intake of Vit. A, Iron, and/or Iodine by at Least 50% of RENI thru Food Fortification

STRATEGIES
Enforcement of Existing Laws and Continuous Advocacy & Promotion Efforts Towards Generating Full Public-Private-NGO Support & Cooperation

COMPONENTS
Program Management, Production & Distribution, Promotion, Food Control & Monitoring

MONITORING OF FORTIFIED PRODUCTS & PRODUCTS WITH SANGKAP PINOY SEAL

- Plant visit
- Collection of samples from any market source to monitor product labeling and level of fortification (at least once a year)
- Product samples that do not comply with acceptable levels of fortification:
  - 1st monitoring - warning
  - corrective measures
  - 2nd monitoring - corresponding administration sanction
  - product recall & cancellation of SPS usage

Manaloto, R, 2010
Mandatory flour fortification started Nov. 7, 2004, in 2005 BFAD conducted 34 and 17 Analyses of VA and Fe respectively. These increased to more than 300 in 2006 and 2007 as BFAD intensified its monitoring particularly for imports which was monitored on per shipment basis. On the 1st semester of 2008 BFAD has conducted 83 analyses focused on bakery samples (59).  

Manaloto, R, 2010
**Contribution of SPS products\(^a\) to retinol intake of nonbreastfeeding 0 – 5 y old children**

<table>
<thead>
<tr>
<th>Retinol intake (µg), median (25(^{th}), 75(^{th}) percentile)</th>
<th>1(^{st}) (lowest) income quintile</th>
<th>5(^{th}) (highest) income quintile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total retinol Intake</td>
<td>158.1 (74.7, 303.4)</td>
<td>463.5 (262.1, 666.1)</td>
</tr>
<tr>
<td>% from SPS(^*)</td>
<td>21.9%</td>
<td>26.4%</td>
</tr>
</tbody>
</table>

\(^{*}\) all income groups = 26.7%

Data source: 2003 National Nutrition Survey, FNRI-DOST; \(n = \) nonbreastfeeding 0 – 5 years old children who ate at least one SPS food product at least three days in the past 7 days (2,125)

\(a\) 47 SPS products were available in the market in 2003

\(b\) food intake data were collected from 2-day 24 h food recall of children

Disparities in VAD across income quintiles are related to retinol intake

C Garcia, MRA Pedro, A Gulles, W Molano, 2006

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**Contribution of SPS products\(^a\) in iron and retinol intake of nonbreastfeeding 0 – 5 y old children, median (25\(^{th}\), 75\(^{th}\) percentiles)**

<table>
<thead>
<tr>
<th>Nutrients</th>
<th>1(^{st}) (lowest) income quintile</th>
<th>5(^{th}) (highest) income quintile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (mg)</td>
<td>Actual intake (w/ fortification)(^a)</td>
<td>Estimated intake (w/o fortification)(^b)</td>
</tr>
<tr>
<td>4.1 (2.6, 5.7)</td>
<td>3.9 (2.6, 5.5)</td>
<td>7.6 (5.3, 11.2)</td>
</tr>
<tr>
<td>Retinol eq. (µg) (^d)</td>
<td>158.1 (74.7, 303.4)</td>
<td>106.4 (52.7, 211.9)</td>
</tr>
</tbody>
</table>

Data source: 2003 National Nutrition Survey, FNRI-DOST; \(n = \) nonbreastfeeding 0 – 5 years old children who ate a SPS food product at least one day in the past 7 days (2,125)

\(a\) 47 SPS products were available in the market in 2003

\(b\) food intake data were collected from 2-day 24 h food recall of children

\(c\) nutrient values of equivalent unfortified food products from the Phil FCT were assumed/replaced values of the fortified food products in the food record of the children

\(d\) \(p = 0.00\) (kolmogorov-smirnov test), with and without fortification

Disparities in VAD across income quintiles are related to retinol intake

C Garcia, MRA Pedro, A Gulles, W Molano, 2006
# 2007 Situational Analysis according to Target Groups based on Fourmula 1

## Food Fortification

### F1 Intermediate outcomes

<table>
<thead>
<tr>
<th>Household</th>
<th>Providers</th>
<th>Other private sector</th>
<th>Local Municipal/ Province</th>
<th>DONCHD/ Cluster or Bureau/ PHIC/ other agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased availability, access and consumption of fortified foods contributing an additional 30% to RENI for vitamin A, iron and iodine, particularly of the vulnerable groups</td>
<td>Even though they are consuming fortified foods, there is lack of knowledge on the benefits of fortified foods</td>
<td>Lack of Knowledge on the benefits of fortified foods and IEC materials needed to promote Fortified foods</td>
<td>See regulations</td>
<td>Lack of LGU plans for food fortification</td>
</tr>
</tbody>
</table>

### Financing

| Joint public – private – NGO financing for food fortification particularly related to marketing and promotions | Lack of funds to promote Fortified foods | Requires funding for training/orientation on food fortification program | Minimum industry marketing effort for fortified foods, staples are not usually promoted, role of promotions should be with government | Lack of funds to promote and monitor Fortified foods | Lack of funds for marketing, management and Promotion of food Fortification |

### Regulations

| Flour – full implementation of RA 8976 | There is only partial compliance by industry with the following policy issues: flour – quality of fortification for vitamin A and iron – fortification of only palm and coconut oil, selling in clear, unlabeled containers affecting vitamin A, Sugar – non – fortification due to the issue of lack of premix and who bears the cost of fortification due to the “quedan” system, Rice - low coverage mainly through NFA and a few rice mills, needs 10,000 rice mills to implement Processed foods – fortification benefits only high income group | Need to review policy on LGU implementation, ordinances for food fortification, forcing mandatory fortification may lead to higher price and shortage of the staple | BFAD - lack of guidelines for implementation of practice fortification law and Sangkap Pinoy Seal program and revise if necessary | CHD efforts for food fortification unknown |

### Governance

| DOH as lead implementing agency with support of other govt. agencies and LGU’s | Household survey on consumption of fortified foods done every 5 years | Lack of LGU plans for food fortification | Lack of LGU plans for food fortification | Lack of data to determine progress, lack of technical knowledge on fortification required for monitoring and supervision, coordination and support required from other agencies |

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Bongga, Acuin, & Maglalang, 2007
Barriers to Implementation of Food Fortification

- Refined sugar and certain oils may not be critical vehicles for fortification
- Sugar & rice have not been fortified due to the unavailability of vit A premix for sugar and iron premix for rice.
- Fortified processed products with DOH seal are now available in the market and are highly consumed by the high income population
- Limited promotion on the contribution of fortified foods with Sangkap Pinoy Seal in improving nutrient intake
- BFAD manpower and facilities to monitor and test fortified products are already stretched to the limits resulting to untested commodities
- LGUs could play an important role in enforcing the food fortification laws & have flexibility in providing incentives to food producers at the local level.
- Role of other agencies in the implementation of the Food Fortification Law need to be revisited and identified

Source: Policy Brief for Thematic Area 4.0: Bongga, Acuin and Maglang, 2007

Trends in the prevalence of anemia among children

Trends in the prevalence of VAD among 6 mos-5 yrs, pregnant and lactating women, Philippines: 1993 - 2008
Nutrition Center of the Philippines, 2012
Review of the Mandatory Food Fortification

Pertinent findings on the implementation of the PFFP:

- AOs and Dos defines structure and roles but there is some reluctance in accepting these roles
- No signed MOAs between the FDA, except for the National Food Authority
- There are standard protocols for laboratory analysis but no operation manuals or SOPs specific for program management and for monitoring of the staples at manufacturer & retail levels
- Issued fortificant standards but have not been evaluated
- While USAID-MOST developed a manual for industry’s access to incentives, there is no data if industry availed of it
- No documented written communication plan for fortification; promotion and advocacy focused on National Food Fortification Day and Garantisadong Pambata
- No established Management Information System

Nutrition Center of the Philippines, 2012
Review of the Mandatory Food Fortification

Some findings on the implementation of the PFFP:

- On Wheat Flour:
  - All flour mills are fortifying with vitamin A & Iron but levels above and below standards, noted
  - Industry indicated need for the promotion of the consumption of fortified bread

- On Cooking Oil:
  - Difficulty of regulating dip-out or “takal” oil and smuggled oil place compliant companies at a competitive advantage
  - Government support in validation and optimization of the industry developed Rapid Test Kit for vitamin A is needed
Nutrition Center of the Philippines, 2012
Review of the Mandatory Food Fortification

Some findings on the implementation of the PFFP:

- **On Rice:**
  - National Food Authority issued policies on rice fortification and specifications for iron-coated rice premix and IFR
  - Only NFA rice (15-25%) are iron fortified
  - Technology for extruded iron-premix available; one local company using it to produce the iron-premix rice
  - A clinical trial demonstrated efficacy of extruded IFR and market trials indicated its acceptability on sensory attributes

- **On Sugar:**
  - At present, no sugar is fortified with vitamin A
  - Who should bear the cost of fortification is unclear with the quedan system of sugar ownership
  - Lower socio-economic quintiles use washed or brown sugar
  - Newer vit.A fortificants available but not tested with washed or brown sugar

Nutrition Center of the Philippines, 2012
Review of the Mandatory Food Fortification

Recommendations:

- **On continuation of mandatory fortification (vehicles & fortificants):**
  - Maintain mandatory fortification of flour and oil (coconut and palm), voluntary of other oils
  - Determine whether vit. A in flour can be reduced/eliminated and vit. A in oil, maintained or increased
  - Study mandatory fortification of flour with folic acid
  - Pursue mandatory fortification of rice with hot extruded iron rice premix
  - Study multiple micronutrient fortification of rice
  - Use more bioavailable iron
  - Study the feasibility of the fortification of sugar at the repacker level
  - Maintain current levels of vit. A and iron pending release of results of 2013 National Nutrition Survey
Nutrition Center of the Philippines, 2012
Review of the Mandatory Food Fortification

Recommendations:

- Designate NNC as over-all office oversee FFP in DOH
- Create coordinating mechanism for inter-agency collaboration
- Strengthen capacity of regulatory agencies for monitoring
- Establish a Management Information System
- Design and implement incentive packages for compliant manufacturers
- Conduct periodic consultative meetings with industry
- Consider centralized procurement of premix

Thank you!