

Micronutrient Powders: Current Global Program Implementation Status and Challenges

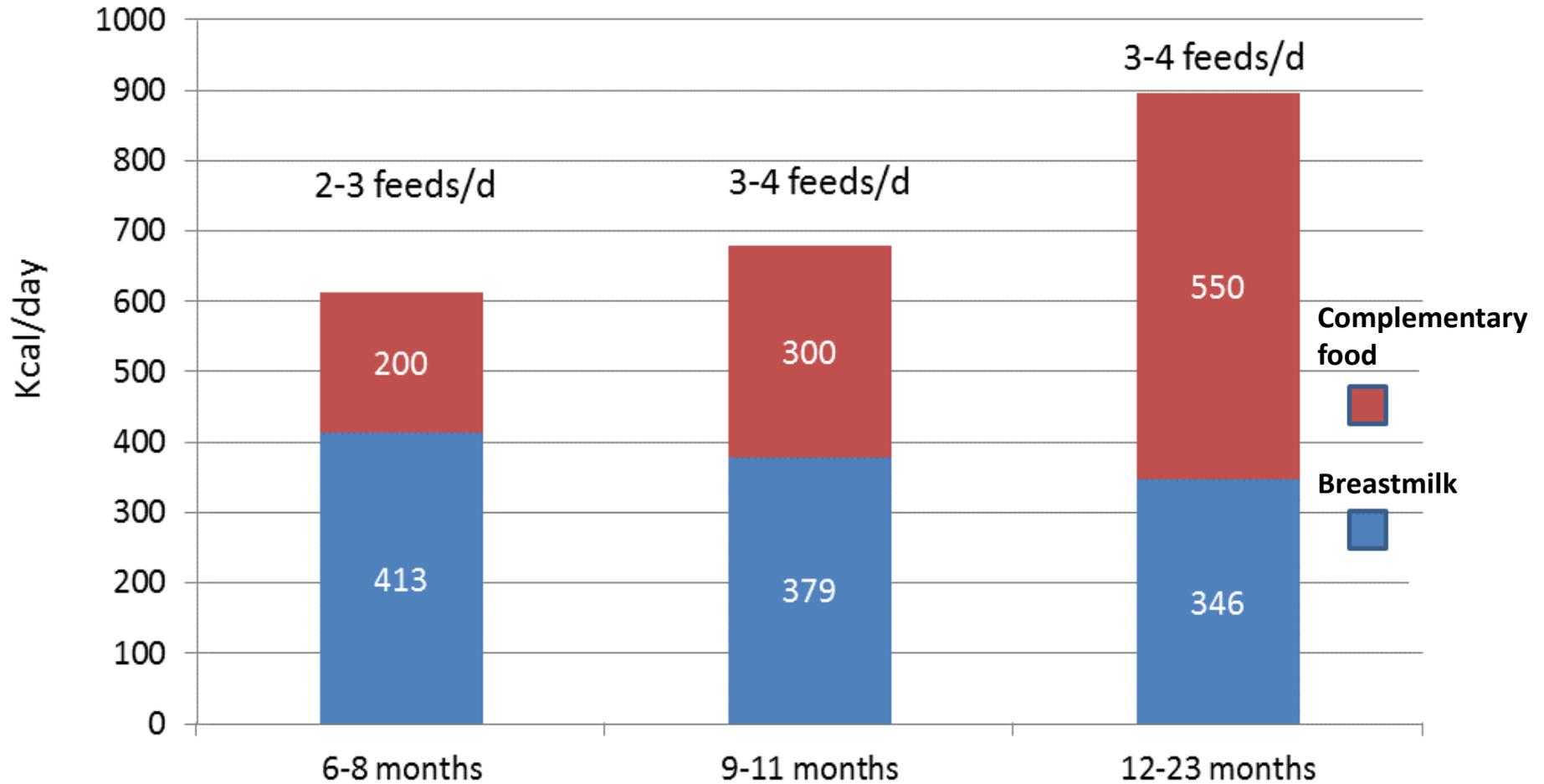
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UNICEF Headquarters, New York

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New Delhi
November 5, 2014

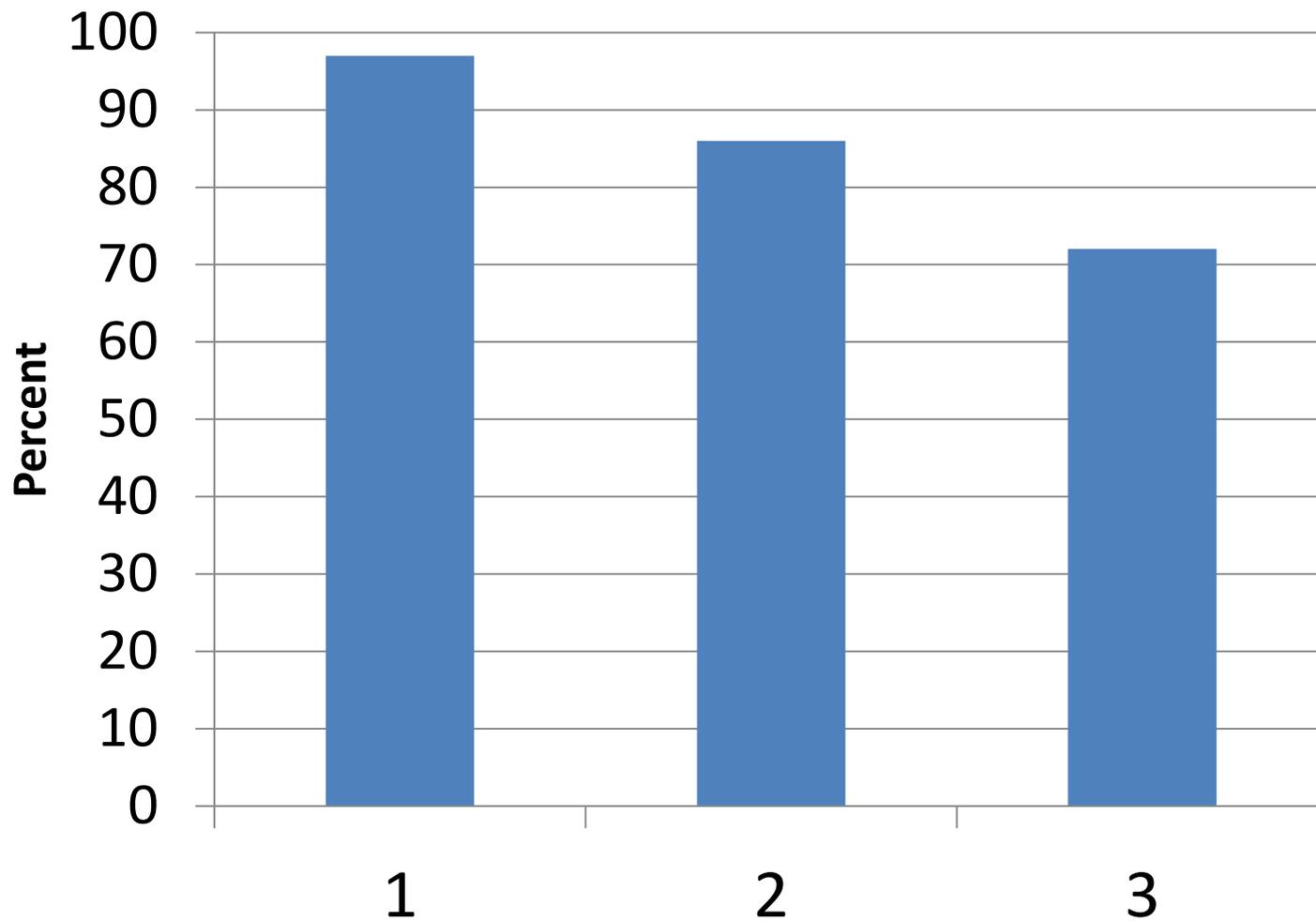
Presentation Overview

- Rationale
- Evolution
- Challenges
- Way forward
- Summary

Energy (kcal) intake from complementary foods in breastfed children



% of nutrient requirements from complementary foods (children 9-11 months)

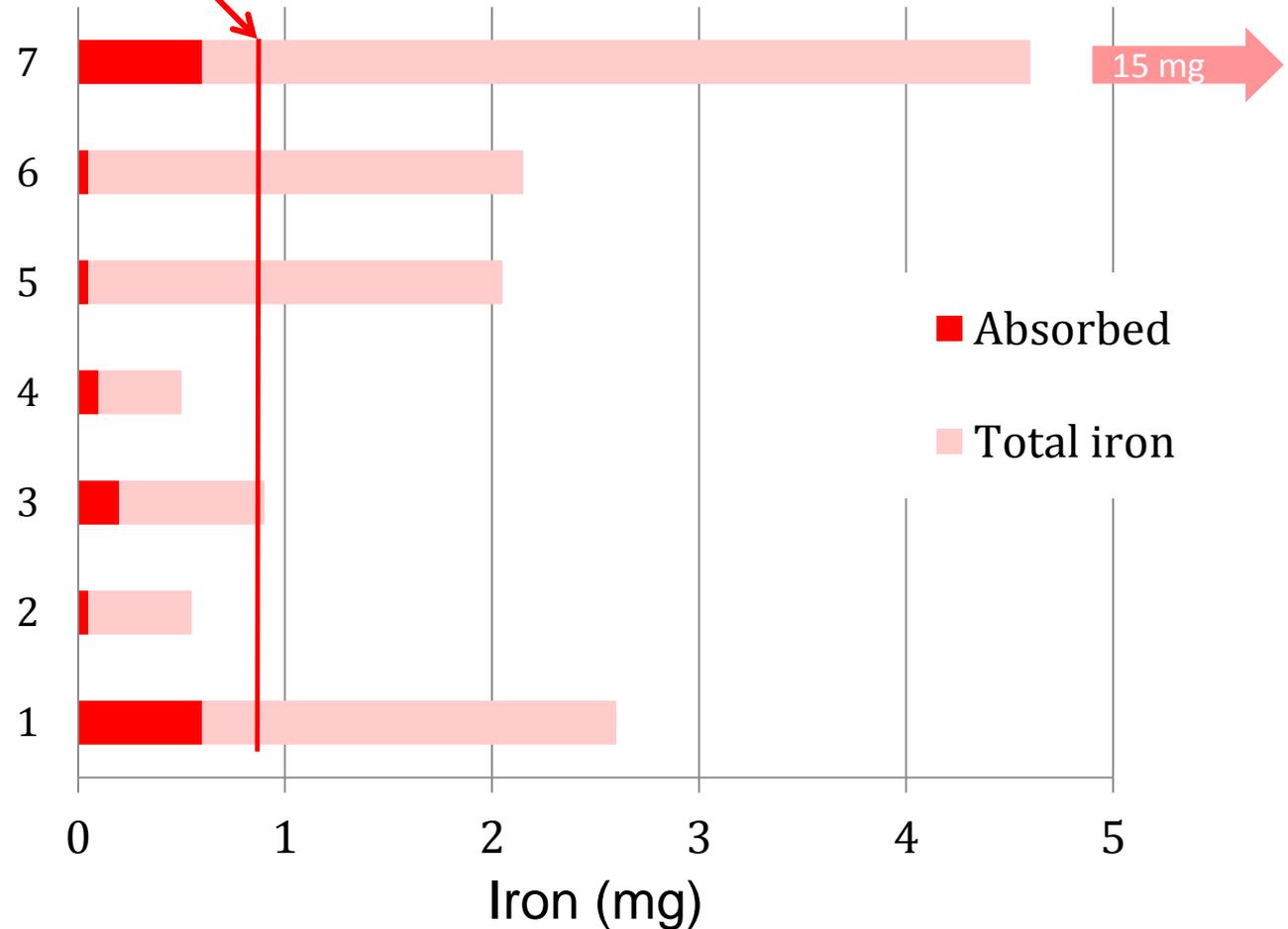


Dietary Interventions

Total & Absorbed Iron Content

Infant Requirements

8-12 months = 0.8mg



Fortified Infant Cereals



However, in many settings, fortified infant cereals are not accessible or affordable to large parts of the population

Mass fortification of flour with iron, folate, and other micronutrients

LIMITATIONS OF MASS FORTIFICATION

- Special groups will have limited benefits
 - Flour intakes of infants and young children are insufficient to meet nutrient demands
 - ➔ Special strategies are needed to meet their nutritional needs

What is home fortification?

- An innovation to improve diet quality of nutritionally vulnerable groups, such as young children
- Aims to ensure that the diet, i.e. complementary foods and breast milk combined, meets the nutrient needs of young children

There are two main types of home fortificants



**Micronutrient Powders
(MNP)**

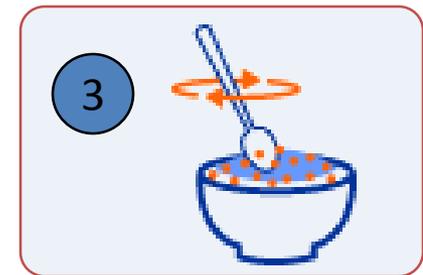
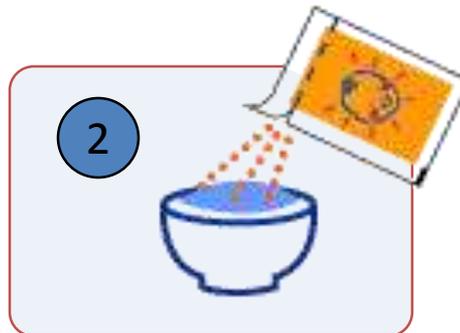


**Small-quantity lipid-based
nutrient supplements (SQ-LNS)**

Home Fortification with MicroNutrient Powders (MNP)



- Single-serve sachets of powdered vitamins and minerals
- Semi-solid 'complementary' foods are suitable for fortification at home
- Successfully used in many settings as 'Sprinkles', Chispitas, Babyfer, MixMe and Ongera



Advantages of MNP

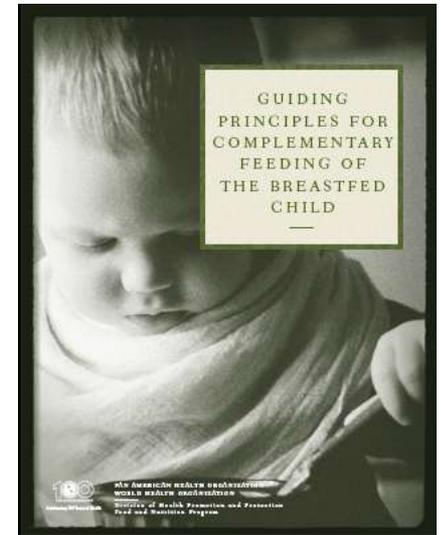
- Lipid coating prevents interactions between vitamins, minerals and food, as well as changes in taste and color of food
- Lightweight, easy to store and transport
- Inexpensive (1 sachet=\$0.02 (INR=1))

Advantages of MNP

- Do not conflict with breastfeeding
- Can be added directly to common foods
- Easy to use and highly 'acceptable'

Guiding Principles for Complementary Feeding of the Breastfed Child

1. Exclusive breastfeeding (EBF) for 6 months and introduction of complementary foods at 6 months
2. Maintenance of BF for up to two years and beyond
3. Responsive feeding
4. Safe preparation and storage of complementary foods
5. Adequate amount of complementary foods needed
6. Appropriate food consistency
7. Adequate meal frequency and energy density
8. Adequate nutrient content
9. Use of vitamin-mineral supplements or fortified products for infants and mother
10. Increase feeding during illness and after illness (e.g. diarrhea)



MNPs promise to achieve higher compliance than iron drops/syrups

Iron drops/syrups

- Metallic taste
- Staining of teeth
- Difficulty in measurement



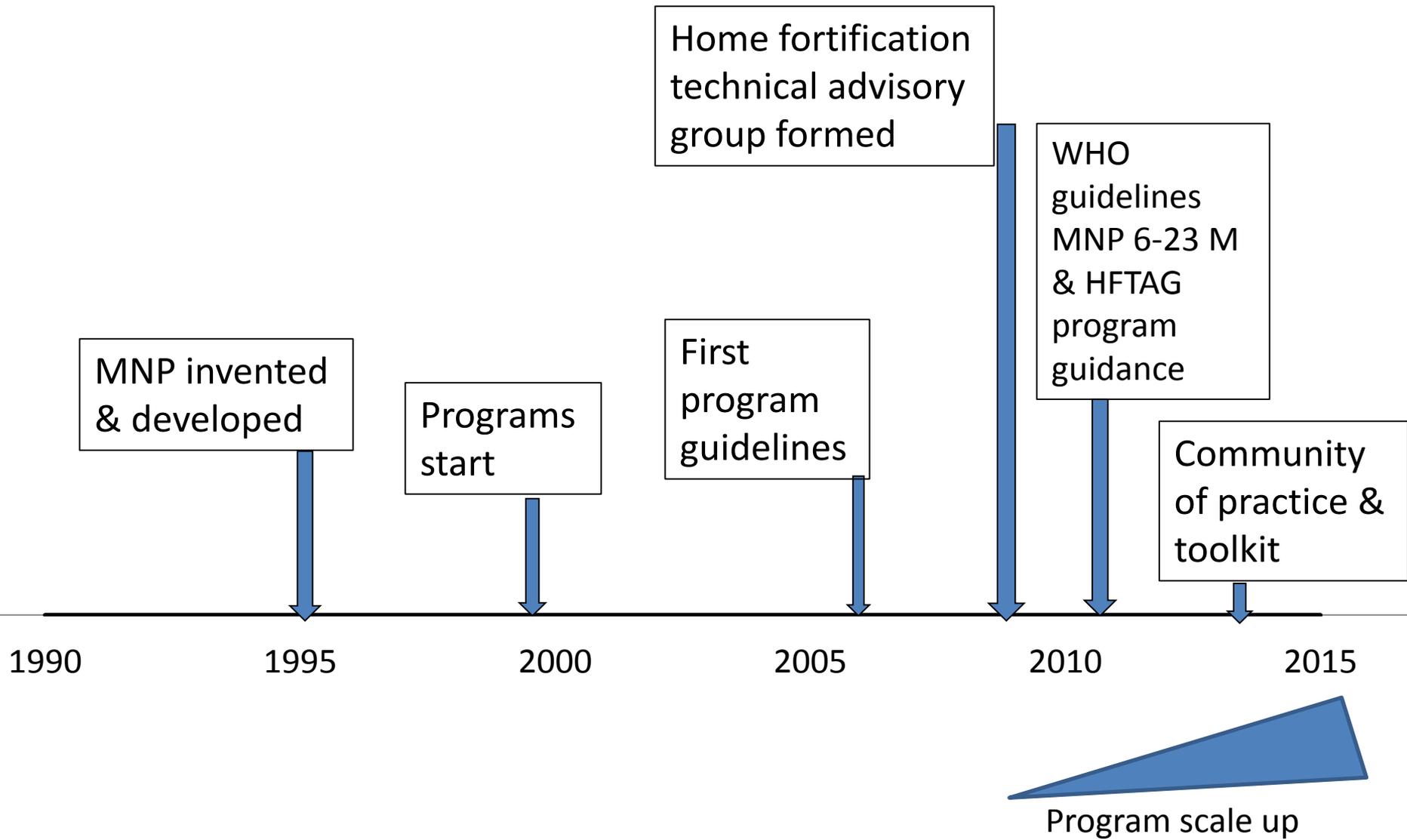
VS

MNPs

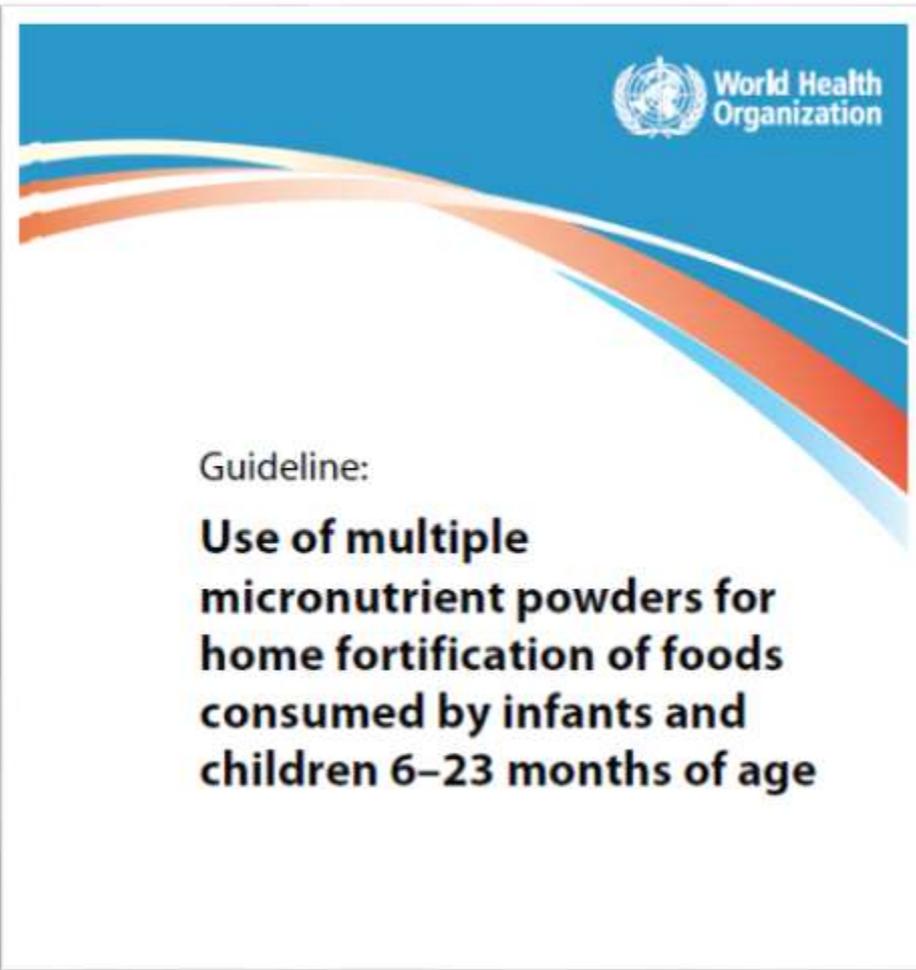
- No changes to taste
- Easy to add
- Non-medical approach



Evolution of MNP programs



WHO Guidelines



Home fortification of foods with multiple micronutrient powders reduced anaemia by 31% and iron deficiency by 51%

Home fortification of foods with multiple micronutrient powders is recommended to improve iron status and reduce anaemia among infants and children 6–23 months of age

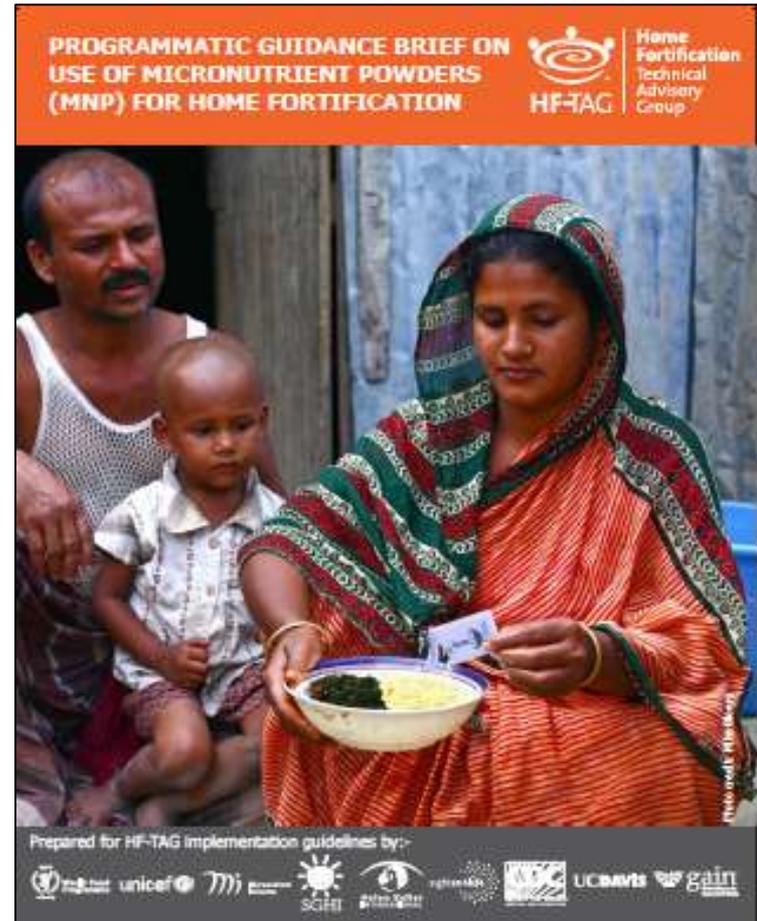
In malaria-endemic areas, the provision of iron should be implemented in conjunction with measures to prevent, diagnose and treat malaria

WHO. *Guideline: Use of multiple micronutrient powders for home fortification of foods consumed by infants and children 6–23 months of age*. Geneva, World Health Organization, 2011.

WHO guidelines (2011)



HFTAG program guidance (2011)



Available at
<http://www.gainhealth.org/hftag/>

WHO guidelines provides basis for program decision, HFTAG guidance note provides program implementation guidance

Standard MNP formulations provide one Recommended Nutrient Intake for children 6-59 months

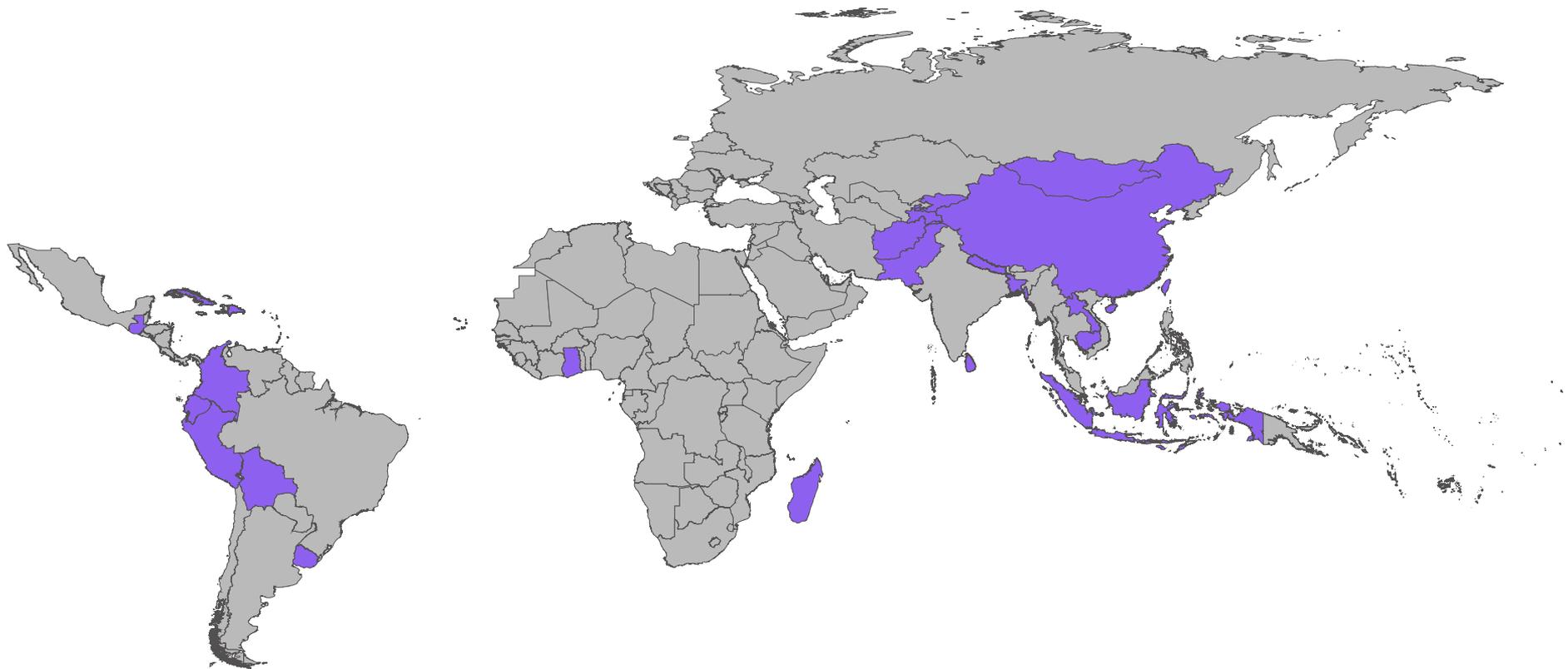
Micronutrients	Children (6 – 59 months)
Vitamin A µg RE	400
Vitamin D µg	5
Vitamin E mg	5
Vitamin C mg	30
Thiamine (vitamin B ₁) mg	0.5
Riboflavin (vitamin B ₂) mg	0.5
Niacin (vitamin B ₃) mg	6
Vitamin B ₆ (pyridoxine) mg	0.5
Vitamin B ₁₂ (cobalamine) µg	0.9
Folate µg ^a	150.0
Iron mg	10.0
Zinc mg	4.1
Copper mg	0.56
Selenium µg	17.0
Iodine µg	90.0

UNICEF–CDC global assessment of home fortification interventions 2011: Current status, new directions, and implications for policy and programmatic guidance

Maria Elena Jefferds, Laura Irizarry, Arnold Timmer, and Katie Tripp

2011

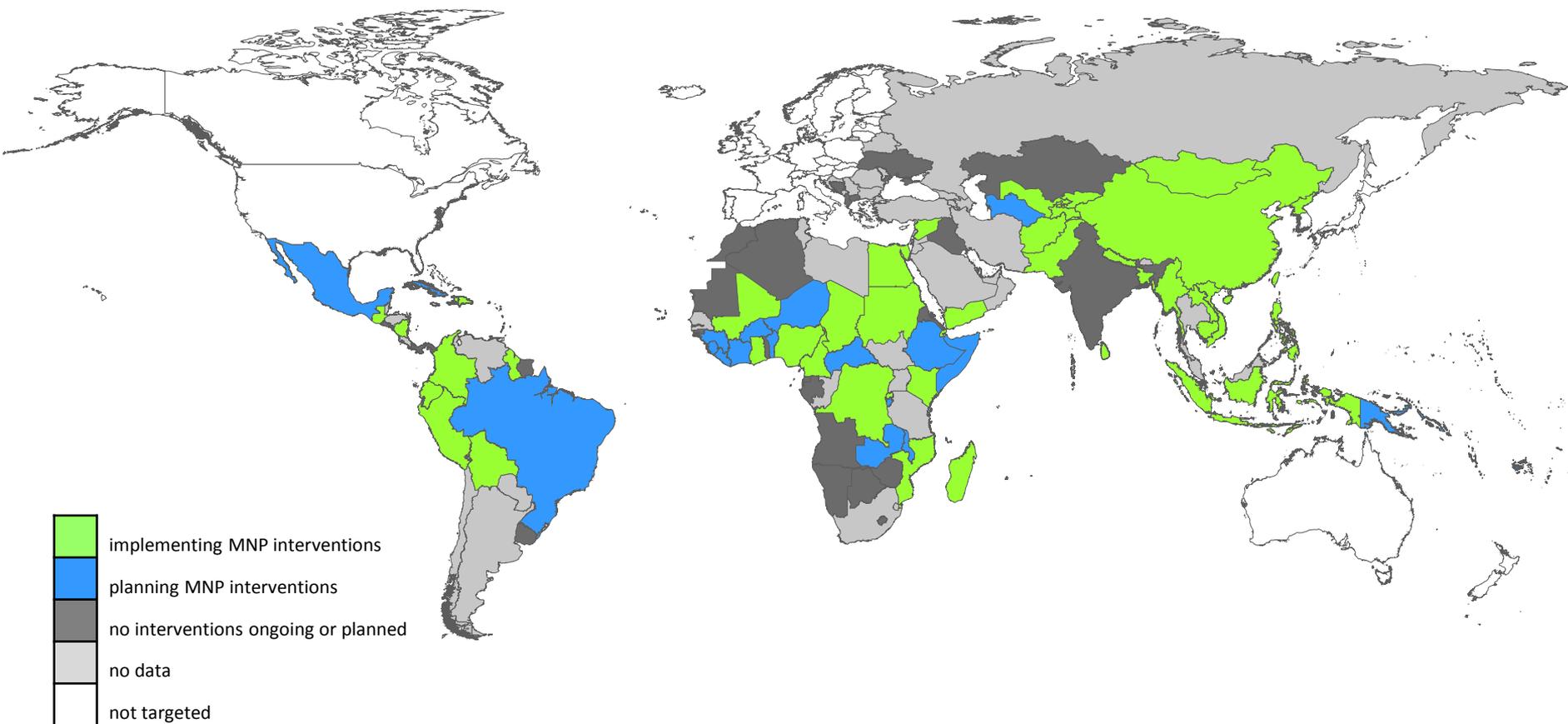
22 countries were implementing MNP interventions in 2011



 implementing MNP interventions

2013

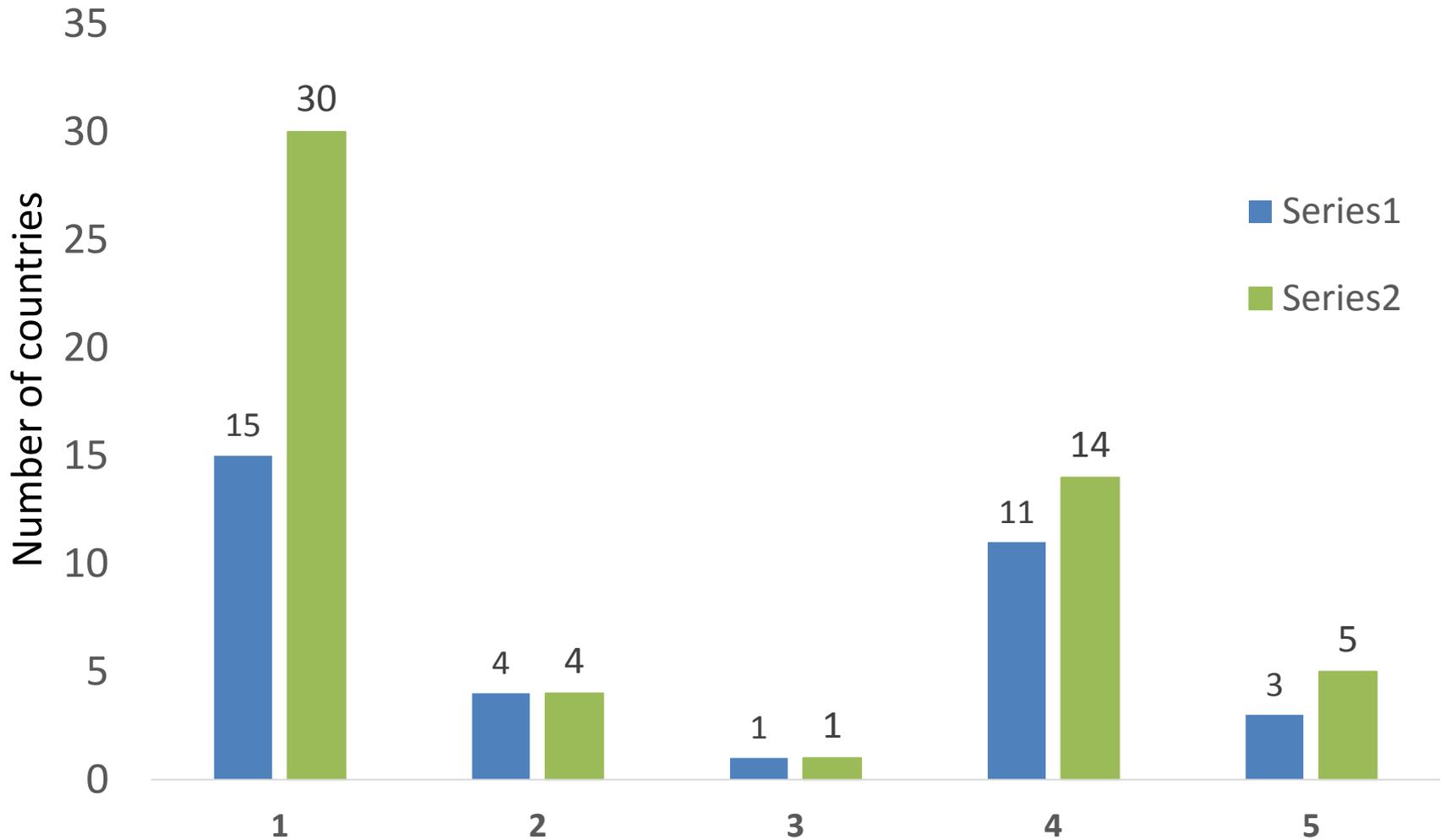
43 countries implementing MNP interventions –
reaching 3.6 M children



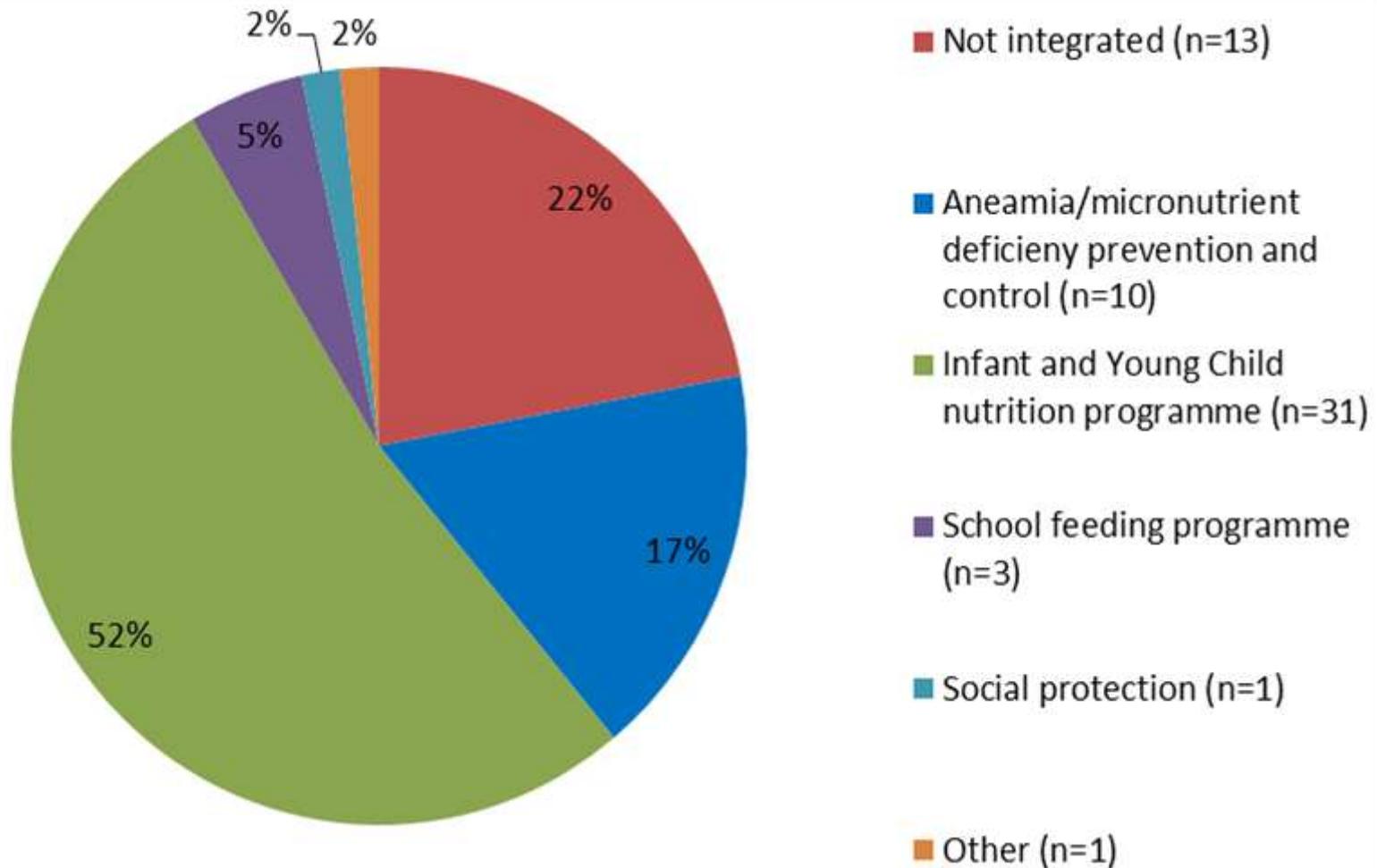
MNP interventions at scale

2011 – 4 countries reach large (national) target	2013 – 14 countries reach large (national) target
Bangladesh Bolivia Dominican Republic Mongolia	Bangladesh Bolivia Djibouti Dominican Republic Ecuador Guatemala Guyana Haiti North Korea Kyrgyz Republic Peru Philippines Syrian Arab Republic Yemen

MNP interventions by target group

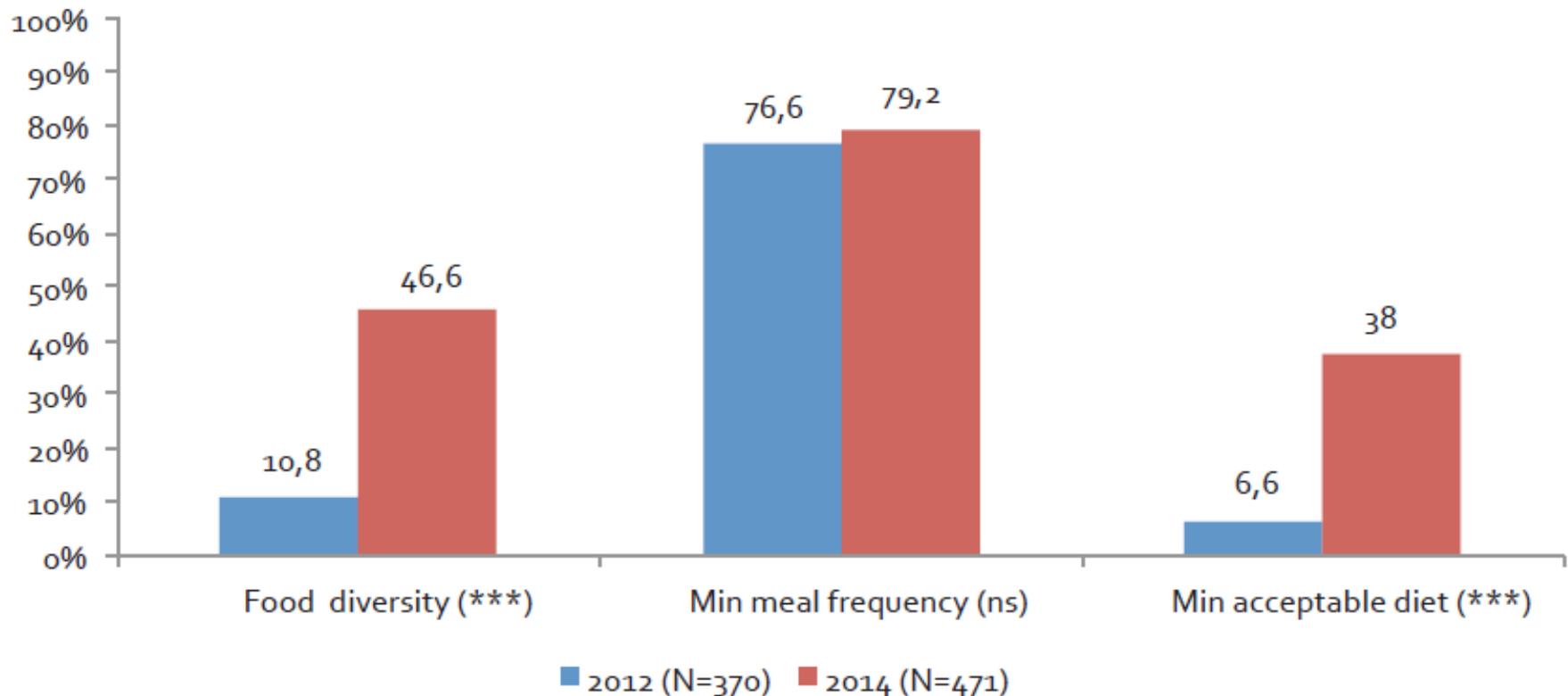


Links of MNP programs with other programs



Social marketing through a combination of community-based and private sector channels to increase MNP access in Madagascar

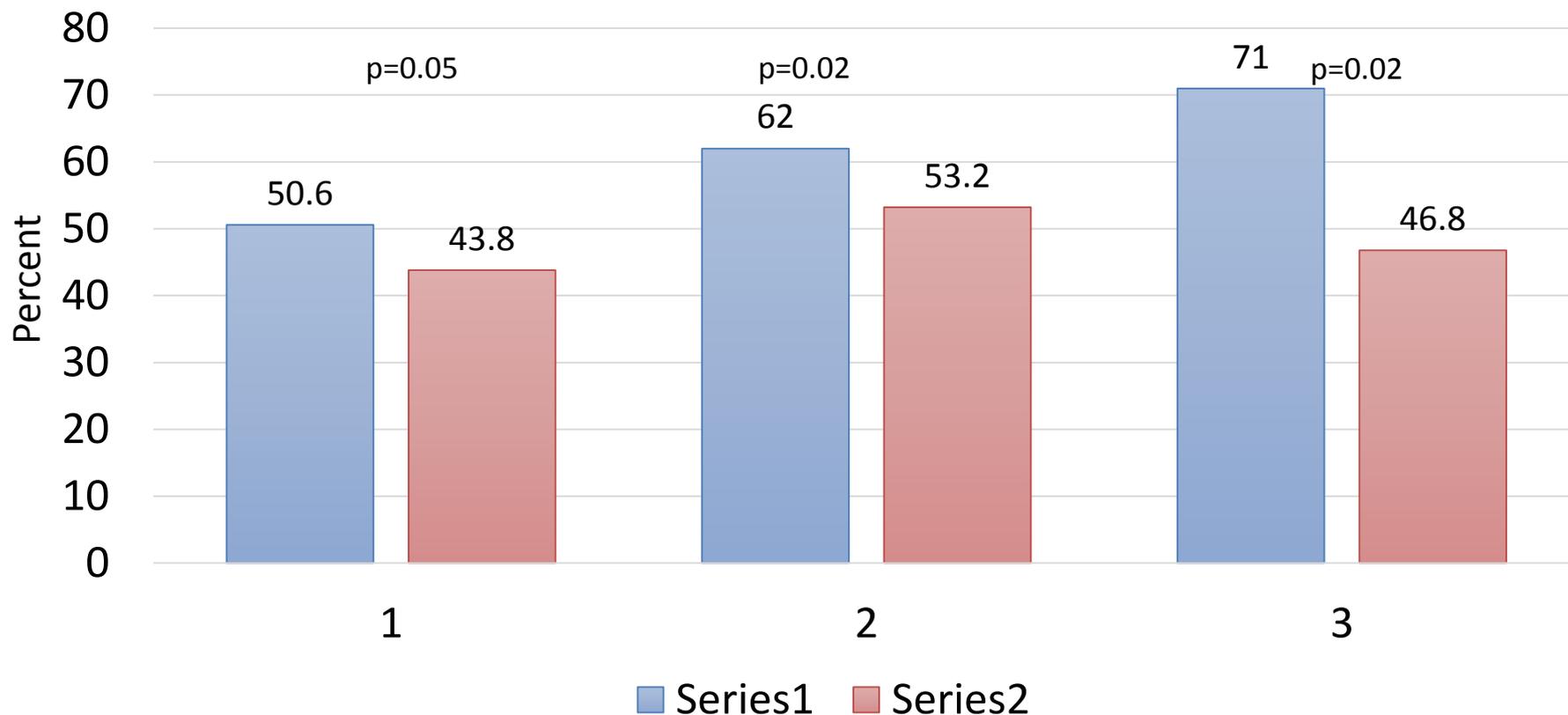
% of children 6-23 months receiving minimum meal frequency, minimum dietary diversity and minimum acceptable diet in past 24 hours, Fenerive Est and Vavatenina Districts (2012-2014)



ORIGINAL ARTICLE

Effects of a large-scale micronutrient powder and young child feeding education program on the micronutrient status of children 6–24 months of age in the Kyrgyz Republic

MK Serdula¹, E Lundeen^{2,3}, EK Nichols⁴, C Imanalieva⁵, M Minbaev⁵, T Mamyrbayeva⁶, A Timmer⁷ and NJ Aburto¹ and the Kyrgyz Republic Working Group⁸



Program Challenges

1. Funding of MNP programs
2. Procurement, quality of MNP product
3. Management/coordination of programs
4. Monitoring of programs and its impact

Way forward

MNP formulation/packaging

- Optimize iron forms to reduce potential non-benefits for microbiota and infections
- Explore addition of other growth promoting nutrients (such as calcium, magnesium, phosphorous)
- Reduce antinutrient content (e.g. by adding phytase)
- Develop more environmentally friendly packaging

Dosing frequency

- Assess dose-response relationship between MNP intake and change in micronutrient status and functional outcomes

Way forward (2)

Delivery science

- Rapid appraisal methodology for designing behavior change strategy (incl locally tailored package design)
- Evaluate best practices on how to monitor and sustainably scale up the intervention
- Improve links with malaria-control programs (where indicated)
- Strengthen demand for infant and young child services, and water, sanitation, and hygiene interventions

Summary: Home Fortification with MNP

- WHO recommends home fortification with MNPs to improve iron status and reduce anemia among infants and children 6–23 months of age
- MNP programs experienced rapid scale up since 2011
- MNP programs have the potential to strengthen overall infant and young child feeding practices

Join the HFTAG Community of Practice on MNP programs at <http://network.hftag.org>

Slide Credits

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Judy McLean
Stanley Zlotkin

