Exploring the Cost-Effectiveness of MMS during Pregnancy

Jennifer Busch-Hallen
Senior Technical Advisor, Maternal Neonatal Health & Nutrition

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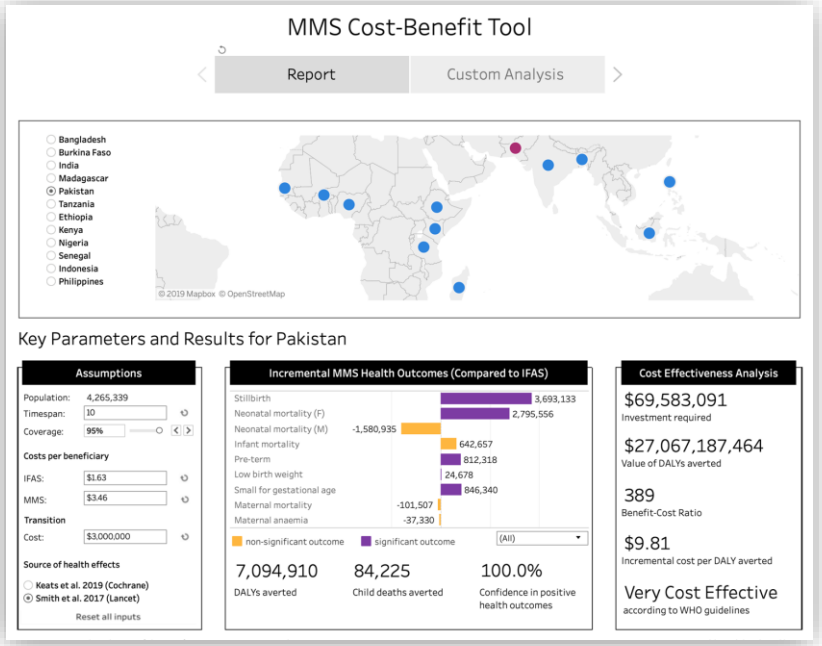
With thanks to Canada Limestone analytics

Outline

- Context
- Evidence
  - Cost-effectiveness
- MMS Cost-Benefit Tool
  - Why and what?
  - Case Study
  - Where to access
  - Demonstration



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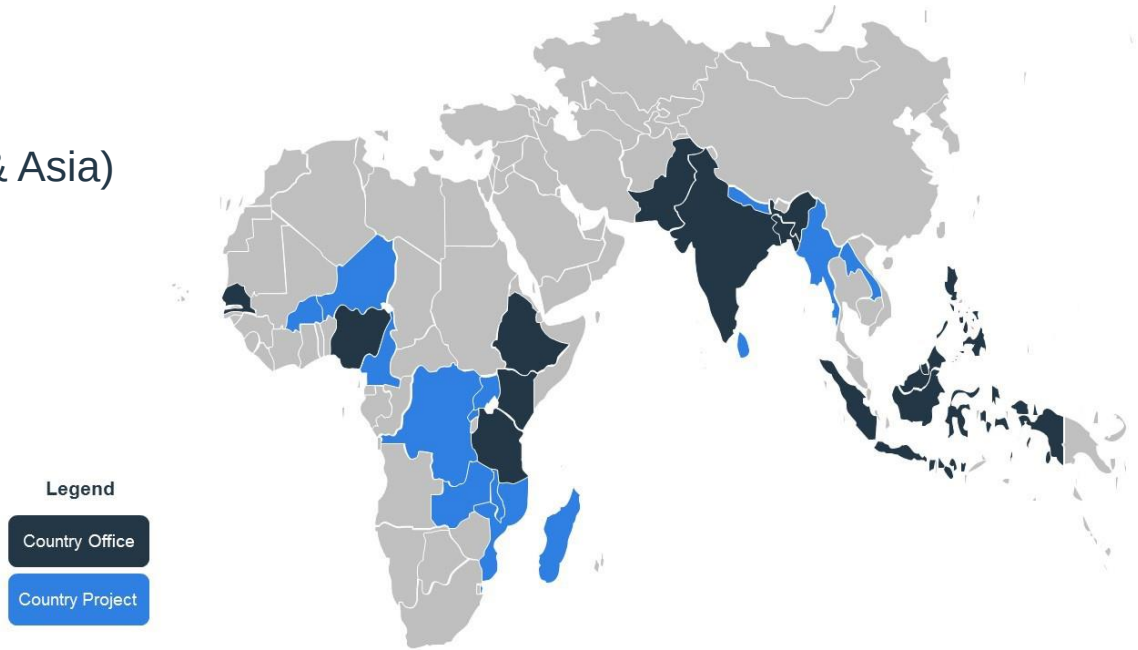
A global nutrition organization originated in Canada

- Over 400 staff worldwide
- Offices in 10 countries (Africa & Asia)
- Technical assistance in >20
- Vitamin A assistance in >60
- Reach >500m people / year



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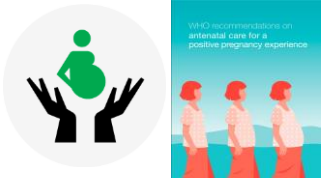
Context: Global Goals and Targets- accelerating progress (1)

Maternal Nutrition



50% reduction of anaemia in women of reproductive age

30% reduction in low birth weight

40% reduction in stunting for children under 5yrs

GLOBAL TARGETS 2025
To improve maternal, infant and young child nutrition

2 ZERO HUNGER

SUSTAINABLE DEVELOPMENT GOALS

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Context: Supplementation During Pregnancy (2)

- WHO ANC guidelines (2016):
  - Clear recommendation for daily IFA supplementation
  - MMS “Not Recommended” due to gaps in evidence and potential risk to newborns.
- MMS and IFA are equally effectively at reducing the risk of anaemia during pregnancy
- More recent evidence*:no increased harm and improved birth outcomes compared to IFA.
- Additional cost for MMS is a major barrier expressed by countries
- WHO are reviewing the more recent MMS evidence and may revise their guidance in 2020

* (Smith et al.,2017, Keats et al.,2019)

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Evidence: Cost-Effectiveness (1)

Multiple Micronutrient Supplements Are More Cost–effective Than Iron and Folic Acid: Modeling Results from 3 High–Burden Asian Countries

Bahman Kashi ✉, Caroline M Godin, Zuzanna A Kurzawa, Allison M J Verney, Jennifer F Busch-Hallen, Luz M De-Regil

The Journal of Nutrition, Volume 149, Issue 7, July 2019, Pages 1222–1229, https://doi.org/10.1093/jn/nxz052

The need remains for country-driven knowledge translation and advocacy to demonstrate the cost-effectiveness of MMS.

ANNALS OF THE NEW YORK ACADEMY OF SCIENCES
Special Issue: *Multiple Micronutrient Supplementation in Pregnancy*
ORIGINAL ARTICLE

Replacing iron-folic acid with multiple micronutrient supplements among pregnant women in Bangladesh and Burkina Faso: costs, impacts, and cost-effectiveness

Reina Engle-Stone,[1,2] Sika M. Kumordzie,[1,2] Laura Meinzen-Dick,[3] and Stephen A. Vosti[2,3]

[1]Department of Nutrition, University of California – Davis, Davis, California. [2]Program in International and Community Nutrition, University of California – Davis, Davis, California. [3]Department of Agricultural and Resource Economics, University of California – Davis, Davis, California

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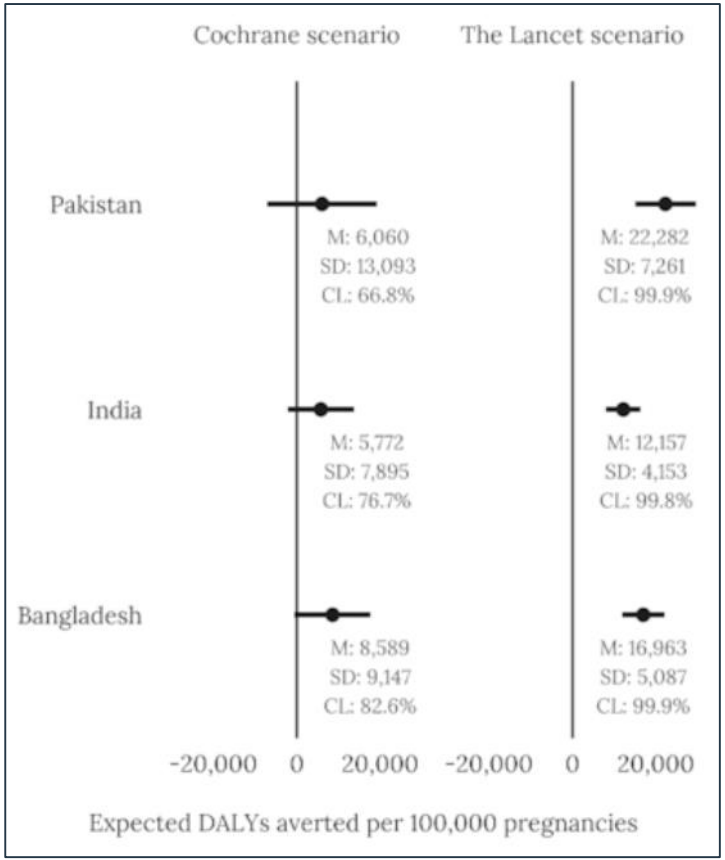
Evidence: Cost Effectiveness (2)

- Kashi et al., 2019 shows that MMS is more cost-effective than IFAS in Pakistan, India, and Bangladesh.
- In all scenarios, MMS are considered very cost-effective compared to IFAS. MMS will avert 2-3x more Disability Adjusted Life Years (DALYs) than IFAS.
- MMS is cost-effective and generates positive health outcomes for both infants and pregnant women using health effect sizes from both meta-analyses.
- Methodology from Kashi et al., 2019 underpins the tool



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What is the MMS Cost-Benefit Tool?

A simple tool to answer a single policy question:

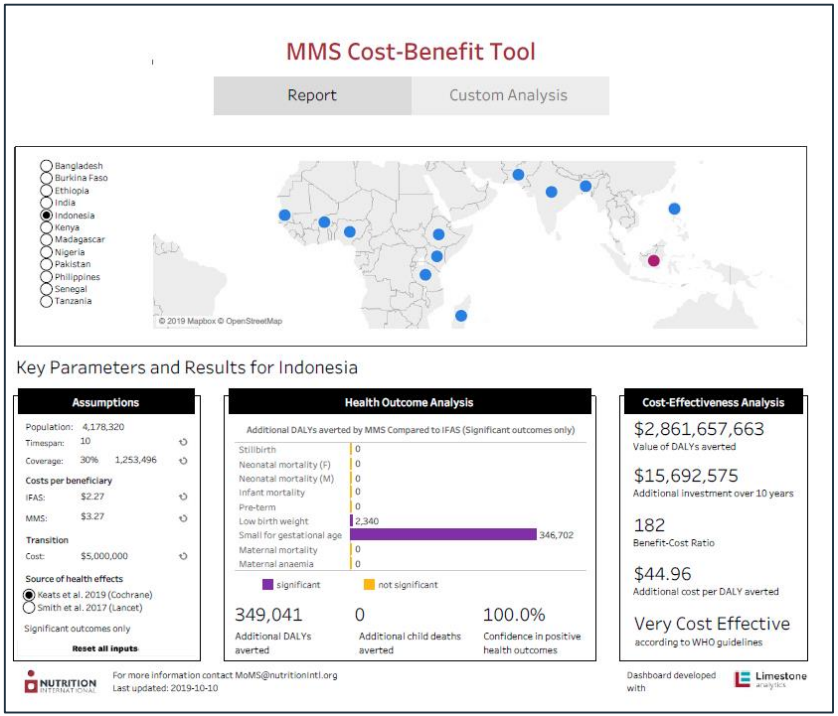
Is MMS better value for money than IFAS?

Purpose:

To support the knowledge translation of economic evidence on IFAS and MMS for countries' decision- and policy-makers

What's unique?

- **Simplicity**, user-friendly, online
- Evidence-based but **rapid**
- **Timely**
- **Dynamic**



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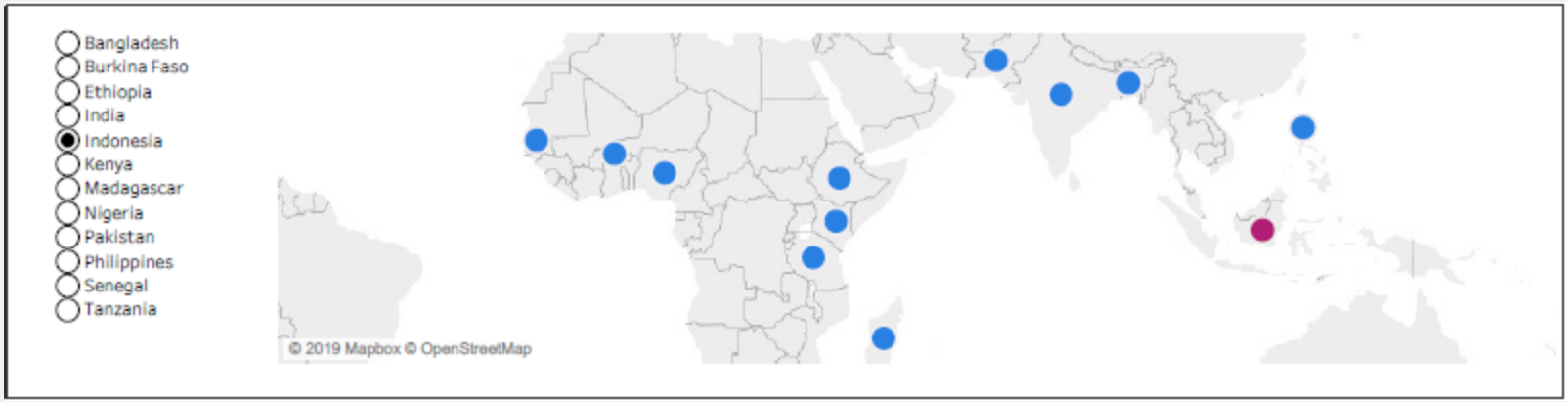
Analytical Capacity

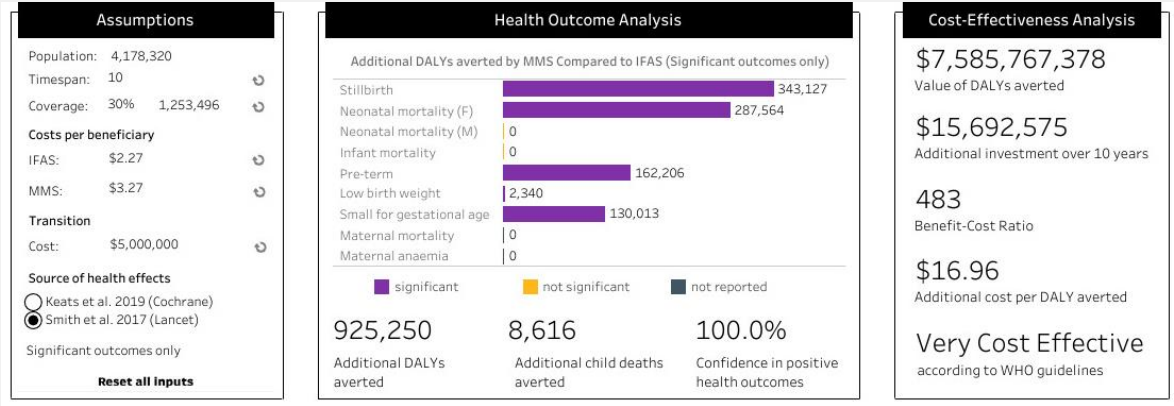
- Comparison based on effect sizes from **Smith 2017 / Keats 2019** systematic reviews
- The tool estimates the impact of MMS compared to IFAS for all significant health outcomes and calculates budget impact, cost-effectiveness, and return on investment.
- Currently for 12 countries in Africa and Asia – and expanding in 2020



[1] Keats et. al. 2019
[2] Smith et. al. 2017

Case Study: Is MMS better value for money than IFAS for Indonesia? Yes

- Compared to IFA, MMS will avert an additional 925,250 DALYs[1]; 8,000 child deaths
- Valued at: $7B
  - Via averting: stillbirth, neonatal mortality (females), pre-term, low birth weight and small for gestational age births.
- This will cost an additional $15.7M, or $17 per DALY averted.
- The benefits outweigh the costs on an order of 483 to 1.
- This is “very cost effective.”



[1]Over 10 years

Case Study: Key Takeaways

- Transitioning to MMS leads to additional significant perinatal health outcomes compared to IFAS.
- The transition is very cost-effective compared to the WHO threshold (using either the Smith et al. or the Keats et al. scenarios)
- The transition has a high return on investment- the long-term economic benefits outweigh the costs on the order of 483 times.

POLICY BRIEF: INDONESIA

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Nourish Life

COST-EFFECTIVENESS OF TRANSITIONING FROM IRON AND FOLIC ACID TO MULTIPLE MICRONUTRIENT SUPPLEMENTATION FOR PREGNANCY

COST-EFFECTIVENESS AND INVESTMENT CASE

In Indonesia, transitioning from IFAS to MMS is expected to....

Avert	925,250	DALYs*
Prevent the deaths of an additional	8,616	children
Yield benefits that are	483	times greater than the costs
Be considered	very cost effective	according to the WHO guidelines (7)

* DALYs averted over a 10 year period

KEY TAKEAWAYS

- Transitioning to MMS leads to significant perinatal health outcomes compared to IFAS with no harm to the mother or baby.
- The transition is very cost-effective compared to the WHO threshold (7) and has a high return on investment – the long-term economic benefits of transitioning outweigh the costs on the order of hundreds of times.

IS ANTENATAL MMS BETTER VALUE FOR MONEY THAN IFAS FOR INDONESIA?

The introduction and scale-up of multiple micronutrient supplementation (MMS) as part of maternal nutrition programming is an opportunity to accelerate progress towards several Sustainable Development Goals (SDG) and World Health Assembly (WHA) Global Nutrition Targets 2025. Recent global evidence has concluded that antenatal MMS is superior to iron and folic acid supplementation (IFAS) in improving birth outcomes, and has equivalent benefits for preventing maternal anaemia (1,2,3). New analyses by Nutrition International in collaboration with Limestone Analytics (4) and others (5) have shown that MMS is more cost-effective compared to the existing IFAS programs in low and middle-income countries for achieving positive health outcomes. Given this new evidence, many countries with a high prevalence of nutritional deficiencies among women of reproductive age (WRA) are exploring the feasibility of transitioning from IFAS to MMS for antenatal care (ANC) programmes, within the context of the current World Health Organization (WHO) guidelines (6), but have concerns around the expected additional cost.

The **Nutrition International MMS Cost-Benefit Tool** provides governments with country-specific information about the health benefits and budget impact of adopting MMS and helps to answer the policy question "*is antenatal MMS better value for money than IFAS?*"

The MMS Cost-Benefit Tool provides government policymakers with the opportunity to strengthen their investment case for mobilizing domestic resources and policy considerations around MMS by providing a clear picture of both the financial impacts and health outcomes of the IFAS to MMS transition.

October 2019 Policy Brief | INDONESIA 1

Indonesia Policy Brief available at: www.NutritionIntl.org/mms-cost-benefit-tool/

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Where to access this tool & resources:

- Dissemination and application in various contexts underway
- Tool, relevant materials and Policy briefs: NutritionIntl.org/mms-cost-benefit-tool/
- For more information contact: MoMS@nutritionIntl.org
- Interactive Learning Lab: Learning Center – Micronutrient Forum

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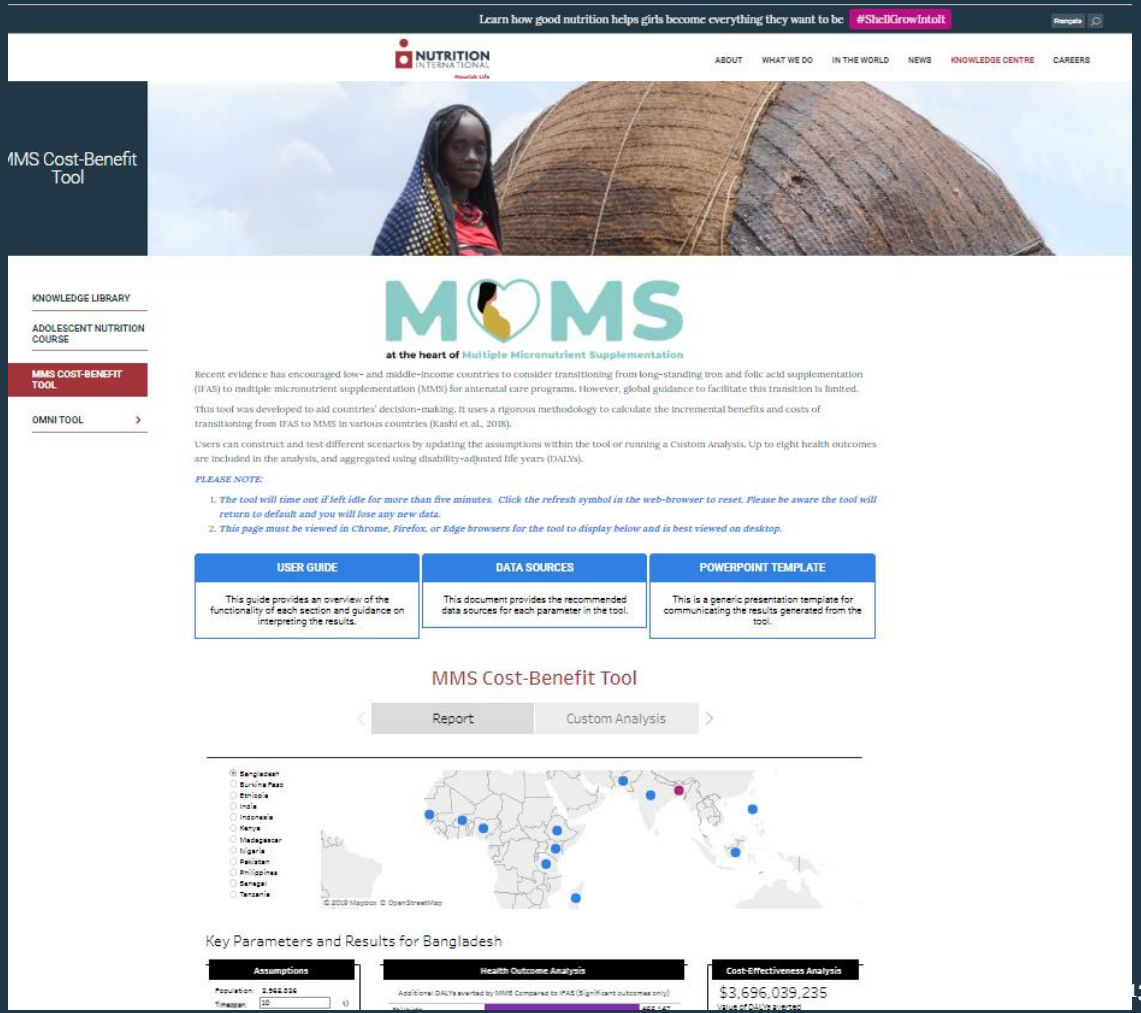
Demonstration

NutritionIntl.org/mms-cost-benefit-tool/



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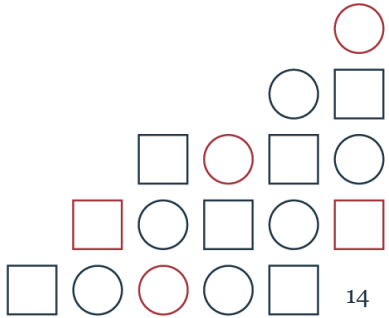
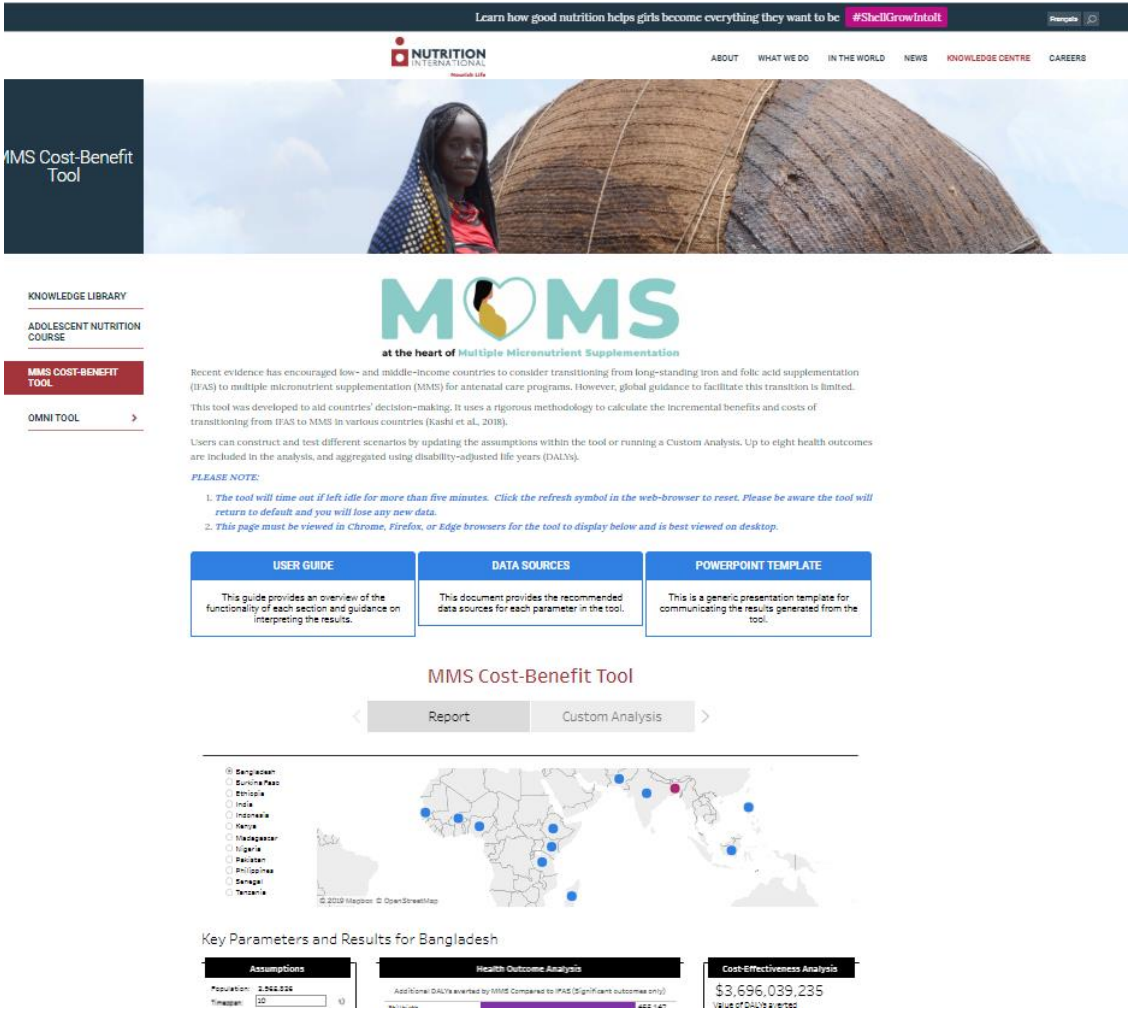
Static Demo Slides




Learn how good nutrition helps girls become everything they want to be
#ShellGrowIntoIt
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ABOUT
WHAT WE DO
IN THE WORLD
NEWS
KNOWLEDGE CENTRE
CAREERS
MMS Cost-Benefit Tool
KNOWLEDGE LIBRARY
ADOLESCENT NUTRITION COURSE
MMS COST-BENEFIT TOOL
OMNI TOOL
MMS
at the heart of Multiple Micronutrient Supplementation
Recent evidence has encouraged low- and middle-income countries to consider transitioning from long-standing iron and folic acid supplementation (IFAS) to multiple micronutrient supplementation (MMS) for antenatal care programs. However, global guidance to facilitate this transition is limited.
This tool was developed to aid countries' decision-making. It uses a rigorous methodology to calculate the incremental benefits and costs of transitioning from IFAS to MMS in various countries (Kashi et al., 2018).
Users can construct and test different scenarios by updating the assumptions within the tool or running a Custom Analysis. Up to eight health outcomes are included in the analysis, and aggregated using disability-adjusted life years (DALYs).
PLEASE NOTE:
1. The tool will time out if left idle for more than five minutes. Click the refresh symbol in the web-browser to reset. Please be aware the tool will return to default and you will lose any new data.
2. This page must be viewed in Chrome, Firefox, or Edge browsers for the tool to display below and is best viewed on desktop.
USER GUIDE
This guide provides an overview of the functionality of each section and guidance on interpreting the results.
DATA SOURCES
This document provides the recommended data sources for each parameter in the tool.
POWERPOINT TEMPLATE
This is a generic presentation template for communicating the results generated from the tool.
MMS Cost-Benefit Tool
Report
Custom Analysis
Bangladesh
Burkina Faso
Ethiopia
India
Indonesia
Kenya
Madagascar
Nigeria
Pakistan
Philippines
Senegal
Tanzania
Key Parameters and Results for Bangladesh
Assumptions
Health Outcome Analysis
Cost-Effectiveness Analysis
$3,696,039,235

Key Parameters and Results for Indonesia

Assumptions

Population: 4,178,320

Timespan: 10

Coverage: 30% 1,253,496

Costs per beneficiary

IFAS: $2.27

MMS: $3.27

Transition

Cost: $0

Source of health effects

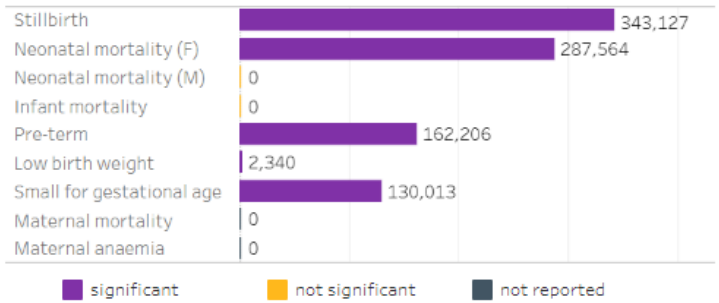
- Keats et al. 2019 (Cochrane)
- Smith et al. 2017 (Lancet)

Significant outcomes only

Reset all inputs

Health Outcome Analysis

Additional DALYs averted by MMS Compared to IFAS (Significant outcomes only)



925,250
Additional DALYs averted

8,616
Additional child deaths averted

100.0%
Confidence in positive health outcomes

Cost-Effectiveness Analysis

$7,585,767,378
Value of DALYs averted

$10,692,575
Additional investment over 10 years

709
Benefit-Cost Ratio

$11.56
Additional cost per DALY averted

Very Cost Effective
according to WHO guidelines

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For more information contact MoMS@nutritionintl.org
Last updated: 2019-10-10

Dashboard developed with Limestone analytics

Key Parameters and Results for Indonesia

Assumptions

Population: 4,178,320

Timespan: 10

Coverage: 30% 1,253,496

Costs per beneficiary

IFAS: $2.27

MMS: $3.27

Transition

Cost: $0

Source of health effects

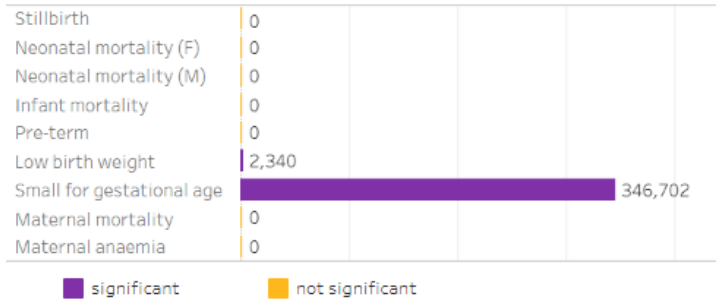
- (•) Keats et al. 2019 (Cochrane)
- ( ) Smith et al. 2017 (Lancet)

Significant outcomes only

Reset all inputs

Health Outcome Analysis

Additional DALYs averted by MMS Compared to IFAS (Significant outcomes only)



349,041
Additional DALYs averted

0
Additional child deaths averted

100.0%
Confidence in positive health outcomes

Cost-Effectiveness Analysis

$2,861,657,663
Value of DALYs averted

$10,692,575
Additional investment over 10 years

268
Benefit-Cost Ratio

$30.63
Additional cost per DALY averted

Very Cost Effective
according to WHO guidelines

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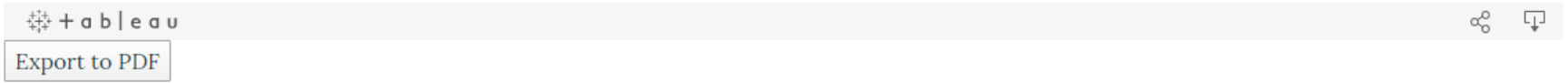
Last updated: 2019-10-10

Dashboard developed with Limestone analytics

tableau

Export to PDF



Policy Briefs

Policy Briefs are available for the countries listed on the map. These documents summarize the results of the analysis and are designed for policymakers to answer the question "is antenatal MMS better value for money than IFAS?"

POLICY BRIEFS		
Bangladesh	Burkina Faso (English | French)	Ethiopia
India	Indonesia	Kenya
Nigeria	Madagascar	Pakistan
Philippines	Senegal (English | French)	Tanzania

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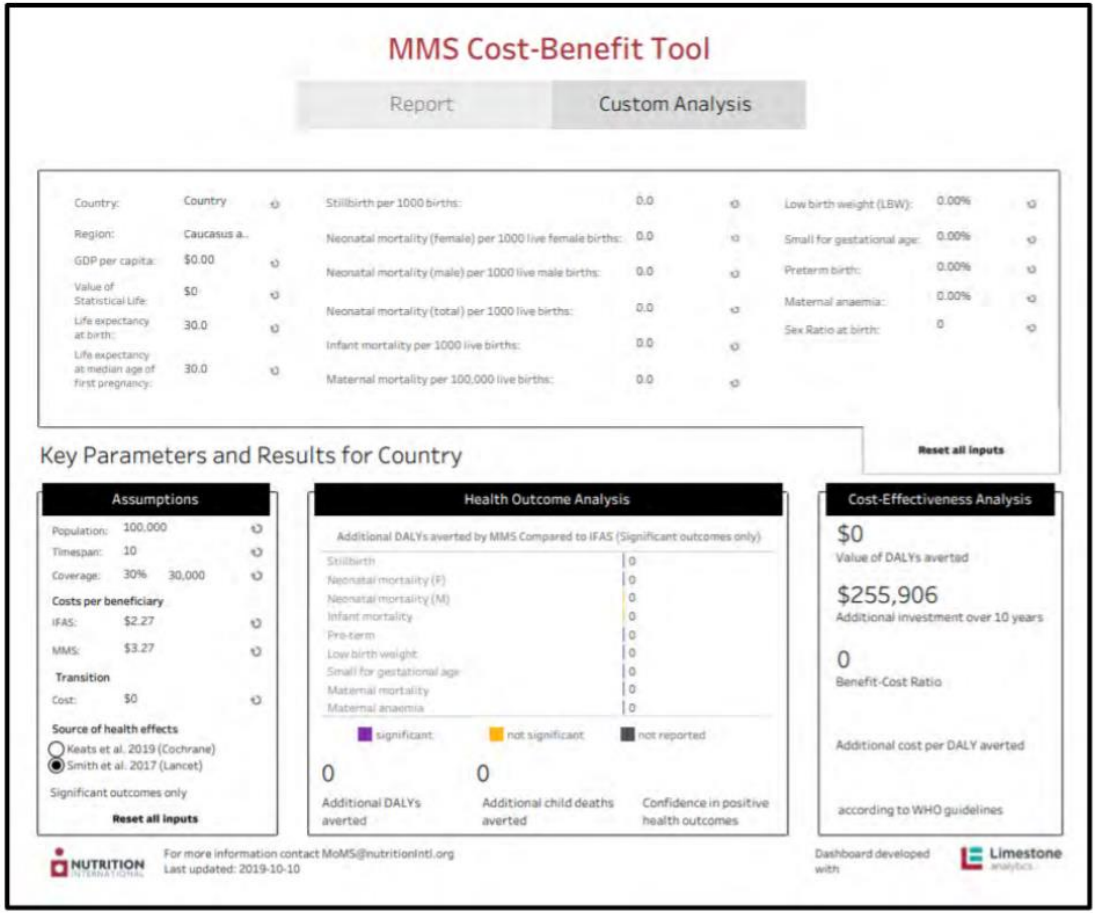
MMS Cost-Benefit Tool
Report
Custom Analysis
Country: Country
Region: Caucasus a..
GDP per capita: $0.00
Value of Statistical Life: $0
Life expectancy at birth: 30.0
Life expectancy at median age of first pregnancy: 30.0
Stillbirth per 1000 births: 0.0
Neonatal mortality (female) per 1000 live female births: 0.0
Neonatal mortality (male) per 1000 live male births: 0.0
Neonatal mortality (total) per 1000 live births: 0.0
Infant mortality per 1000 live births: 0.0
Maternal mortality per 100,000 live births: 0.0
Low birth weight (LBW): 0.00%
Small for gestational age: 0.00%
Preterm birth: 0.00%
Maternal anaemia: 0.00%
Sex Ratio at birth: 0
Reset all inputs
Key Parameters and Results for Country
Assumptions
Population: 100,000
Timespan: 10
Coverage: 30% 30,000
Costs per beneficiary
IFAS: $2.27
MMS: $3.27
Transition
Cost: $0
Source of health effects
Keats et al. 2019 (Cochrane)
Smith et al. 2017 (Lancet)
Significant outcomes only
Reset all inputs
Health Outcome Analysis
Additional DALYs averted by MMS Compared to IFAS (Significant outcomes only)
Stillbirth 0
Neonatal mortality (F) 0
Neonatal mortality (M) 0
Infant mortality 0
Pre-term 0
Low birth weight 0
Small for gestational age 0
Maternal mortality 0
Maternal anaemia 0
significant
not significant
not reported
0
Additional DALYs averted
0
Additional child deaths averted
Confidence in positive health outcomes
Cost-Effectiveness Analysis
$0
Value of DALYs averted
$255,906
Additional investment over 10 years
0
Benefit-Cost Ratio
Additional cost per DALY averted
according to WHO guidelines
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For more information contact MoMS@nutritionintl.org
Last updated: 2019-10-10
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Limestone analytics