REGIONAL TRAINING WORKSHOP ON QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC) FOR FLOUR FORTIFICATION
Lusaka, Zambia, 15-18 May 2017

Cost Benefit Analysis: Introducing a modeling tool for Cost Benefit Analysis

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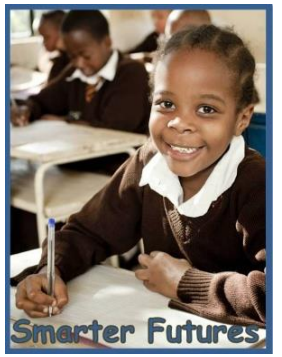
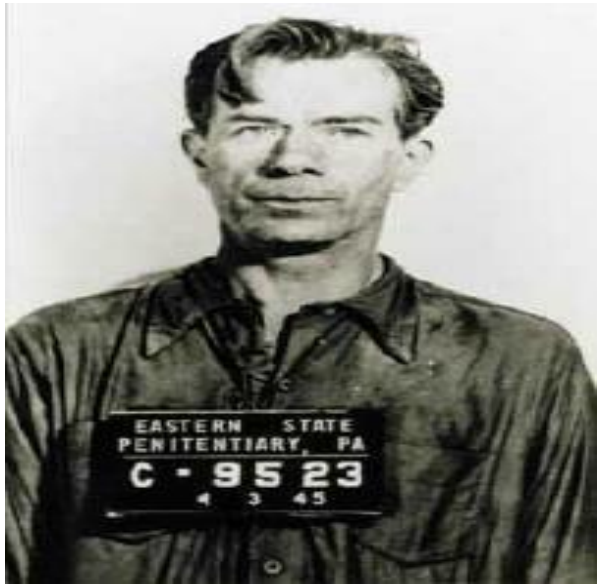
Smarter Futures, Food Fortification Initiative

Food Fortification Initiative
Enhancing Grains for Healthier Lives



Multiple Rationales for Investment in Flour Fortification

- Moral
  - Humanitarian Imperative – lives saved
- 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.*"

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

- Zambia Workshop Structure based on 2 days
- Country team representing Industry, Ministry of Health, Ministry of Trade and/or Finance, Development partners
- Country team 13 - 16 people
- Data collection by country teams prior to and during the workshop
- Country teams need to reach consensus on their own country data and statistics.

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, Vitamin A
- Specific data for countries can be used based on country official 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: Neural Tube Defects 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

Wheat and Maize 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

Examples of Health Impact: Fortification For NTD Prevention

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%

Blencowe, H., et.al., Folic acid to reduce neonatal mortality from neural tube disorders. *International Journal of Epidemiology*, 2010 April; 39 (Suppl 1): i110–i121.

Example of Health Impact
Iron Deficiency Effectiveness of Flour Fortification

National Programme Evaluations Prevalence of Iron Deficiency and Anemia					
Country	**Risk Group**	**Condition**	**Pre**	**Post**	**% Reduction**
Venezuela	Children > 5yrs	Iron Deficiency	37.2%	15.5%	58.3%
		Anemia	18.1%	17.1%	5.5%
*Costa Rica	Adult Women		18.4%	10.2%	45%
Kuwait			33%	24%	27%
Oman	Pregnant Women		49%	31%	37%

* In the case of Costa Rica with a comprehensive multiple food vehicle fortification programme Iron deficiency in under 5 children has been eliminated

Vitamin A deficiency
Large Scale Effectiveness Trial Darjeeling, India

Prevalence of Vitamin A Deficiency (Serum Retinol < 0.70 umol/l)			
	Pre	**Post**	**% Reduction**
Pregnant Women	24.5%	23.2%	5%
School Age Children	34.5%	18.7%	46%
Adolescent Girls	30.1%	12.5%	58%
Pre-School Children	26.5%	22.5%	15%

WORKSHOP AGENDA

- Objectives
- Consequences of micronutrient deficiencies
- Overview of food fortification principles
- Methodology of Cost Benefit Model
- Data collection and review of data sets
- Confirmation/validation of the data sets (small working groups)
- Cost Benefit Analysis
- Recommendations
- Next steps.

WORKSHOP OBJECTIVES

- To carry out a cost benefit analysis of wheat and maize flour fortification in Zambia
- To demonstrate that a public health intervention of flour fortification has both a health benefit and an economic benefit for the national population
- To demonstrate the importance of an effective monitoring system for compliance of the law by both millers and importers
- To sensitize the ministries of the Government of Zambia on the economic benefits of flour fortification

Cost Benefit Workshops
Completed

The following regions and countries have had CBA workshops:

- CEE, Eurasia, Kosovo
- Uzbekistan
- Smarter Futures – East Africa 2013, Zambia

- Every participating country has shown an economic benefit for maize and wheat flour fortification
- Participant responses have been very positive and the workshops have resulted in flour fortification being implemented

Cost benefit analysis:
Objective, Scope, Key data sets & Expected deliverables

- **Cost Benefit Analysis - Introduction**
  - Micronutrient malnutrition erodes the foundation of economic growth
  - Scientific literature has developed “coefficients of loss” for iron deficiency, folic acid deficiency (and vitamin A deficiency)
  - Application of best possible evidence from the scientific and economic literature to national health, demographic, labor and economic environment enables cost and benefit projections
  - Systematic economic reviews of poor health continue to be published all the time – model allows for updated information and statistics to be used.

Cost Benefit Analysis: Objective

- **Malnutrition has significant cost for the country for both future and current losses**
- **Future losses**
- **Mortality and disability** in children and consequent forgone income from future employment;
- Deficits in child cognition, inferior school performance and **depressed future productivity;**
- **Current losses**
- **Depressed productivity** in working iron deficient and anemic adults; and
- **Excess health care costs.**

Cost benefit analysis: Expected deliverables

- Economic Cost of Malnutrition – over ten year period in USD;
- Cost of Food Fortification – Maize and Wheat Flour Fortification – over ten year period in USD
- Potential benefit of Food Fortification in the form of reduction in Economic Losses – over ten year period in USD
- Year by year comparative analysis of cost and benefit
- Potential Impact of Cost of Fortification on Retail Price of Maize and Wheat Flour.

For More Information

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