



Preventing malnutrition: The potential role of lipid-based nutrient supplements (LNS)

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Outline

- What are "lipid-based nutrient supplements" (LNS)?
- Why might LNS be beneficial for preventing malnutrition?
- FANTA-2 planned research

What are "lipid-based nutrient supplements" (LNS)? (1)

Key features:

- Lipid is the primary source of energy
- Fortified with multiple micronutrients (vitamins and minerals)

Other characteristics:

- General composition: vegetable fat, peanut paste, skimmed milk powder, sugar and vitamin-mineral mix
- Ready-to-use food (RUF): Do not require dilution, preparation, cooking

What are "lipid-based nutrient supplements" (LNS)? (2)

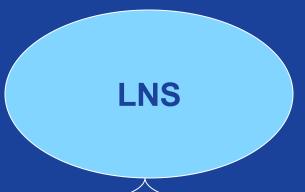
- Contain no water:
 - Inhibits microbial growth
 - Allows safe storage at home even in tropical climates
- Vitamin and mineral powder embedded in fat:
 - Prevents oxidation of vitamins
 - Increases shelf-life of the product
- Fat-base masks unpleasant taste of certain micronutrients
- Potential for local production and distribution

"Fortified-blended foods" and "RUFs": Where do LNS belong?

- "Fortified-blended-foods" (FBF): processed mixtures of cereals and other ingredients (e.g., pulses, oilseeds, dried skimmed milk, sugar and/or vegetable oil) fortified with vitamins and minerals which require preparation
 - Corn-soy blend
 - Wheat-soy blend

- RUF are ready-to-eat foods that require no preparation
 - High-energy biscuits
 - Ready-to-eat meals
 - -LNS

Potential applications and daily amounts



Application

Prevention of chronic malnutrition

Treatment of severe acute malnutrition

Daily amount of LNS used

Daily amount used	Uses
Small (5-10 g/day)	Home-fortification
Moderate (20-90 g/day)	Targeted supplementary feeding of moderately malnourished children, blanket supplementation or home fortification of complementary foods (e.g., RUCF or RUSF)
Large (100- 200g/d)	Therapeutic feeding of severely malnourished children (e.g. RUTF)

Why might LNS be beneficial for preventing malnutrition?

- LNS shown to increase linear growth of children and improve motor/cognitive development (efficacy trials in Ghana and Malawi)
- Fat content increases energy density, and may enhance absorption of fat-soluble vitamins (e.g., Vitamin A)
- Provide essential fatty acids, important for improved growth and brain development
- LNS can be tailored to the specific requirements of the target group: micronutrients and daily amount consumed

Food and Nutrition Technical Assistance II Project (FANTA-2)

- Five year Cooperative Agreement (June 2008 June 2013) funded by USAID
- Objective: To improve nutrition and food security policies, strategies and programming
 - Field support to strengthen country-specific nutrition and food security policies, strategies and programming
 - Increase the evidence base, effective methods and competencies

- Evaluation of the effectiveness of LNS for the prevention of chronic malnutrition (i.e., stunting) in children
- Effectiveness vs. efficacy research:
 - Efficacy: intervention is delivered under "controlled" or "ideal" conditions
 - Effectiveness: intervention delivered via regular program mechanisms = Less control over delivery or compliance with intervention
 - "Real-world" setting

- At least 2 studies to be conducted by FANTA-2/UC Davis
- Potential study sites being explored:
 - High prevalence of stunting
 - Possible programmatic settings:
 - Maternal, child health and nutrition program
 - not providing additional food supplementation
 - providing additional food supplementation (e.g., Title II program)
 - Community management of acute malnutrition screening

- Important study design aspects
 - Acceptability assessment and formative research regarding LNS use
 - LNS: 20 g/day
 - Randomized design
 - "Comparison" (control) group
 - Target group: children 6 mo of age
 - Length of supplementation (per child): 18 mo (6-24 mo of age)

- Outcomes to be assessed:
 - Biological:
 - Growth: length/height, weight
 - Stunting, underweight
 - Micronutrient status: iron, vitamin A
 - Anemia
 - Motor and cognitive development
 - Operational effectiveness:
 - Program delivery
 - Caregiver exposure and practice
 - Cost effectiveness:
 - Costs related to product, transportation, personnel time





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