

evidence action /

ENDLINE RESULTS • NIGERIA • MAY 2026

Multiple micronutrient supplementation in Nigeria

What a 90-facility pilot with the Federal Ministry of Health and Social Welfare (FMoHSW) tells us about delivering MMS and strengthening maternal anemia testing and treatment through government antenatal care.



Nigeria carries more than a quarter of the world's maternal deaths

512

maternal deaths per 100,000 live births¹

45%

of pregnant women are anemic²

16%

of births are small for gestational age³

24

stillbirths per 1,000 births⁴

Micronutrient deficiencies sit behind a large share of that toll. Iron deficiency contributes to maternal and perinatal mortality. Folate and iodine deficiencies produce neural tube defects. Inadequate calcium and vitamin D intake is linked to hypertension, pre-eclampsia, fetal growth restriction, and preterm birth.

The standard of care in Nigeria is daily iron and folic acid (IFA) supplementation delivered through antenatal care. Reaching women isn't the problem — 67% take at least some IFA. Keeping them supplied is. Tablets come in 30-day refills tied to each visit, so most women run out long before delivery. Only 25% take IFA for more than 90 days.⁵

IFA COVERAGE, 2024

67% took any IFA during pregnancy

25% took IFA for more than 90 days

Multiple Micronutrient Supplements (MMS) contain 15 essential micronutrients, including iron and folic acid. Compared to IFA alone, MMS reduces low birthweight by 12-14%, small-for-gestational-age births by 2-9%, and stillbirths by 5-8%.⁶ MMS also provides comparable protection against maternal anemia as IFA, which itself reduces anemia risk in pregnancy by approximately 70% compared to no supplementation.⁷

¹ Trends in Maternal Mortality 2000–2023: Estimates by WHO, UNICEF, UNFPA, World Bank Group and UNDESA/Population Division / ² WHO Global Anaemia estimates, 2025 Edition / ³ Lancet Small Vulnerable Newborn Series / ⁴ UN Inter-agency Group for Child Mortality Estimation (2024) / ⁵ Nigeria Demographic and Health Survey 2023–24 / ⁶ Healthy Mothers Healthy Babies Consortium / ⁷ Peña-Rosas et al, 2015



Ninety government ANC facilities, 20K women reached

From September 2024 to December 2025, Evidence Action and FMoH&SW replaced IFA with MMS as the prophylactic supplementation regimen across 90 government antenatal care facilities in six local government areas, spanning urban and rural settings in the Federal Capital Territory and Oyo State. The pilot, which reached 19,440 women, was designed to generate the local implementation evidence Nigeria needs before national scale-up.

90

ANC facilities across
6 LGAs

5,305

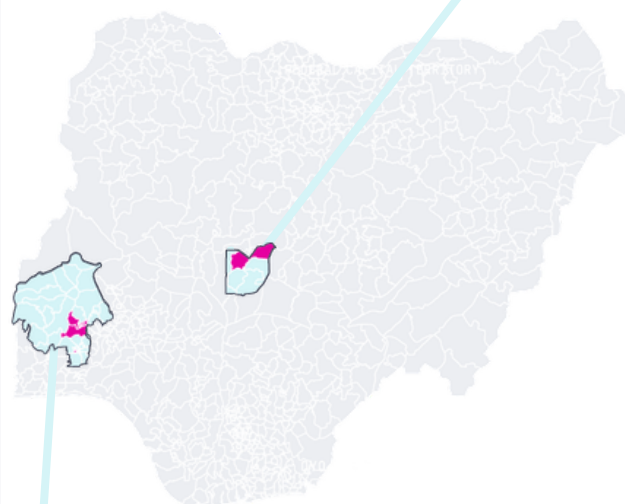
pregnant women in
the endline sample

WHAT THE PROGRAM DID

- **A full 180-tablet course at the first visit**, replacing 30-day IFA refills dispensed at each return visit.
- **Two-day health worker training** on MMS delivery, counseling, and anemia management, with two staff trained per site.
- **Supervision and LGA review meetings**, monthly at first, then tapering, using standardized supervision and reporting checklists.
- **An A/B test of adherence support**: a light package (SMS, phone alarms, counseling flip charts) against a full package adding paper calendars.
- **Reinforced anemia protocols**, with a sub-study introducing point-of-care hemoglobinometers at all 90 sites.

Federal Capital Territory

Bwari • Gwagwalada



Oyo State

Ibadan South West • Oyo East • Oyo West • Afijio

TIMELINE

Feb–Apr 24	Formative research
Apr–Aug 24	Baseline data collection
Sep 24	Pilot launch and A/B testing begins
Dec 24	Enrollment targets are met and enrollment period ends
Mar 25	HemoCue devices deployed in Oyo
Jul 25	HemoCue devices deployed in FCT
Dec 25	Observation period ends

Every primary outcome moved, and most moved a long way

Baseline against endline across the pilot's six primary indicators, with 95% confidence intervals. Bars are drawn to a common scale within each pair. Indicator definitions are in the annex on page 12.

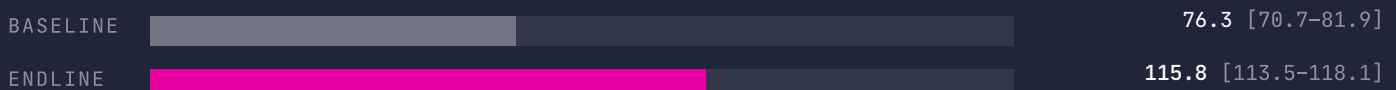
Average daily doses of iron dispensed, limited to allowable consumption days (#)

+59.7% ***



Average daily doses of iron consumed during pregnancy (#)

+51.9% ***



Compliance rate (%)¹

+3.6 pp ***



First-visit anemia testing rate (%)

+38.3 pp †



Anemia treatment initiation rate, visits with mild or moderate anemia diagnosis (%)

+60.9 pp †



Average iron consumed among women diagnosed with mild or moderate anemia (mg)⁴

+74.2 mg



Baseline N = 3,184; endline N = 5,305. 95% confidence intervals in brackets.

¹ We apply a uniform correction factor of 0.80 to all visits where IFA/MMS consumption was self-reported by the pregnant woman. Self-report was the verification method for 65.9% of visits at baseline (4,608 of 6,997 visits) and 19.9% of visits in the pilot (1,538 of 7,738 visits)

² Baseline testing rates are drawn from June 2024 ANC register data across all pilot facilities, representing the full ANC attendee population for that month. Confidence intervals are not presented for baseline.

³ As baseline data on anemia treatment initiation rates was not collected, baseline figures in this section are modeled based on rapid facility assessment findings. Baseline initiation rates represent the proportion of facilities reported to adhere to anemia treatment protocols. As these are modeled estimates rather than survey-derived figures, confidence intervals are not presented for baseline values.

⁴ Estimates are derived directly from iron consumption recorded in the pilot IFA/MMS register, disaggregated by whether women were ever initiated on therapeutic iron. Women not observed to term and those whose visits were affected by the healthcare worker strike were excluded as their therapeutic iron consumption was not fully captured over the course of the pilot.

Significance: *** p<0.001. † Changes in anemia testing and treatment initiation were not tested for statistical significance, as baseline figures derive from register census and facility assessment data rather than a sampled baseline cohort.

One bottle, one visit: the single most impactful change

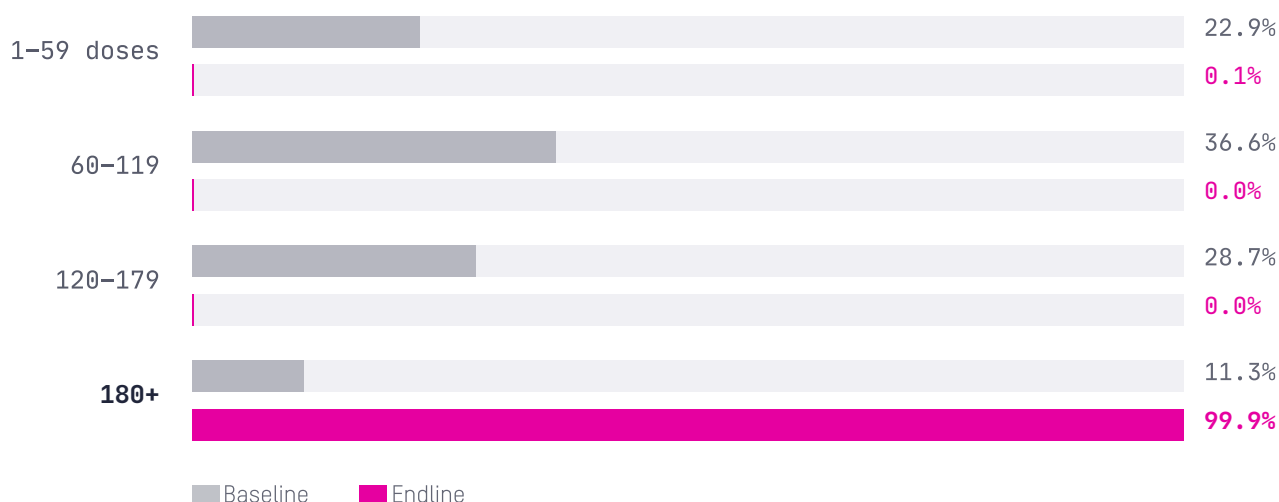
Under the standard of care, women received a 30-day course of IFA at each ANC visit, which left many with nothing on hand between visits. The pilot handed over the full 180-tablet course at the first visit. Distribution rose from an average of 99.5 daily doses to 179.8, and more than 99.8% of women left with a full course, against 11.3% at baseline.

>99.8%

of women were dispensed a full 180-dose course during the pilot, compared with 11.3% at baseline.

DISTRIBUTION OF WOMEN BY TOTAL DAILY DOSES DISPENSED

Share of the sample in each dose band, baseline against endline



THE REMAINING CONSTRAINT IS WHEN WOMEN ARRIVE, NOT WHEN THEY LEAVE

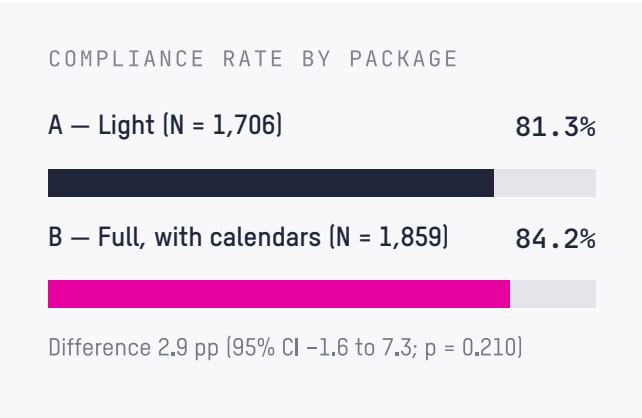
Women left their first visit with 179.8 doses on average. Only 141.3 of those fell within the days still remaining in their pregnancy — because women started antenatal care at 20.5 weeks on average, and 13.5% did not start until the third trimester. Supply is no longer the binding constraint. Late careseeking is.



05 — ADHERENCE

Counseling sustained adherence. Calendars did not.

Forty-five facilities received a light adherence package — SMS reminders, phone alarms, and enhanced counseling with flip charts. Forty-five received the same plus paper calendars. The difference in compliance was 2.9 percentage points and not statistically significant.



COST PER PREGNANT WOMAN

Phone alarm reminders	no cost
Counseling flip charts	\$0.01
SMS reminders	\$0.11
Paper calendars	\$0.40

4.6 / 5

Mean usefulness rating pregnant women gave counseling. Every woman shown the flip chart said it helped her adherence; 95.3% of health workers rated it very useful.

Asked why they took MMS regularly, 85.7% of women cited knowledge of the benefits for themselves and 73.0% the benefits for their baby. Health workers said the same.

Women did rely on reminders — 22.4% kept the bottle somewhere visible, 9.7% set a phone alarm, 8.2% tied the dose to a meal — but these are habits counseling can build at no cost. The finding is not that reminders are unhelpful, but rather that a printed calendar at \$0.40 per woman bought no measurable compliance gain over counseling alone.

Acceptance was nearly universal

Of 135 women interviewed at endline, 99.3% were offered MMS at their first visit and 98.5% of those accepted it. Acceptance was driven by what they had been told about the benefits, and by encouragement from their health worker.

94.0%

rated their experience of taking MMS very or somewhat positive

94.8%

preferred receiving all 180 tablets at the first visit

95.7%*

preferred bottles to blister packs or sachets

**Among women who stated packaging mattered*

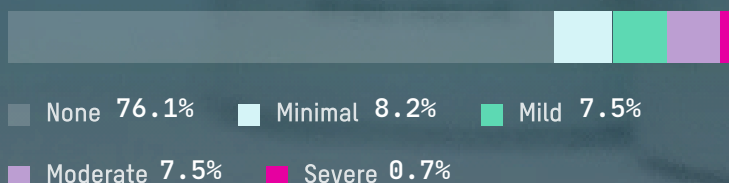
4.8 / 5

mean score health workers gave for how clients responded to MMS

TOLERABILITY

Side effects were uncommon, and almost never severe

Reported severity of side effects, all women surveyed (N = 134)

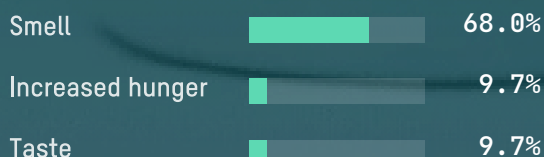


One woman in the sample reported a severe side effect. Among the 32 women reporting any effect, black stool and nausea were most common at 25.0% each, followed by increased appetite at 18.6% and dizziness or weakness at 12.5%.

69.4%

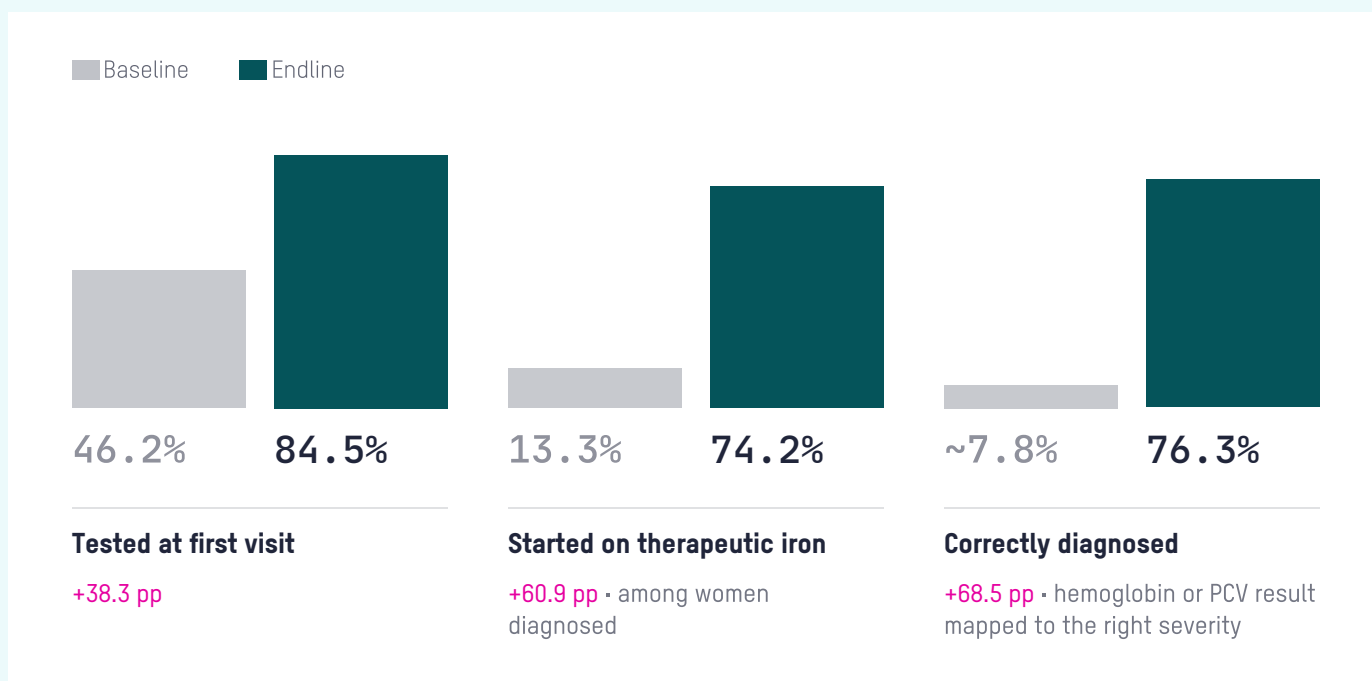
reported nothing they disliked about MMS

Named dislikes, among the 30.6% who cited one



Reinforced training drove the gains in testing, diagnosis and treatment

Training, supervision and monthly review meetings reinforced the existing anemia protocols at all 90 facilities. No new equipment was required. First-visit testing nearly doubled, and treatment initiation among women diagnosed with mild or moderate anemia rose more than fivefold.



SUB-STUDY — POINT-OF-CARE DEVICES

HemoCue hemoglobinometers were introduced part-way through the pilot and lifted first-visit testing a further 13.0 pp, to 97.5%. The gain came almost entirely from facilities that had no on-site testing capability at baseline and had to refer samples elsewhere.[†]

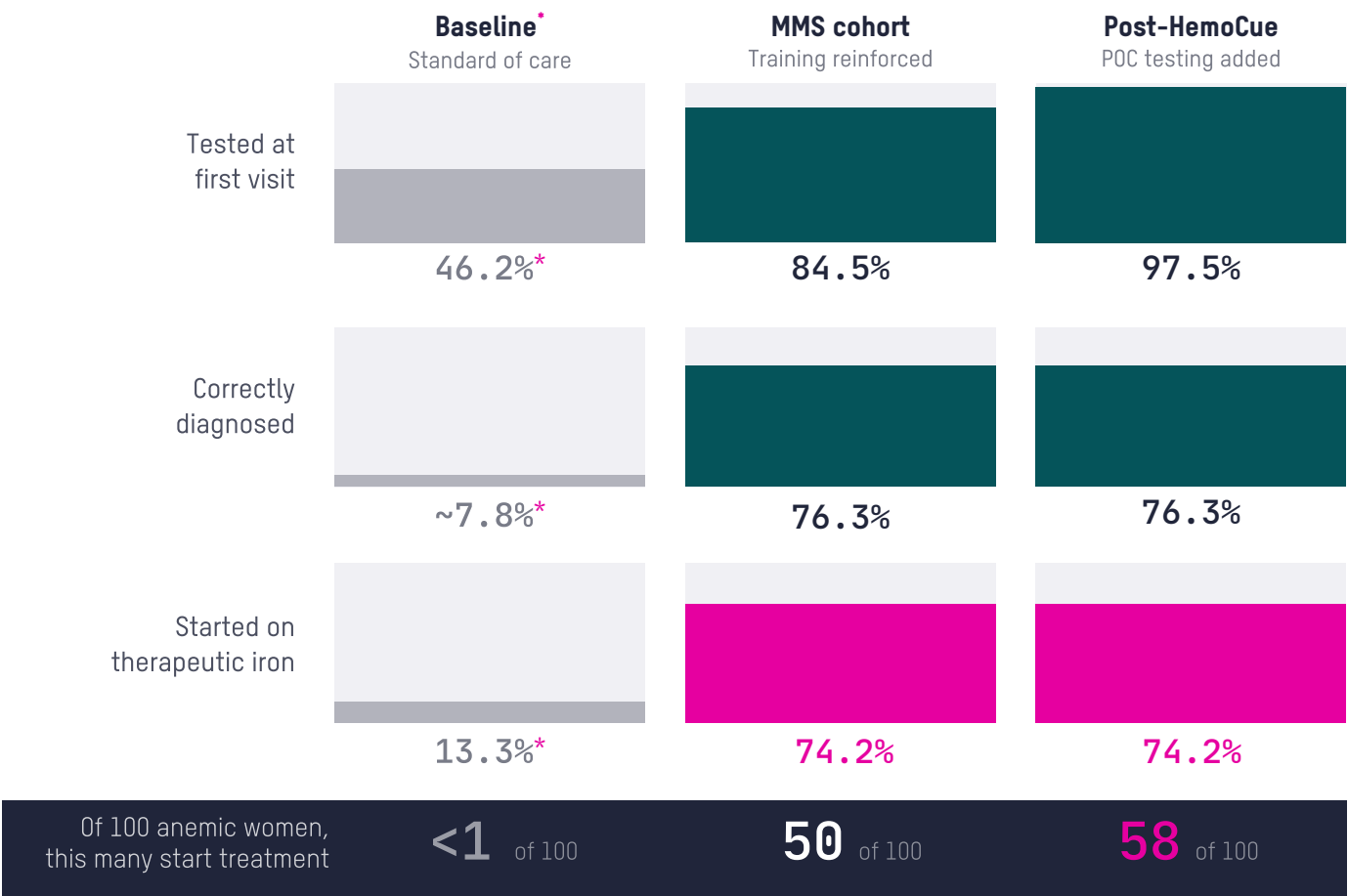
+32.8 pp	facilities referring samples off-site	+6.2 pp	facilities already testing on site
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* Baseline figures on this page are not survey-derived: testing is drawn from June 2024 ANC register data across all pilot facilities, and treatment initiation and diagnosis accuracy are modeled from the rapid facility assessment. They are not directly comparable to the register-derived pilot figures.

† This does not account for the accuracy gains that could be achieved from switching from packed-cell volume testing (PCV) to point-of-care hemoglobin testing that HemoCue deployment would enable.

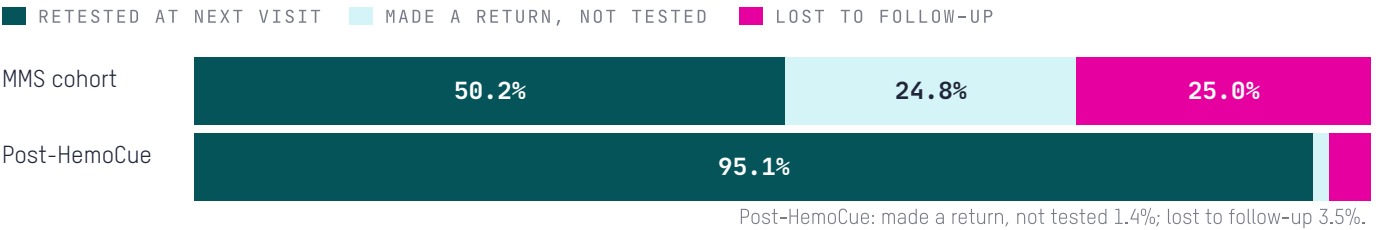
Following an anemic woman through testing, diagnosis and treatment

Each column tracks 100 women arriving at a first ANC visit with anemia, through the three steps where women fall out of the pathway: whether she is tested, whether her result is classified correctly, and whether she is started on therapeutic iron.



AFTER A DIAGNOSIS — WHAT HAPPENS NEXT

Share of women diagnosed with mild or moderate anemia



Women started on treatment were dispensed 39.8 therapeutic daily doses on average and consumed 36.3. Among those observed across two or more visits, the compliance rate was 80.1%.

* Baseline testing and initiation figures are drawn from June 2024 register data and a rapid facility assessment; baseline diagnosis accuracy is an approximation from health worker interviews and is not directly comparable to register-derived pilot figures. Women reaching treatment is the product of the three steps and is indicative rather than an observed count.

What we're carrying into national scale-up

Distribution

- Retain the 180-tablet course at the first ANC visit as a core program component, given its demonstrated impact on consumption.
- Investigate cost-effective ways to address late ANC initiation, particularly where careseeking is later than in the pilot LGAs.

Compliance and adherence

- Strengthen existing counseling practice and keep distributing flip charts to facilities — low cost, high favorability.
- Deprioritize paper calendars, which were not associated with meaningful improvements in compliance.

Anemia testing and treatment

- Maintain reinforcement of testing and treatment protocols as the primary method of raising testing rates and sustaining iron consumption through the shift from 60mg IFA to 30mg MMS.
- Where funding allows, deploy point-of-care hemoglobinometers prioritizing sites without on-site testing equipment.

Data management

- Prioritize data management capacity building and simplify the instruments used to record distribution and consumption.

Supply chain and financing

- Ensure timely quantification, forecasting and distribution, and monitor supply availability at facility level.
- Utilize the Child Nutrition Fund matching mechanism and the Nigeria Basic Health Care Provision Project as procurement financing pathways, and develop a long-term financing plan for MMS.

REMAINING QUESTIONS TO TEST AT SCALE

Can government supply chains carry MMS?

Evidence Action managed all MMS supply during the pilot, so procurement and distribution through government systems is the next thing to test. High baseline IFA distribution shows those systems function — the open question is whether they can absorb a new product.

How will MMS be financed?

Kirk Humanitarian donated the product for the pilot, so government financing mechanisms were not tested. Identifying a path to sustainable domestic financing is a priority for the next phase.

MMS fits inside the public ANC system Nigeria already has

The pilot showed that a well-designed MMS program can be delivered through existing government antenatal care infrastructure without disrupting services. Distribution and consumption rose substantially, compliance held high, acceptability was near-universal, and anemia testing and treatment initiation improved sharply.

Mean iron consumption among anemic women stayed broadly stable despite the shift from a 60mg to a 30mg elemental iron tablet, because gains in testing and treatment initiation offset the lower dose.[†] The evidence generated here, with FMoHSW, is now available to inform scale-up in Nigeria and the wider pool of MMS implementation research.

+51.9%

average daily doses consumed during pregnancy, 76.3 to 115.8

+38.3pp

first-time anemia testing rate, 46.2% to 84.5%

94.0%

of women rated taking MMS a positive experience

[†] Consumption is not the same as absorption. Evidence indicates that the iron in MMS is more readily absorbed than the iron in IFA, so a 30mg MMS tablet delivers more absorbed iron than its elemental iron content relative to IFA would suggest.



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Conducted in partnership with the FMoHSW the Oyo State and FCT health authorities, and the health workers of 90 antenatal care facilities. MMS product donated by Kirk Humanitarian.

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How each indicator is defined and measured

Terms used throughout this report, in the order they appear on page 4. Unless stated otherwise, endline figures are derived from the pilot IFA/MMS register and baseline figures from the baseline survey cohort.

Daily dose	The daily prophylactic or therapeutic iron regimen prescribed to a pregnant woman. At baseline, the prophylactic regimen consisted of daily iron or IFA supplementation (60mg iron) and the therapeutic regimen consisted of daily iron or IFA (120mg iron). Under the pilot, the prophylactic regimen is daily MMS (30mg iron) and the therapeutic regimen is daily MMS (30mg iron) plus an iron or IFA supplement (60mg iron), for a total of 90mg iron per day.
Allowable consumption days	The days during her pregnancy window (from ANC initiation to delivery) when a woman has supplements available for consumption. The assumed full length of pregnancy is set at 40 weeks (i.e. 280 days).
Average daily doses of iron dispensed, limited to allowable consumption days during pregnancy (#)	The mean number of daily doses a woman received across all her ANC visits, limited to allowable consumption days.
Average daily doses of iron consumed during pregnancy (#)	The mean total number of daily doses consumed during pregnancy.
Compliance rate (%)	The ratio of daily doses consumed to daily doses dispensed between a woman's first and last recorded ANC visit, reflecting the average rate at which women took their prescribed regimen.
First-visit anemia testing rate (%)	The proportion of women tested for anemia at their first ANC contact.
Correct diagnosis (%)	The proportion of women correctly classified as having mild or moderate anemia based on recorded hemoglobin or PCV values.
Anemia treatment initiation rate, visits with mild or moderate anemia diagnosis (%)	The proportion of pregnant women diagnosed with mild or moderate anemia who received at least one therapeutic daily dose of oral iron.
Average iron consumed among women estimated to have mild or moderate anemia (mg)	The average milligrams of iron consumed per pregnant woman over the course of pregnancy, disaggregated by anemia status (no anemia, mild anemia, moderate anemia).

BASELINE DATA SOURCES

Baseline cohort (N = 3,184). Longitudinal ANC register across the 90 pilot facilities, with consumption assessed by self-report, April–August 2024. Source for baseline dispensing, consumption and compliance indicators.

June 2024 ANC register census. All pilot facilities, full ANC attendee population for that month. Source for first-visit anemia testing indicator.

Rapid facility assessment. Health worker interviews on protocol adherence and anemia cutoffs (N = 90 facilities). Source for modeled baseline anemia treatment initiation and diagnosis accuracy indicators.

Modeled baseline anemic population. WHO prevalence estimates for mild and moderate maternal anemia applied to the baseline cohort, combined with June 2024 ANC register census and rapid facility assessment findings. Source for baseline iron consumption among women identified as anemic.

ENDLINE DATA SOURCES

MMS cohort (N = 5,305; pre-HemoCue N = 3,076 / post-HemoCue N = 2,229). Longitudinal IFA/MMS register across the 90 pilot facilities, with consumption assessed by bottle weight, September 2024–August 2025 (Oyo) and September 2024–December 2025 (FCT). Source for dispensing, consumption, compliance, first-visit and follow-up anemia testing, correct diagnosis, treatment initiation, and iron consumption among women identified as anemic.

STATISTICAL NOTATION

***** $p < 0.001$** — difference between baseline and endline, two-sided test on the sampled cohorts.

pp — percentage points. **[]** — 95% confidence interval.

† — not tested for statistical significance. Changes in anemia testing, treatment initiation, and average iron consumption derive from register census, modeled estimates, and facility assessment data rather than a sampled baseline cohort, so no significance test applies.