

Group Antenatal Care is associated with Increased Uptake of Intermittent Preventive Treatment of Malaria in Pregnancy among Women in Nigeria, Compared to Routine Antenatal Care

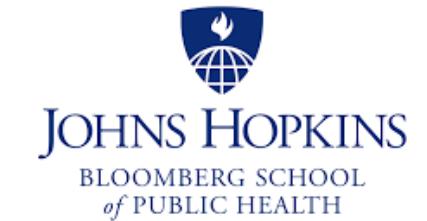
Secondary Analysis of a Cluster Randomized Controlled Trial

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A photograph showing a woman wearing a patterned headwrap and a light green jacket holding a newborn baby wrapped in a pink cloth. A man in a striped shirt is standing behind her, looking down at the baby. They appear to be in a clinical or community setting with other people visible in the background.

Overview

- Background
 - › Gaps in antenatal care (ANC) and coverage
 - › Impact of malaria in pregnancy (MiP)
- Methods
- Results
- Conclusions

Credit: Jhpiego

Current Antenatal Care Experience: Lots of women, little time



Long waits
Short visits
Often low quality

Average ANC visit 3–4 min
90 seconds of education (all visits)

ANC =
opportunity cost for
women
(low return on
investment)

Low
ANC
attendance

Little
health
impact

Globally,
during
period 2007–
2014, 64% of
pregnant
women
attended the
WHO-
recommended
minimum four
contacts for
ANC

What matters to women?

- Systematic scoping review to identify ANC processes/outcomes important to women
 - › All continents except Australia represented (n=1264 women) were included
- Meta-theme: Women want and need a positive pregnancy experience
 1. Maintain **physical and sociocultural normality**
 2. Maintain healthy pregnancy for mother, baby (**prevent/treat risk, illness, death**)
 3. Effective transition to **positive labor and birth**
 4. Achieve positive motherhood (**maternal self-esteem, competence, autonomy**)
- Review suggested framework for future ANC
 - › Clinical practices (interventions, tests); relevant, timely information; psychosocial/emotional support
 - › Practitioners with good clinical/interpersonal skills within high quality health system

Background: Malaria in pregnancy

- Every year, MiP contributes to ~20% of stillbirths in sub-Saharan Africa
 - › Plus 10,000 maternal deaths globally
- WHO recommends in areas with malaria risk
 - › Insecticide-treated nets (ITN)
 - › Intermittent preventive treatment of MiP with sulfadoxine-pyrimethamine (IPTp-SP)
 - › Typical ANC interventions



Credit: Jhpiego

Group ANC:

Same women, same providers, different model of care

At first visit, women of similar gestational ages are placed in cohorts of 8-12 women to receive scheduled care during 1 ½–2 hour meetings, with 3 key elements:



1

CLINICAL
ASSESSMENT



2

PARTICIPATORY,
FACILITATED
LEARNING



3

PEER
SUPPORT

Catling et al., Cochrane Database Syst Rev., 2015.

Evidence on G-ANC

- 1993 CenteringPregnancy model pioneered by a US midwife
 - › Process driven, empowerment-based, control on materials and model fidelity
 - › Designed for literate population attending frequent ANC (>10 visits) in high income countries
- Manant and Dodgson integrative review (2011)
 - › 12 studies: 10 quantitative, 1 mixed, 1 qualitative
 - › **Increased knowledge, satisfaction with care, improved breastfeeding initiation/continuation**
 - › **No change in maternal health, but increase in gestational age at birth and birthweight**
- Cochrane Review: group vs conventional ANC (2015)
 - › 4 RCT (2 US; 1 Sweden; 1 Iran) most analysis based on 1 study, high variability
 - › **No difference in PTB or birth weight, initiation of breastfeeding**
 - › **Increased satisfaction – 5x higher compared to individual care**
- Hale (2014): PPFP
 - › **Significantly higher PPFP use at 3, 6, 9, 12 months PP**

Transferability to Low Resource Settings

- Primary purpose of the Gates grant is to study the transferability of the CenteringPregnancy model to low resource settings.
- The Group ANC model of care may address the ongoing issues found in ANC in low resource setting that have yet to be addressed adequately, including but not limited to attendance, compliance with care, platform for preventative measures, etc.
- Also has the potential to provide different service delivery needs than a high resource setting, including prevention and treatment of malaria in pregnancy.

Integrated platform for patient-focused MiP interventions

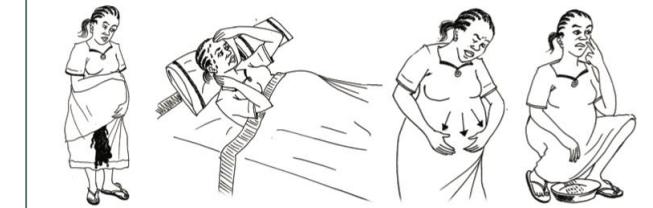
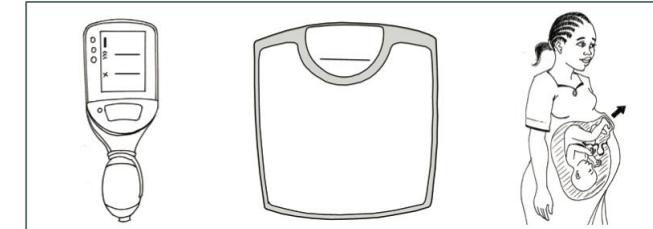
An example of picture cards used to facilitate learning

At first visit:

- LLIN use and IPTp included in participatory learning, problem solving and goal setting

At each visit

- Self-assessment re-enforces problem recognition and care seeking
- Longitudinal group registry verifies LLIN ownership and use
- IPTp given (6x total)

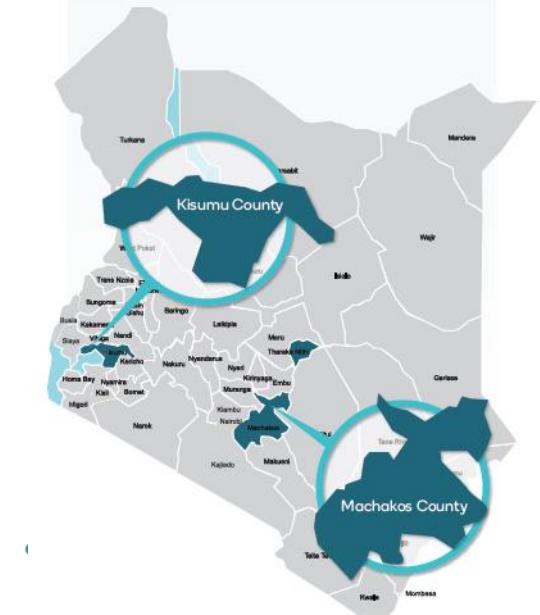


Study setting: Nigeria and Kenya

- Most populous country in Africa with ~191 million
- High average total fertility rate: 5.5 children per woman
- Uptake of ANC is low
- Nasarawa State
 - › 40.1% deliver in a facility



- Total population ~51 million
- Total fertility rate: 3.9 children per woman (lower than E. Africa avg of 4.7)
- Uptake of ANC is low—ANC4 is 57.6% nationally
- Facility-based delivery rate is 61.2% nationally
 - › 62.9% is Machakos County and 69.5% in Kisumu County



Objectives

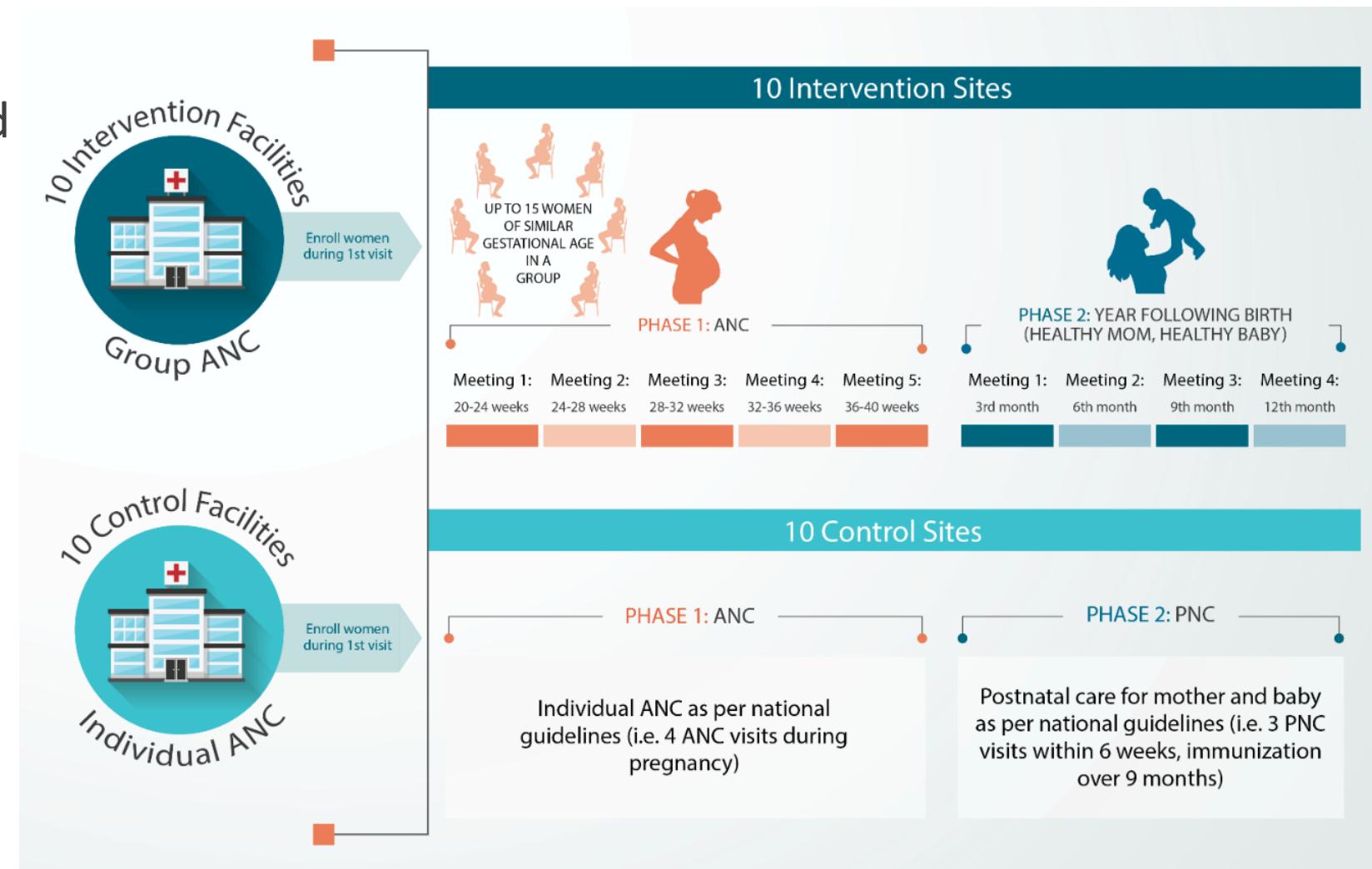
- We investigated whether study arms differed with regard to the following
 - › Uptake of MiP interventions
 - » IPTp-SP
 - » Use of ITN for mothers and infants
 - › Diagnosis of malaria infection in pregnancy



Credit: Jhpiego

Methods

- Data from cluster randomized controlled trial of G-ANC vs. routine ANC
 - › Funded by the Bill and Melinda Gates Foundation
 - › Nigeria (Nasawara state) and Kenya (Machakos, Kisumu)
 - › Two phases (pregnancy and first year after birth)
 - › Phase 1: 9/2016 to 8/2017
- 20 paired facilities/country
 - › n=2,101



Methods

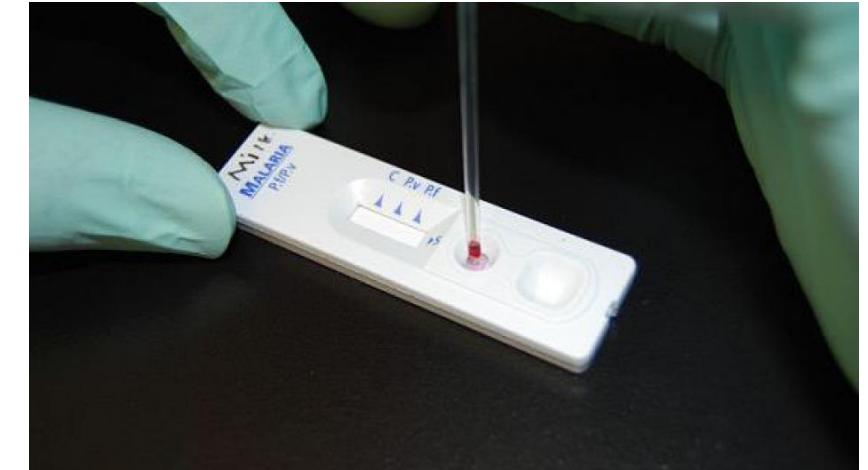
- ANC refresher training for providers at control and intervention sites
 - › No changes made to standard ANC content in national guidelines
- Intervention sites trained on G-ANC model
- SP supplies provided equally to all sites and delivered by directly observed therapy
- Study staff did training, transcription of data, analysis, but NOT delivery of care



Credit: Jhpiego

Methods

- Participants tested for malaria if presented with fever of ≥ 37.5 F and no other obvious cause
- **IPTp-SP** administration data collected via record abstraction
- **Malaria** endpoints confirmed by immunochromatographic rapid diagnostic tests
 - › Abstracted from client facility cards and laboratory registers
- **Net use** data collected via interview at 3-6 weeks postpartum

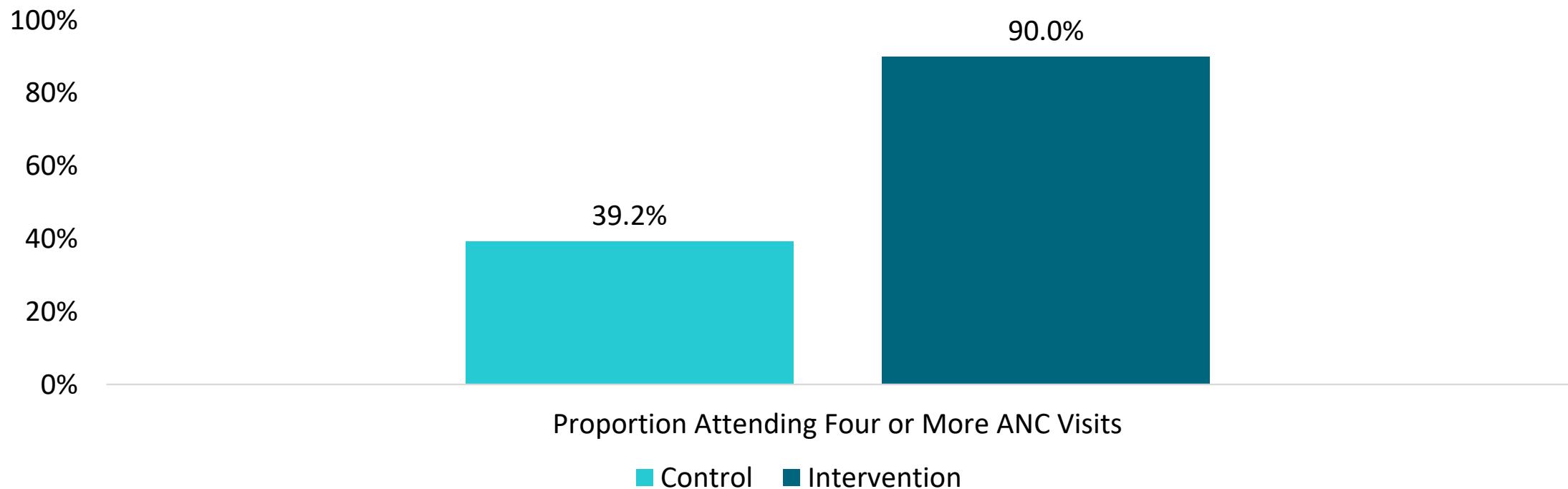


Rapid diagnostic test for malaria.
Credit: [CDC Global/CC BY 2.0](#)



G-ANC Trial results: Better retention in ANC

Figure 1. Attendance at Four or More ANC Visits
 $(p=<0.001)$



- Powered to see 15% increase in facility based birth and 10% increase in PPFP at 1 year
- Retention in ANC measured via facility register data

Results: Doses of IPTp-SP Received

Table 1. Receipt of IPTp-SP doses among **Nigerian** women in G-ANC study

	Whole Cohort (n=1,018)	G-ANC Arm (n=510)	ANC Control (n=508)	p-value
2+ IPTp doses	775 (76.1%)	467 (91.6%)	308 (60.6%)	<0.001
3+ IPTp doses	530 (52.1%)	347 (68.0%)	183 (36.0%)	0.05
4+ IPTp doses	351 (34.5%)	268 (52.6%)	83 (16.3%)	0.004
5+ IPTp doses	189 (18.6%)	146 (29.6%)	43 (8.5%)	0.034

Table 1. Receipt of IPTp-SP doses among **Kenyan** women in G-ANC study **KENYA KISUMU COUNTY ONLY**

	Whole Cohort (n=419)	G-ANC Arm (n=211)	ANC Control (n=208)	p-value
2+ IPTp doses	775 (76.1%)	163 (77.3%)	150 (72.1%)	.590
3+ IPTp doses	530 (52.1%)	156 (73.9%)	116 (55.8%)	.100
4+ IPTp doses	351 (34.5%)	131 (62.1%)	77 (37%)	.056
5+ IPTp doses	189 (18.6%)	97 (46%)	27 (13%)	<0.001

Malaria infection detection and ITN receipt- Nigeria only

(Kenya Phase 1 data undergoing analysis)

Table 2. Malaria detected by RDT during follow-up

	Number of malaria cases/person-years	Incidence per 100 person-years
ANC Control	131/381.0	0.34
G-ANC Arm	71/382.5	0.19
Whole Cohort	202/763.5	0.26

- No significant difference detected in malaria incidence between G-ANC and control arms

Table 3. ITN receipt in pregnancy and use at 3-6 weeks postpartum

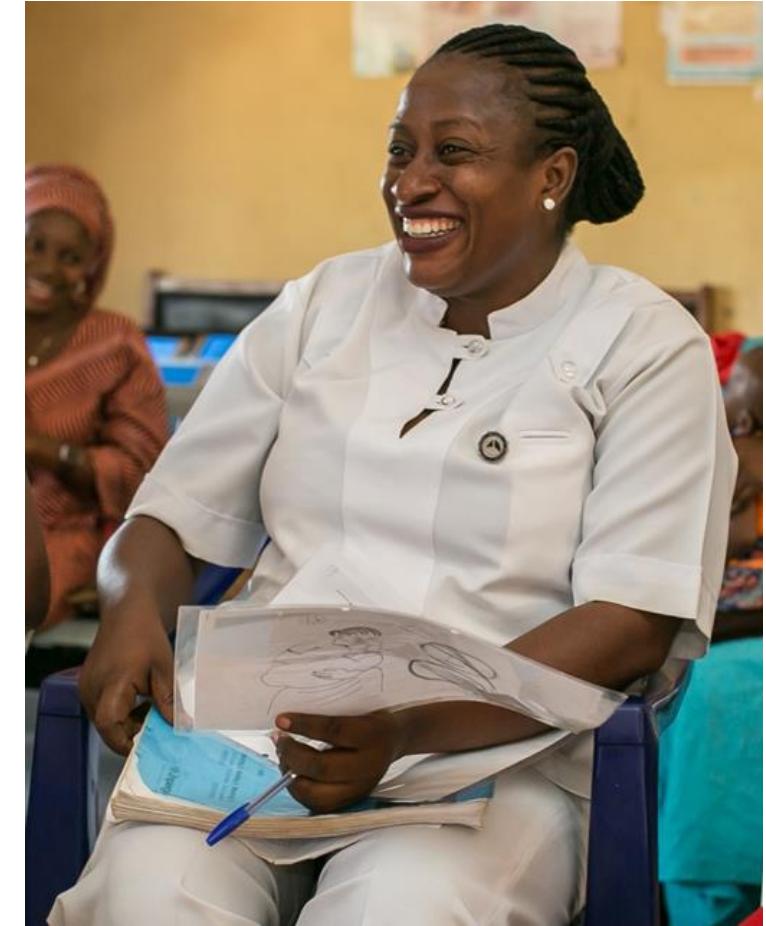
	Whole Cohort (n=1,018)	G-ANC (n=510)	ANC (n=508)	p-value
Received ITN during pregnancy	993 (97.5%)	503 (98.6%)	490 (96.5%)	0.46
Mother slept under ITN last night	717 (70.4%)	372 (72.9%)	345 (67.9%)	0.18
Infant slept under ITN last night	807 (79.3%)	422 (82.7%)	385 (75.8%)	0.02

Strengths and Limitations

- Strengths
 - › Good study retention
 - › Data from real public sector ANC sites
 - › RDT-confirmed endpoints for malaria
- Limitations
 - › Trial not designed to test difference in malaria-related interventions and outcomes between control and intervention arms
 - › Blinding not practical
 - › Gestational age estimation challenging, assumed onset time of pregnancy imprecise
 - › Client-reported and service delivery documentation data subject to reporting bias
 - › Possible but unlikely that interventions were received outside of study

Conclusions

- First study to suggest G-ANC in low-resource settings
 - › Improves IPTp-SP coverage
 - › May improve ITN use for infants – critical (malaria responsible for 61% <5 mortality in Nasarawa)
- No clear impact on malaria diagnosis
- Results support further study of G-ANC as platform to improve coverage of other interventions



Credit: Jhpiego

“Now, I know their names.”

Future Directions

- Can model be scaled? Can it be further optimized?
- Appears sustainable for now...
 - › All 10 intervention sites continue to offer G-ANC after conclusion of study and with no additional financial support
- Phase 2: Postnatal mothers, 1st year of life for infants
 - › Post-partum family planning initiation/continuation
 - › Breastfeeding
- New settings, including Ethiopia
 - › Harvard ENAT study (PI: Lee) – birthweight outcomes



Credit: Jhpiego

Lorna Othola, a nurse at Ahero Sub-County Hospital, displays a card showing how to hold a breastfeeding baby

Acknowledgments

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of PUBLIC HEALTH



Credit: Jhpiego

Thank you!

