

2021 Provider Survey Results

Nigeria Health, Population, and Nutrition Multi-Activity Evaluation



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Cover

A health worker examines one-year-old Beatrice in a health clinic in Nigeria.

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Contents

Acknowledgments.....	2
Figures	5
Tables.....	6
Abbreviations.....	8
Executive Summary	10
Methods	10
Key Findings	11
Programmatic Implications	13
Introduction.....	15
Evaluation Questions.....	16
Provider Survey.....	16
Background.....	17
Programming Approaches	17
Theory of Change	18
Methods	21
Sampling Design	21
Data Collection Instruments.....	22
Training and Fieldwork	23
Sampling and Response Rates.....	24
Analytical Approaches	24
Limitations.....	26
Ethical Considerations.....	27
Gender Integration	27
Results: Provider Characteristics.....	28
Provider Demographics	28
Occupational Category and Provider Status.....	28
Experience and Tenure.....	29
Services Provided.....	30
Results: Provider Training.....	32
General Training.....	32
Malaria	32
Child Health Services.....	33
Antenatal Care	34
Family Planning	35
Diagnostic Services	37

Training Providers	37
Results: Clinical Vignettes	39
Vignette Approach	39
Child Health Vignette	40
ANC Vignette: Gender-Based Violence	45
ANC Vignette: Malaria in Pregnancy.....	48
Family Planning Vignette: Implant Side Effects	52
Family Planning Vignette: Postpartum Family Planning.....	56
Family Planning Vignettes: Male Engagement in Family Planning.....	59
Results: Provider Attitudes and Norms.....	63
Malaria Case Management	63
Family Planning.....	64
ANC.....	65
Results: Gender Attitudes and Norms.....	67
Provider Gender Attitudes.....	67
Gender-Sensitive Community RMNH QOC Norms	69
Perceived Gender-Sensitive FP/ANC Service Provision Community Norms	71
Summary and Implications	73
Training.....	73
Malaria	73
Implications of Baseline Malaria Findings for Anticipated Evaluation Results	74
ANC.....	75
Family Planning.....	75
Gender.....	76
Conclusions.....	78
Programmatic Implications	79
Malaria Programming.....	79
ANC and FP Programming	79
References.....	80
Appendix A. Nigeria HPN Evaluation Health Facility Assessment and Provider Survey Baseline Sampling Strategy.....	81
Appendix B. Provider Survey Instrument	86
Appendix C. Clinical Vignette Scoring Rubrics	114
Appendix D. Expanded Results Tables.....	120
Appendix E. Antenatal Care Hypertension in Pregnancy Clinical Vignette.....	146

Figures

- Figure 1A. General high-level theory of change.....19
- Figure 1B. Theory of change for improved leadership and governance outcome 20
- Figure 2A. Age of providers (%), by state (p=0.196) 28
- Figure 2B. Years of education (%), by state (p<0.001)..... 28
- Figure 3. Occupational category and provider status, by state 29
- Figure 4A. Years since received qualification/basic training, by state (p=0.007) 30
- Figure 4B. Time working at current facility, by state (p<0.001)..... 30
- Figure 5. Services provided in current position at facility, by state31
- Figure 6. Percent of providers who received training on general topics, by state..... 32
- Figure 7. Percent of malaria providers who received training on malaria topics, by state 33
- Figure 8. Percent of child health service providers who received training on child health topics, by state 34
- Figure 9. ANC providers who received training on ANC topics, by state 35
- Figure 10. Percent of family planning providers who received training on family planning topics, by state 36
- Figure 11. Percent of diagnostic service providers who received training on specific diagnostic tests, by state37
- Figure 12. Training providers reported by ever-trained health workers, by state 38
- Figure 13. Vignette structure 39
- Figure 14. Child health vignette rubric response frequencies, by state 42
- Figure 15. ANC GBV vignette rubric response frequencies, by state47
- Figure 16. ANC malaria in pregnancy vignette rubric response frequencies, by state 50
- Figure 17. FP implant side effects vignette rubric response frequencies, by state 54
- Figure 18. Postpartum FP vignette response frequencies, by state57
- Figure 19. Male engagement in family planning vignette response frequencies, by state61
- Figure 20. Provider attitudes and norms for malaria case management topics, by state 64
- Figure 21. Provider attitudes and norms for FP topics, by state 65
- Figure 22. Provider attitudes and norms for ANC topics, by state..... 66
- Figure 23. Percent of providers who disagree/strongly disagree with gender attitude statement, by state 68
- Figure 24. Distribution of EFA-adjusted provider gender attitudes scores, by state..... 69

Figure 25. Percent of providers who disagree/strongly disagree with gender-sensitive community RMNH QOC norms statements, by state	70
Figure 26. Distribution of EFA-adjusted perceived gender-sensitive community RMNH QOC norms, by state.....	71
Figure 27. Percent of providers who strongly agree/agree with statements on gender-sensitive FP/ANC service provision norms in their LGA, by state	72

Tables

Table ES1. Clinical vignette weighted total scores (average % points obtained), by state	12
Table 1. Nigeria HPN activity implementation timelines, by state.....	15
Table 2. Child health vignette domain and total scores, by state	44
Table 3. ANC GBV vignette domain and total scores, by state	47
Table 4. ANC malaria in pregnancy vignette score distributions, by state	51
Table 5. FP implant side effects vignette score distributions, by state	55
Table 6. Postpartum FP vignette score distributions, by state	59
Table 7. Male engagement in family planning vignette score distributions, by state	62
Table A1. Number of providers in surveyed facilities in Kebbi, 2020	83
Table A2. Zamfara phased sample design.....	85
Table A3. Zamfara sample results by accessibility and functional PHC status, by sampling phase	85
Table D1. Provider characteristics, by state	120
Table D2. Training, by state.....	123
Table D3.1. Child health vignette provider responses, by state.....	129
Table D3.2. GBV vignette provider responses, by state	132
Table D3.3. ANC malaria in pregnancy vignette provider responses, by state.....	133
Table D3.4. Family planning side effects vignette provider responses, by state	135
Table D3.5. Postpartum family planning vignette provider responses, by state	138
Table D4.1. Provider attitudes on clinical practices, by state	141
Table D5. Provider and perceived LGA gender attitudes, by state	143
Table E1. ANC hypertension in pregnancy provider responses, by state	147

Abbreviations

ACT	artemisinin-based combination therapy
ANC	antenatal care
BA-N	Breakthrough ACTION - Nigeria
CHEW	community health extension worker
CHIPS	Community Health Influencers, Promoters, and Services Programme
CPI	client-provider interaction
D4I	Data for Impact
DHIS2	District Health Information Software, version 2
DRF	drug revolving fund
DRMC	Data Research and Mapping Consult
EDDS	essential drugs, diagnostics, and supplies
EFA	exploratory factor analysis
EPI	Expanded Programme on Immunization
FDC	facility development committee
FP	family planning
GBV	gender-based violence
GHSC-PSM	Global Health Supply Chain Program – Procurement and Supply Management
HFA	health facility assessment
HMIS	health management information system
HPN	health, population, and nutrition
IHP	Integrated Health Project
IPTp	intermittent preventative treatment of malaria in pregnancy
ITN	insecticide-treated net
IUCD	intrauterine contraceptive device
JCHEW	junior community health extension worker
KAP	knowledge, attitudes, and practices
LARC	long-acting reversible contraception
LGA	Local Government Authority
LMIS	logistics management and information system
MEFP	male engagement in family planning

MIP	malaria in pregnancy
MIS	Malaria Indicator Survey
MNCH	maternal, newborn, and child health
MOU	memorandum of understanding
mRDT	malaria rapid diagnostic test
NDHS	Nigeria Demographic and Health Survey
NHREC	National Health Research Ethics Committee
PHC	primary healthcare
PHCUOR	Primary Health Care Under One Roof
PMI-S	President's Malaria Initiative for States
PPFP	postpartum family planning
QOC	quality of care
RMNCH+NM	reproductive, maternal, child, and newborn health plus nutrition and malaria
RMNH	reproductive, maternal, and newborn health
TOC	theory of change
WDC	ward development committee
WHO	World Health Organization
USAID	United States Agency for International Development

Executive Summary

This report presents the results of a health provider survey conducted by Data for Impact (D4I) as one component of a mixed methods outcome evaluation of four United States Agency for International Development (USAID)/Nigeria Health, Population, and Nutrition (HPN) activities. The four activities are the Integrated Health Project (IHP), the President’s Malaria Initiative for States (PMI-S), Breakthrough ACTION - Nigeria (BA-N), and the Global Health Supply Chain Program – Procurement and Supply Management (GHSC-PSM). The objective of the health provider survey evaluation component is to provide evidence for health programming, with a focus on comparing an integrated health programming approach with a disease-focused approach (malaria).

An integrated approach (led by IHP) implements a fully integrated set of reproductive, maternal, newborn, and child health plus nutrition and malaria (RMNCH+NM) interventions as well as health system strengthening interventions. A disease-focused approach (led by PMI-S) addresses one health area only (malaria) and includes health system strengthening focused on that health area. In each state, both approaches also include demand creation (led by BA-N) and commodity procurement and distribution interventions (led by GHSC-PSM). The evaluation is being implemented in three case study states—Kebbi (integrated approach), Zamfara (disease-focused approach), and Ebonyi (combined approach with both IHP and PMI-S implementing).

The purpose of the survey, which will be conducted again at endline in 2025, is to assess whether provider knowledge, attitudes, and self-reported practices improve over time and whether that improvement varies depending on whether the focus of provider training is disease-focused (fever/malaria management) or more integrated (RMNCH+NM). The provider survey contributes to answering the evaluation question:

Did malaria and other health and service delivery outcomes improve more from baseline to endline in local government authorities (LGAs)/states where an integrated (IHP) approach was implemented, a disease-focused (PMI-S) approach was implemented, or a combination of the two?

Provider outcomes in malaria, child health, antenatal care, and family planning service areas were assessed. Non-malaria service areas serve as ‘comparison’ services for the purposes of the evaluation to allow examination of depth versus breadth in the changes in outcome levels by service areas seen in the two programming approaches.

Methods

In each state, 120 public primary healthcare (PHC) facilities were sampled that were designated as ward-level ‘functional’ PHC facilities per Nigeria’s Primary Health Care Under One Roof (PHCUOR) policy. In Ebonyi and Kebbi, a representative sample of IHP-supported public PHCs was selected, and in Zamfara, a comparable sample of PMI-S-supported public PHCs was selected.

The provider survey gathered data on health worker demographics, training levels, provider attitudes and norms, gender attitudes and norms, and included five clinical vignettes. The provider norms module focused on attitudes and perceived norms around clinical practices. Providers were asked to indicate their agreement with statements about malaria case

management, FP, and ANC service provision, and then were asked to describe how often they thought other providers in their LGA performed the activities. The gender norms module focused on provider attitudes and perceived norms around gender. Health workers were asked to describe how strongly they agreed with gender-related statements concerning their own gender attitudes and their perceptions of gender norms and attitudes among other providers in their LGA who perform similar services.

A clinical vignette is a hypothetical scenario describing a typical visit from a patient; an iterative format is used to reveal case details and solicit health worker responses to open-ended questions about care processes, from taking the patient history to making a diagnosis and developing a treatment plan. The vignette module included five clinical vignettes related to malaria, ANC, and family planning. A pediatric malaria vignette was administered to health workers who regularly provide child health services for fever. Two ANC vignettes were administered to health workers who regularly provided ANC services; the first focused on hypertension in pregnancy¹ and gender-based violence (GBV), and the second on malaria in pregnancy (MIP). Health workers who regularly provided FP services were asked to complete two FP vignettes, one on implant side effects and the other on postpartum family planning (PPFP). Male engagement in family planning (MEFP) was woven throughout both FP vignettes.

Analysis of both the provider and gender attitude scales followed the methodology of Doyle, et al. (2021). Analysis of vignettes involved the development and use of a standard scoring rubric for each domain (e.g., patient history, physical exam, treatment, and counseling) for each vignette. Points were awarded when providers, for example, asked desired questions during the medical history, conducted expected exam components, ordered appropriate tests, and correctly diagnosed, treated, and counseled the patient.

The provider survey was administered to a total of 1,070 total health workers: 354 in Ebonyi, 371 in Kebbi, and 345 in Zamfara. Data collection occurred from July 5-August 12, 2021.

Key Findings

Provider Characteristics

Health workers interviewed at baseline in Ebonyi were more likely to be female, have more years of education, and be classified in the professional cadre compared to respondents in Kebbi and Zamfara. Nearly all Ebonyi respondents provided malaria, child health, ANC, and diagnostic services, and over 75 percent provided FP services, with most health workers performing multiple types of services. Most providers in Kebbi and Zamfara provided malaria and child health services, but fewer offered FP, ANC, or diagnostic services.

The highest levels of training ever received and received in the past two years occurred in Kebbi. Levels of training ever received were generally higher in Zamfara than Ebonyi, but most of the training was received more than two years ago among Zamfara providers.

¹ Due to limitations with the hypertension in pregnancy ANC vignette data, only GBV-related vignette content is analyzed and scored in the main body of the baseline report.

Vignettes

Vignette-specific service provision quality scores were calculated for major domains within each vignette (e.g., patient history, physical exam, diagnosis, treatment, etc.) based on scoring rubrics. A weighted total score was calculated for each vignette such that each domain contributes equally to the vignette's overall score. As summarized in Table ES1, provider performance in each state was strongest for the MIP scenario and weakest for male engagement and gender-based violence content. Health workers in Zamfara generally had the lowest performance for each vignette.

Table ES1. Clinical vignette weighted total scores (average % points obtained), by state

Vignette	Ebonyi	Kebbi	Zamfara	p-value
Child Health	55.6	50.7	50.6	0.000
ANC - GBV	19.7	18.1	14.9	0.044
ANC - Malaria in Pregnancy	72.4	72.4	72.9	0.910
FP - Implant side effects	49.1	55.4	37.2	0.000
Postpartum FP	54.1	58.9	53.4	0.003
Male engagement in FP	13.5	16.1	11.4	0.035

Child health. In all three states, provider scores within the child health malaria vignette were weakest for history taking and physical exam domain scores. Health workers in Ebonyi had the highest average scores across domains, and providers in Kebbi and Zamfara performed similarly in each domain. Contrary to guidelines and training materials, some providers – particularly in Zamfara – recommended antibiotics for pediatric malaria treatment.

ANC. MIP vignette scores were generally high in each state for the exam, diagnosis, and treatment domains and were lowest for the patient history domain. Apart from the patient exam domain, no significant differences were detected in average domain or weighted total scores among the study states.

Performance on the ANC GBV scenario was poor. While approximately 40 percent of providers across states indicated they would ask GBV screening questions, fewer than 5 percent of health workers in Ebonyi and Kebbi and no providers in Zamfara determined that the patient was potentially at risk for GBV.

Family planning. Kebbi providers scored highest in FP and male engagement content, followed by Ebonyi and Zamfara. In each state, most providers responded that they would counsel the hypothetical patient experiencing implant side effects in choosing another contraceptive method and over 90 percent responded they would offer counseling for postpartum contraception. In both the FP side effects vignette and the postpartum FP vignette, provider scores in the history taking and counseling content domains were low.

Provider Attitudes and Norms

Providers were asked about malaria case management attitudes and norms around assessing patient fever status during the rainy and dry seasons, ordering malaria diagnostic tests for all patients with fever during both seasons, and only prescribing antimalarials when malaria test results are positive. Providers were also asked about ANC practices including discussing delivery

plans and pregnancy danger signs, providing mosquito nets to pregnant women, providing tetanus injections, and recommending three or more doses of intermittent preventative treatment of malaria during pregnancy (IPTp) for all pregnant women. Provider attitudes towards malaria case management and ANC topics largely aligned with the corresponding perceived LGA practice norms, and attitudes and norms were positive and strong at baseline. An exception was provision of mosquito nets as a component of ANC, with respondents indicating they implemented this practice at a higher rate than other providers in their LGA.

Respondents were asked about FP planning attitudes and norms around offering contraceptives to women under 18, offering a range of contraceptive methods, requiring partner consent before providing contraceptives, and not offering contraceptives to unmarried people. Responses on FP provider attitudes and community norm were generally less aligned with local clinical guidelines than those for malaria and ANC and were more likely to diverge between provider and LGA.

Gender Attitudes and Norms

Providers reported how strongly they agreed or disagreed with 14 gender-related statements, such as ‘A woman should not use a FP method unless her partner agrees’ and ‘Men are better at making decisions than women are. The first section asked all providers about their own attitudes around gender and these items were used to create a gender attitudes scale. On a scale of 1-4, providers in Ebonyi had the highest mean score (3.1), indicating the most gender-equitable provider attitudes, followed by Kebbi (2.6) and Zamfara (2.4)

Providers were asked to describe how strongly they agreed or disagreed with nine statements about gender-sensitive reproductive, maternal, and newborn health (RMNH) quality of care (QOC) among other providers in the respondent’s LGA. Providers in Ebonyi had the highest mean score (3.3), indicating greater perceived gender-equitable norms among other providers in the LGA, followed by Kebbi (2.9) and Zamfara (2.7).

A final section on gender norms and attitudes was restricted to FP or ANC service providers and asked about providers’ agreement with three statements on couples’ communication, promoting individual agency, and engaging men as partners and users of FP. Nearly all respondents in each state agreed or strongly agreed that other FP/ANC providers in their LGA supported coaching clients on discussing FP with their partner and ensuring that patients make their own contraceptive decisions. Half or fewer believed that men’s only role in FP was to help select contraceptive methods for their female partner to use.

Programmatic Implications

These results and possible solutions to identified gaps were discussed with evaluation stakeholders to determine programmatic recommendations. Recommendations are summarized below.

Malaria Programming

- Activities should address training and support for comprehensive malaria care provision, particularly around patient history, physical exam, and counseling domains, as well as incorrect prescription of antibiotics for pediatric malaria.

ANC and FP Programming

Given the current programming scope, recommendations related to gender, ANC, and FP are more relevant to the integrated programming in Ebonyi and Kebbi; given the disease-focused malaria programming in Zamfara, it is unlikely that these recommendations can be addressed under the scope of current USAID programming there.

- More emphasis is needed on GBV screening, risk assessment, and management in activity training and support.
- Activities should craft interventions to shift negative gender-related attitudes and norms on FP service provision and encourage male engagement in FP.
- Activities should address FP QOC gaps, particularly in history taking, counseling content and provider consideration of key factors to determine course of action.

Introduction

Data for Impact (D4I) is conducting a mixed methods outcome evaluation of four United States Agency for International Development (USAID)/Nigeria Health, Population, and Nutrition (HPN) activities in order to provide evidence for health programming, with a focus on comparing an integrated health programming approach with a disease-focused approach (malaria). The four activities are the Integrated Health Project (IHP), the President’s Malaria Initiative for States (PMI-S), Breakthrough ACTION – Nigeria (BA-N), and the Global Health Supply Chain Program – Procurement and Supply Management (GHSC-PSM).

An integrated approach (led by IHP) implements a fully integrated set of RMNCH+NM and health system strengthening interventions. A disease-focused approach (led by PMI-S) addresses one health area only (malaria) and includes health system strengthening focused on that health area. Both approaches also include demand creation (led by BA-N) and commodity procurement and distribution interventions (led by GHSC-PSM).

The evaluation is being implemented in three case study states—Kebbi, where IHP is implementing an integrated approach, Zamfara, where PMI-S is implementing a disease-focused approach, and Ebonyi, where both IHP and PMI-S are implementing. BA-N and GHSC-PSM are operating in all three states and are collaborating and coordinating with IHP and PMI-S.

D4I’s Nigeria HPN evaluation is on a five-year evaluation timeframe, from October 2020-September 2025. Evaluation components include a health facility assessment (HFA) and health provider survey (baseline and endline), District Health Information System Version 2 (DHIS2) data analysis (annual), process monitoring (annual), an organizational network analysis (midline and endline), a qualitative component with community members and health facility in-charges (midline), a Most Significant Change workshop (midline), and a costing component (annual data collection).

The timelines for HPN activity implementation and the D4I evaluation are presented in Table 1; for the purposes of this report, ‘baseline’ and ‘endline’ refer to the D4I evaluation baseline and endline, both of which occur after HPN activity start and end dates, respectively.

Table 1. Nigeria HPN activity implementation timelines, by state

State	Activity	Start date	End date
Ebonyi	IHP	April 2020	December 2024
	PMI-S	January 2020	January 2025
Kebbi	IHP	April 2019	March 2024
Zamfara	PMI-S	August 2020	June 2025
D4I Nigeria HPN Evaluation		October 2020	September 2025

For all states: BA-N September 2017 – September 2026; GHSC-PSM July 2016 – November 2023.

Evaluation Questions

The evaluation seeks to answer the following questions:

Effectiveness

1. Did malaria and other health behavior and service delivery outcomes improve more from baseline to endline in LGAs/states where an integrated (IHP) approach was implemented, a disease-focused (PMI-S) approach was implemented, or a combination of the two?
2. Did relevant commitment/engagement and capacity outcomes improve more from baseline to endline in LGAs/states where an integrated (IHP) approach was implemented, a disease-focused (PMI-S) approach was implemented, or a combination of the two?
3. What program implementation strategies are associated with improvements in health behaviors, service delivery, and commitment and capacity in different contexts?

Process

4. How and to what extent did the four activities and government collaborate and coordinate to achieve desired health behavior and service delivery outcomes?
 - a. What factors facilitated or hindered collaboration and coordination?
 - b. What were the most critical coordination/collaboration points?
5. What factors facilitate or hinder implementation across the four activities in LGAs/states where an integrated (IHP) approach was implemented, a disease-focused (PMI-S) approach was implemented, or a combination of the two?

Economic

6. What are the costs of the different approaches by state?

Provider Survey

The health provider survey gathered information on provider knowledge, skills, and self-reported practices related to delivery of services for malaria, ANC, child health, and FP. Data was also collected on providers' level of training and on provider and gender norms and attitudes.

The purpose of the survey is to assess whether provider knowledge, attitudes, and self-reported practices improve over time and whether that improvement varies depending on whether the focus of provider training is narrow (fever/malaria management) or more diverse (RMNCH+NM).

The provider survey, which will be conducted again at endline in 2025, contributes to answering the first evaluation question above:

Did malaria and other health and service delivery outcomes improve more from baseline to endline in LGAs/states where an integrated (IHP) approach was implemented, a disease-focused (PMI-S) approach was implemented, or a combination of the two?

Background

Nigeria did not achieve the Millennium Development Goals related to maternal and child health and the health status of women and children in the country is among the poorest in the world. Nigeria registered modest improvement in under-five mortality which declined from 157/1,000 live births in 2008 to 128/1,000 live births in 2013 but rose to 132/1,000 live births in 2018. The infant mortality rate declined from 75/1,000 live births in 2008 to 69/1,000 live births in 2013 and 67/1,000 live births in 2018 (Nigeria Demographic and Health Survey [NDHS], 2018). The incidence of malaria was 313.8/1,000 in 2020 (WHO, 2021), accounting for 27 percent of the global burden of malaria. Malaria overburdens Nigeria's weak health system and is a major social and economic burden on the country. The entire population (estimated at 191 million) is at risk of malaria, which takes its greatest toll on children under age five and pregnant women. The 2015 Nigeria Malaria Indicator Survey (MIS) recorded a drop in malaria prevalence among children ages 6-59 months from 42 percent in 2010 to 27 percent in 2015 (MIS, 2015). The percentage of children with malaria in 2015 was 64 percent in Kebbi, 30 percent in Ebonyi, and 63 percent in Zamfara (MIS, 2015).²

Nigeria has scaled up malaria control interventions. The proportion of households owning one or more insecticide treated nets (ITNs) increased from just 8 percent in 2008 to 61 percent in 2018. Similarly, the proportion of children under age five reported to have slept under an ITN the night before the survey increased from 6 percent in 2008 to 52 percent in 2018. In addition, two-thirds of pregnant women in 2018 reported receiving two or more doses of IPTp during ANC, up from 27 percent in 2013 (NDHS, 2018).

In this context, USAID/Nigeria's approach to health programming is focused on (1) strengthening governance of health systems, (2) increasing demand for high quality healthcare services, and (3) increasing access to high quality health services. USAID/Nigeria's health sector development hypothesis is that increased and improved health system capacity, access to equitable health services, quality of health service provision, and government commitment and capacity to mobilize more resources will lead to more self-sufficient and effective management of essential health services, which in turn will contribute to a healthier population (USAID, 2020). Improved governance is expected to lead to increased funding for priority health programs, and increased demand for and access to high quality services are expected to result in reductions in maternal, infant, and child morbidity and mortality as well as a decrease in prevalence of diseases such as malaria.

Programming Approaches

The terms vertical and integrated are used to describe two seemingly dichotomous approaches to health programming, but in practice the extent of verticality or integration varies by project (Atun, Bennet, and Duran, 2008). For the purposes of this evaluation, the vertical approach (henceforth "disease-focused approach") is focused on malaria, and the integrated approach is focused on comprehensive primary healthcare (i.e., RMNCH+NM) and broad health system strengthening.

² Data collection for the 2015 MIS occurred in October and November 2015. Malaria prevalence determined by microscopy.

While there is an abundance of literature on the comparative effectiveness of disease-focused versus integrated health programming, most are opinion and thought pieces. Proponents of the disease-focused approach posit that disease-specific interventions are an effective way to maximize impact of available resources and increase accountability. They believe that disease-focused approaches lead to more rapid health results than integrated strategies that attempt to strengthen broader systems as a platform for service delivery, especially in weak health systems where disease-focused programs might be the only means of ensuring the delivery of selected priority disease-specific services (Atun et al., 2008). In contrast, proponents of integrated health programming argue that the approach is more cost effective and sustainable if fully integrated into public health systems (Msuya, 2015). They believe that disease-focused projects divert resources from and may undermine comprehensive primary healthcare (Levine, 2007).

Empirical evidence on the relative benefits of disease-focused versus integrated service delivery is limited but suggests that there is a role for disease-focused programming when a rapid response is needed, or as a temporary intervention when the PHC system is weak, or when target groups are difficult to reach. (Atun et al., 2008).

Theory of Change

A portfolio-level theory of change (TOC) guided the overall design of the evaluation. A working version of a general TOC was developed by the D4I evaluation team with input from USAID/Nigeria (Figures 1A and 1B). The TOC is not intended to capture every detail of how the specific inputs of each of the four activities lead to intended outcomes, but rather to illustrate the higher-level steps on the pathway to intended outcomes with an emphasis on points where the contributions of the four individual activities come together to influence outcomes.

Figure 1A shows how different types of outcomes that the four activities aim to influence work together to affect two ultimate outcomes: increased use of RMNCH+NM services and increased sustainability of health systems and health outcomes. Improved provider knowledge, attitudes, and practices (KAP) is expected to lead to improved client-provider interaction (CPI) and increased readiness of facilities to provide services is expected to contribute to increased use of services. The provider survey focuses on measuring improvement in provider KAP over time.

IHP and/or PMI-S have primary responsibility for these service delivery outcomes, but other partners contribute—GHSC-PSM is responsible for increasing the availability of essential drugs, diagnostics, and supplies (EDDS) which are needed to improve the readiness of facilities to provide services, and BA-N contributes to improved CPI by developing training materials on provider behavior change that aim to improve provider KAP. BA-N is also responsible for generating demand for quality health services at the community level which is expected to work synergistically with improved CPI and increased facility readiness to increase use of services. Increased demand for quality health services is also expected to contribute to increased sustainability of health systems and health outcomes by changing social norms and expectations around health services in the community.

All four activities are working toward improved health systems outcomes in health financing, leadership and governance, and advocacy and accountability which are expected to lead to improved sustainability of health systems and health outcomes. They are also working to support the service delivery and demand outcomes described above. IHP, in particular, is

working on several aspects of health financing to increase sustainability of health service outcomes. Their work in health financing also has the potential to contribute to increased demand for health services if it leads to reduced out of pocket expenditures for clients (e.g., through increased access to health insurance or reduced fees charged at health facilities). GHSC-PSM is working to strengthen financing of EDDS which is expected to lead to increased sustainability of their availability in health facilities. In particular, they are working to establish drug revolving funds (DRFs) in some states. BA-N contributes to this outcome by working to strengthen community capacity to participate in DRFs. IHP’s work in health financing broadly, most notably helping states access the Basic Health Care Provision Fund, which also has the potential to strengthen financing of EDDS.

Figure 1A. General high-level theory of change

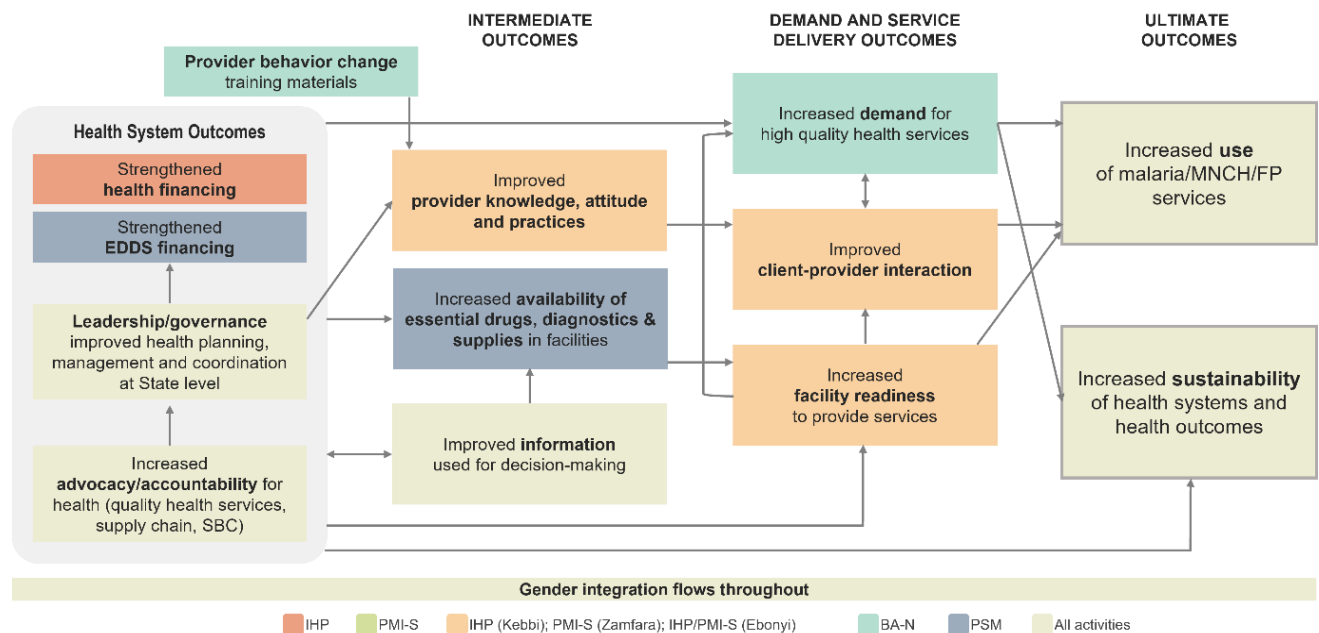
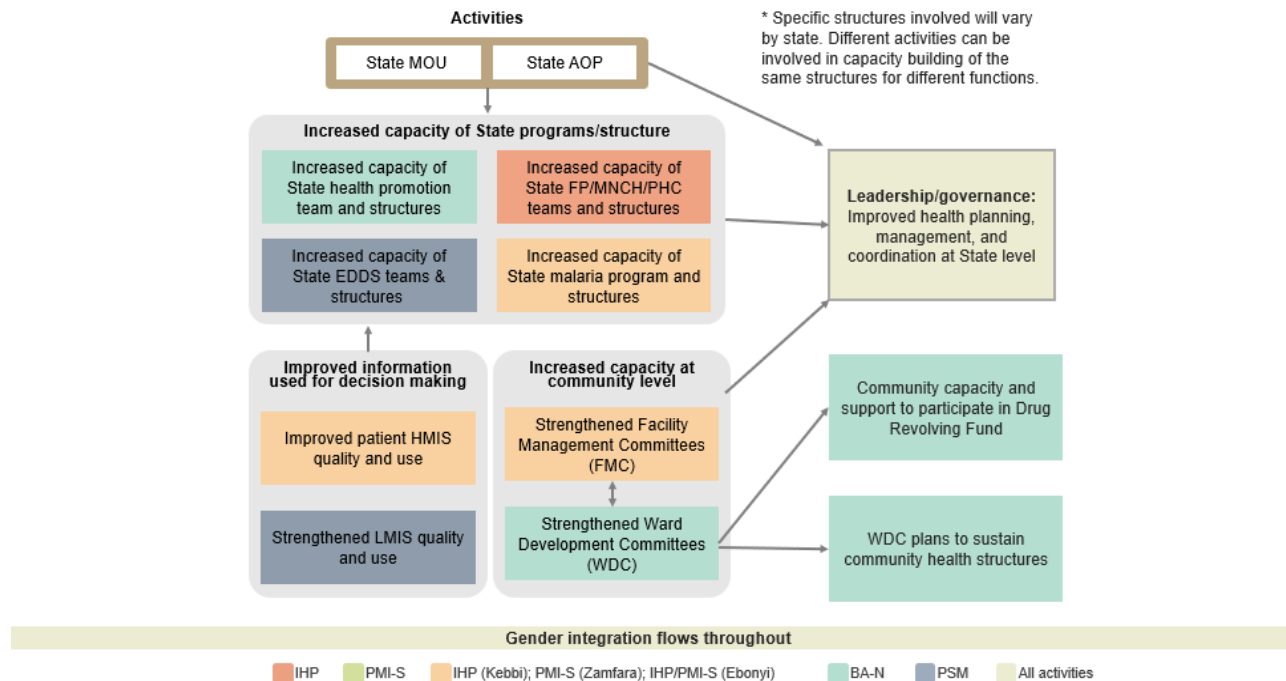


Figure 1B shows in broad terms how the four activities are working to strengthen leadership and governance at the state level. State memoranda of understanding (MOUs) and annual operational plans form the foundational frameworks to guide collaboration between state structures and the four activities in each state. Each of the four activities is working to strengthen the capacity of state teams and structures relevant to their mandate in each state guided by the state MOU and annual operational plan. The specific structures that each activity engages with varies by state but can include state malaria, MNCH, family planning, supply chain, and health promotion teams, as well as the Hospital Management Board, PHC Board, and the PHC Development Agency. In some cases, multiple activities are engaging with the same state structure for different purposes.

Improved information used for decision making is expected to strengthen leadership and governance; both IHP and PMI-S are working to strengthen patient information systems and GHSC-PSM is working to strengthen logistics management information systems (LMIS) to support this outcome. At the community level, BA-N is working to strengthen ward development

committees (WDCs) which is expected to lead to increased sustainability of community health structures. IHP and PMI-S are working to strengthen facility development committees (FDCs) to further support sustainability outcomes. FDCs and WDCs are expected to work together to support community health needs.

Figure 1B. Theory of change for improved leadership and governance outcome



All four activities are expected to advocate for inclusion of items relevant to their mandate in state annual operational plans and budgets in support of sustainability objectives. BA-N works with IHP to advocate for funding for health promotion in IHP’s health financing activities. BA-N also works with IHP to advocate for adoption of the national Community Health Influencers, Promoters, and Services (CHIPS) Programme.³

Figures 1A and 1B acknowledge that gender integration is required across all four activities. The activities, particularly IHP and BA-N, are implementing gender approaches to address issues of provider bias, provider gender preference, male engagement, GBV, child marriage, fistula, and other gender issues. The approaches include gender-sensitivity provider training and outreach to community structures such as WDCs and FDCs; integration of gender issues into job aids, guidelines, and training manuals; and training, technical guidance, and advocacy at state and federal government levels to create an environment that supports and addresses gender and social inclusion in implementation of state health policies and plans. It is expected that these gender integrated activities lead to more gender-equitable outcomes throughout both theories of change.

³ BA-N also conducts advocacy work at the community level with community and religious leaders to support social norms change related to health service use. This advocacy work supports the increased demand for health services element of the TOC in Figure 1A.

Methods

D4I is conducting a nonexperimental mixed methods portfolio evaluation of four USAID/Nigeria HPN activities. The portfolio evaluation includes a performance evaluation of health service delivery outcomes, including measures of volume, readiness to provide, and quality of services delivered. The performance evaluation⁴ will incorporate before and after comparisons and does not include an experimental control group.

The provider survey collects data on provider training, KAP, CPI, and quality of health service delivery. An HFA was also conducted as a separate component of the evaluation; the provider survey was implemented at all facilities included in D4I's HFA sample.

Sampling Design

This section provides an overview of the Nigeria HPN evaluation baseline HFA and provider survey sampling strategy. We sampled 120 public PHC facilities in each state and interviewed up to five providers present at the PHC on the day of the survey. A detailed sampling explanation is provided in Appendix A.

D4I's sampling objective was to obtain as comparable a sample as possible across the three states for the evaluation. A health facility had to meet four criteria to be eligible for inclusion in the D4I sample frame: the facility must be (1) a public health facility, (2) a PHC facility (no secondary or tertiary facilities), (3) receiving direct support from IHP or PMI-S, and (4) the ward's designated 'functional' PHC facility⁵ per Nigeria's PHCUOR policy, which maintains that there should be one functional primary healthcare center in each ward. The application of these criteria resulted in slightly different sampling strategies in each of the three states; D4I selected a representative sample of IHP-supported public PHCs in Ebonyi and Kebbi, and a comparable sample of PMI-S-supported public PHCs in Zamfara.

The D4I sampling frames in Ebonyi and Kebbi consisted of all public PHCs where IHP was working at evaluation baseline. IHP's selection of health facilities is based on the PHCUOR policy; IHP works in these designated 'functional' PHCs in program-supported wards in both Ebonyi and Kebbi. In both states, D4I restricted IHP's PHC list to include only public PHCs where IHP was working at evaluation baseline and drew a random sample of 120 wards, then selected the designated PHC in each sampled ward for a total of 120 facilities in Kebbi and 120 facilities in Ebonyi.⁶ As IHP works in the one state-designated PHC in each ward, the D4I baseline sample is also one designated PHC per ward.

PMI-S works in high-volume malaria facilities and often provides direct support to multiple facilities in a ward. PMI-S applies different criteria than IHP in selecting facilities for program support, including (1) that the facility is functionally on the DHIS2 (i.e., exists and is reporting), (2) the facility is accessible given security concerns, (3) staff strength, and (4) patient turnover. We sought to mirror the sampling approach used in Ebonyi and Kebbi in the Zamfara baseline evaluation sample frame but including only PHCs that PMI-S was directly working with. To

⁴ As defined by USAID Evaluation Policy, performance evaluations incorporate before-and-after comparisons, but generally lack a rigorously defined counterfactual. (USAID, 2020)

⁵ Thirty-seven of the 120 selected facilities in Zamfara were not the ward's 'functional' public PHC; see note below on PMI-S facilities.

⁶ IHP works only in public facilities in Kebbi, whereas they support both public and private health facilities in Ebonyi.

achieve this, the Zamfara sample frame was restricted to public PHCs where PMI-S was working in May 2021. The team drew a random sample of 120 wards, then selected the state-designated 'functional' PHC for the sampled ward if PMI-S was working in that facility. In cases where PMI-S was not working with the state-designated PHC in a sampled ward, D4I selected the public PHC where PMI-S was implementing project activities.⁷

In each sampled facility in Ebonyi, Kebbi, and Zamfara, the evaluation team interviewed up to five providers present in the facility on the day of the interview. For the purposes of this survey, eligible providers were defined as those health workers who provide outpatient services at the health facility. Providers were eligible for interview if (1) they were present at the facility on the day of the survey, (2) they see ANC, family planning, AND/OR sick children, and (3) they provided verbal informed consent to be interviewed. All eligible providers were interviewed at facilities with five or fewer eligible providers; in facilities with more than five eligible providers, field supervisors and enumerators were trained to use a random number table to implement random selection of five providers in the field.

Data Collection Instruments

The provider survey component of the evaluation addresses those parts of the TOC related to improved provider KAP, CPI, and quality of health service delivery. The provider survey instrument collected information related to malaria, child health services, ANC, and FP to explore breadth versus depth in outcomes when comparing integrated and disease-focused approaches. The integrated activities are expected to influence provider KAP for malaria, ANC, and FP, while the malaria-focused activities are expected to only influence KAP for malaria-related services, including prevention and treatment of malaria in children and in pregnancy. The provider survey instrument consisted of five sections:

1. **Background:** The background module collected information about providers' demographics, education, and clinical experience.
2. **Training:** The training module asked about training ever received and training received in the past 24 months related to general clinical in-service training, the diagnosis and/or treatment of malaria, child health services, FP services, ANC services, and laboratory testing for diagnostic services. Information about training providers was also collected.
3. **Clinical Vignettes:** The vignette module included five clinical vignettes related to malaria, ANC, and family planning. A pediatric malaria vignette was administered to health workers who regularly provide child health services for fever. Two ANC vignettes were administered to health workers who regularly provide ANC services; the first focused on hypertension in pregnancy and GBV, and the second on MIP. Health workers who regularly provide FP services were asked to complete two FP vignettes, one on implant side effects and the other on PFP; male engagement in family planning (MEFP) content was woven throughout both FP vignettes.

⁷ PMI-S was not working in the state-designated 'functional' PHC in all wards; in instances where one of these wards was sampled, D4I prioritized selecting for the baseline sample the public PHC where PMI-S was implementing project activities rather than including the ward's 'functional' PHC that was not receiving PMI-S support. We were able to sample 100 unique wards in Zamfara; we did not select the designated 'functional' ward PHC in 17 of these 100 wards.

4. **Provider Attitudes and Norms:** The provider attitudes and norms module focused on attitudes and perceived norms around clinical practices and gender. Providers were asked to indicate their agreement with statements about malaria case management, FP, and ANC service provision,⁸ and then were asked to describe how often they thought other providers in their LGA performed the activities.
5. **Gender Attitudes and Norms:** The final module of the provider survey focused on provider attitudes and perceived norms around gender. Health workers were asked to describe how strongly they agreed with gender-related statements concerning their own gender attitudes⁹ and their perceptions of gender norms and attitudes among other providers in their LGA who perform similar services.

The provider survey instrument is available in Appendix B.

Training and Fieldwork

DRMC implemented the provider survey¹⁰ under the guidance of D4I. DRMC and D4I led a lead trainer workshop in Abuja from June 14-21, 2021. Two lead trainers each from the three case study states attended the training. Training topics included an introduction to the study, COVID safety procedures, human research ethics, interviewing techniques, sampling of providers, role plays, field data management, use of tablets, and a question-by-question review of the data collection tools. The lead trainer team piloted the tools in three facilities in Bwari Area Council. Minor revisions were made to the tools which were then finalized.

State-level trainings were held in the three case study states from June 24-July 1, 2021. In each state, two lead trainers trained four data collection teams, each comprised of a supervisor and four enumerators. The training covered the same topics as the lead training and included two-days of field practice.

Data collection occurred from July 5-August 12, 2021. To ensure data quality, supervisors observed enumerators as they conducted a portion of their interviews. In addition, the data collection tools were programmed with numerous automated edit checks that notified the enumerator immediately if the data entered was not acceptable (for example, was out of a set range, or conflicted with data previously entered). The programming also required a response to all questions. Data managers at D4I ran quality control reports daily during data collection to confirm that data was received from all assigned health facilities.

The main challenge encountered during data collection was insecurity in Zamfara, and to a lesser extent in Kebbi, which required replacement of health facilities in wards assessed as unsafe by the data collection teams.

⁸ Provider attitudes and perceived norms around ANC practices were adapted from Breakthrough Research's Nigeria Behavioral Sentinel Survey baseline questionnaire (Johansson et al., 2020).

⁹ Questions about the provider's own gender attitudes were based on recent research by Doyle et al., 2021. Questions about provider perceptions of other providers' gender norms and attitudes were also derived from Doyle et al., 2021, as well as D4I's Family Planning Provider Gender Competency Assessment Tool (under development).

¹⁰ The provider survey was implemented alongside an HFA. Findings from the evaluation baseline HFA are available at <https://www.data4impactproject.org/publications/nigeria-hpn-evaluation-process-monitoring-results-round-1/>

Sampling and Response Rates

The replacement methodology for sampled wards that were not accessible due to security concerns in Kebbi and Zamfara is detailed in Appendix A.

In Kebbi, nine of the 120 originally sampled wards had to be replaced due to the security situation immediately before fieldwork. From this updated sample of 120 accessible wards, three were replaced during fieldwork.

Approximately 37 percent of the originally sampled wards in Zamfara were not accessible to data collection teams due to the security situation in the state. Appendix A describes the four-phased adaptive sample substitution approach the data collection teams followed in Zamfara; if the survey team could not safely travel to a selected facility, another ward was substituted following a pre-specified order. In practice, baseline surveys were implemented in all Zamfara wards where PMI-S was working that the data collection could safely visit. The evaluation team surveyed a second PMI-S supported facility in 24 Zamfara wards (20 percent of the Zamfara sample) to reach the 120 facility target sample size; all facilities selected were facilities that PMI-S is currently working in or is planning to work in.

All eligible health providers present at the PHC on the day of the survey were interviewed, with an average of three providers interviewed per facility in each state and a 100 percent provider response rate. The provider survey was administered to a total of 1,070 total health workers: 354 in Ebonyi, 371 in Kebbi, and 345 in Zamfara.

Analytical Approaches

The evaluation's overarching development hypothesis is that shifting to an integrated health programming approach from a disease-specific approach will lead to broader and more sustainable improvements in health system and health behavior outcomes. Because the different activities across the evaluation have different objectives and mandates in each state, D4I examined outcomes specific to malaria and outcomes for 'comparison' PHC services, specifically child health, FP, and ANC.

The provider instrument assessed malaria, child health, FP, and ANC outcomes in the TOC related to CPI and provider KAPs. The quantitative performance evaluation consists of trend analyses of indicators of interest between baseline and endline in each state and a comparison of trends across the three case study states. This baseline provider survey report presents descriptive statistics by state; we examine baseline differences across the three states using chi-squared tests when applicable.

Clinical Vignettes

We administered a series of clinical vignettes to providers to measure health workers' levels of essential knowledge and self-reported clinical practices in the child health, ANC, and FP service areas. A clinical vignette is a hypothetical scenario describing a typical visit from a patient; an iterative format is used to reveal case details and solicit health worker responses to open-ended questions about care processes, from taking the patient history to making a diagnosis and developing a treatment plan.

Descriptive analyses of baseline clinical vignette data included examination of response frequencies for each vignette question, as well as the development and analysis of vignette scores. The goal of vignette scoring analysis is to provide an overall summary of provider performance on each vignette. The scoring approach was modeled on examples from the provider vignette literature (Lohela, et al., 2016; Uribe, et al., 2018; Peabody & Liu, 2007), adapted to this evaluation’s context.

We developed a standard scoring rubric for each domain (e.g., patient history, physical exam, testing, diagnosis, etc.) of each vignette, with a modified approach for FP vignettes due to their different structure. Results from the preliminary rubrics were shared with USAID/Nigeria, USAID/Washington, IHP, and PMI-S. Expert consultation was held with these and other stakeholders to review and validate key decision points in the scoring approach, including rubric response items, point allocation, and contribution of vignette domains to total scores. The final revised rubrics were then used for scoring and are available in Appendix C.¹¹ Clinical vignette data processing and analysis steps are outlined below:

1. Examination of raw response frequencies based on precoded response options¹² for tablet-based data collection.
2. Examine write-in ‘other’ responses for each question. Each write-in response is reconciled as appropriate:
 - a. Assigned to a pre-coded response category;
 - b. Recoded to a new response category; or
 - c. Maintained as an unrecoded other response.
3. Calculate domain scores for each vignette based on the scoring rubric.
4. Calculate the weighted total score for each vignette, where the total score is weighted such that each vignette domain contributes equally to the overall score.

Item-specific response frequencies were tabulated by state and are presented in detail in Appendix D, Section D3. Responses grouped per rubric criteria are presented graphically in the clinical vignettes results chapter, along with tabulated summary statistics for domain and weighted total scores for each vignette.

¹¹ It was determined during stakeholder rubric validation that the antenatal care clinical vignette focused on hypertension in pregnancy and gender-based violence could not be used to measure provider knowledge and practice around preeclampsia/hypertension in pregnancy. Based on both pre-coded and write-in data collected for this vignette, it could not be determined if respondents were truly reporting preeclampsia diagnosis and treatment, or whether hypertension in pregnancy and preeclampsia responses were conflated as preeclampsia during data entry. In light of this data collection limitation, hypertension in pregnancy results are not presented in the main results section of the report, but are available in Appendix E; only the gender-based violence content from this clinical vignette was analyzed and scored for the evaluation baseline assessment.

¹² The survey instrument was pre-programmed for tablet-based data collection. Incorrect and irrelevant response options were included if they were anticipated to be common responses to facilitate data collection, but also to check for specific deviations from clinical guidelines (for example, prescribing antibiotics for a malaria diagnosis). Each question had an ‘other’ response option for which the data collectors, who had clinical backgrounds, would type in specific responses which were then hand-coded during data processing and analysis.

Gender Scales

Health workers were asked to describe their agreement with gender-related statements, including both their own attitudes and their perceptions of other providers in their LGA who perform similar services. The analysis of both the provider gender attitudes scale and the provider perceived LGA gender norms scale followed the methodology of Doyle, et al. (2021). Factor analyses were used to refine the scores and assess scale item reliability.

Limitations

There are three notable limitations of the provider survey component of the evaluation: (1) evaluation versus activity baseline, (2) potential measurement error and respondent bias, and (3) sampling limitations due to an unstable security situation in northern states.

Evaluation Baseline

Since this is a multi-activity evaluation, the four different HPN activities are at different points in their implementation in the different case study states. Therefore, the results presented in this report do not represent a baseline for individual activities, but rather they reflect a starting point of where project activities are at the evaluation baseline (July/August 2021). At the time of baseline data collection:

- IHP had been supporting facilities in Kebbi for over two years and facilities in Ebonyi for approximately 15 months;
- PMI-S had been supporting facilities in Ebonyi for approximately 18 months and in Zamfara for 11 to 12 months;
- GHSC-PSM activities had been active in all three states for five years; and
- BA-N activities had been active for just under four years in all three states.

The IHP and PMI-S activities are most directly related to the outcomes that are the focus of the provider survey. The timing of these two activities drove the timing of the evaluation baseline, and baseline analysis does not explicitly account for first year implementation planning versus actual implementation of provider-level activities (e.g., PMI-S was finalizing the selection of their beneficiary facilities at the time of D4I evaluation sample selection).

Potential Measurement Error and Respondent Bias

The clinical vignette, provider norms, and gender attitudes sections of the provider instrument assess health worker knowledge, attitudes, and self-reported practices. These measurement approaches capture hypothetical reported behaviors, not necessarily what happens in practice. Provider responses in these sections may also be subject to social desirability bias. We do not expect these potential measurement error and respondent bias limitations to differ between baseline and endline data collection. The provider data will yield information to assess whether knowledge, attitudes, and self-reported practices improve over time, as well as whether improvement varies depending on whether the focus of provider training is narrow (fever/malaria management) or more diverse (integrated PHC).

Sample Limitations Due to Security Instability in Northern States

Security instability in Zamfara and northern Kebbi LGAs made some health facilities inaccessible and unable to be sampled. Due to these sampling restrictions, these findings may not be representative of all the locations where the activities work. D4I adapted its sampling strategy to be reflective of the current situation on the ground and will apply lessons learned from baseline data collection to endline surveys. D4I plans to revisit the same facilities at endline, so although the baseline sample may not be representative of all facilities PMI-S worked in in Zamfara, the longitudinal sample should be preserved assuming there are no difficulties accessing those same facilities at endline.

Ethical Considerations

The evaluation protocol was reviewed by the University of North Carolina Office of Human Research Ethics, which determined that the study (#20-2722) did not constitute human subjects research as defined under federal regulations [45 CFR 46.102 (e or l) and 21 CFR 56.102I(e)(l)] and did not require IRB approval. In Nigeria, the evaluation protocol was reviewed by the National Health Research Ethics Committee (NHREC) which determined that according to the National Code for Health Research Ethics, the study met the criteria for exemption and was therefore approved as exempt from NHREC oversight (NHREC/01/01/2007-04/12/2020).

Gender Integration

Gender issues are integrated across the four USAID/Nigeria HPN activities, D4I's evaluation TOC, and throughout the provider survey. Provider trainings addressed gender-related attitudes and norms related to malaria, FP, and ANC services. Provider interviews included questions on relevant gender-related attitudes and norms covered by trainings. Gender issues were explicitly integrated into three of the vignettes: the ANC vignette on hypertension in pregnancy includes GBV content, and both FP vignettes included content on male engagement.

The evaluation team and data collection staff included men and women. Evaluation products include analysis of and reflection on gender-related results, and data use and action planning activities stemming from the baseline provider survey results will seek to help stakeholders interpret these results and plan for programming adjustments as needed.

Results: Provider Characteristics

The first section of the provider survey collected details on health worker characteristics including basic demographics, occupational status and category, professional experience and tenure, and health services provided. A detailed results table for all provider characteristics is presented by state in Appendix D, Table D1.

Provider Demographics

The provider survey was administered to 1,070 total health workers, with almost equal representation from each state. The proportion of female providers varied by state ($p < 0.001$), with the highest percentage of female providers in Ebonyi (91.8 percent), followed by Kebbi (57.4 percent) and Zamfara (33.6 percent) (Appendix Table D1).

The average age of providers was 40 years in each state, with similar age distributions across the states (Figure 2A). While the average years of education was 15 years in each state, there were some notable differences in the distributions across states. Health workers in Ebonyi reported more education than in Kebbi or Zamfara ($p < 0.001$) (Figure 2B).

Figure 2A. Age of providers (%), by state ($p=0.196$)

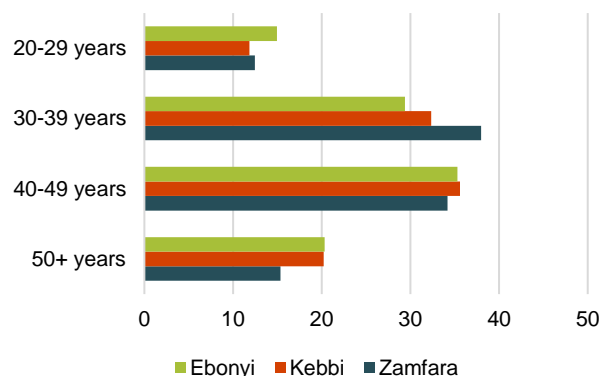
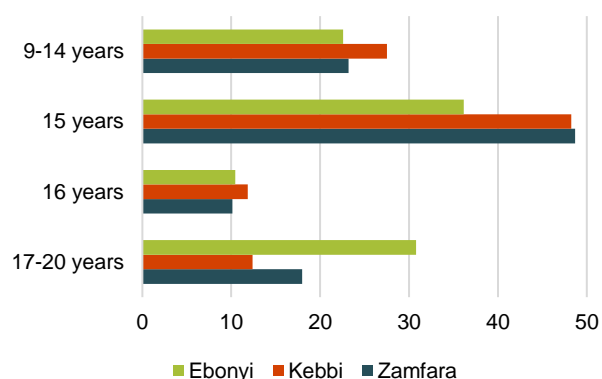


Figure 2B. Years of education (%), by state ($p < 0.001$)



Sample sizes: 354 Ebonyi, 371 Kebbi, and 345 Zamfara

Occupational Category and Provider Status

Doctors,¹³ registered nurses, midwives, nurse midwives, public health officers,¹⁴ and laboratory scientists were categorized as professional providers. The nonprofessional health worker cadre included public health associates, laboratory technicians, environmental health officers¹⁵ and associates, pharmacy and dental technicians, health information/medical records technicians,

¹³ Only two doctors were interviewed, one in Ebonyi and one in Kebbi.

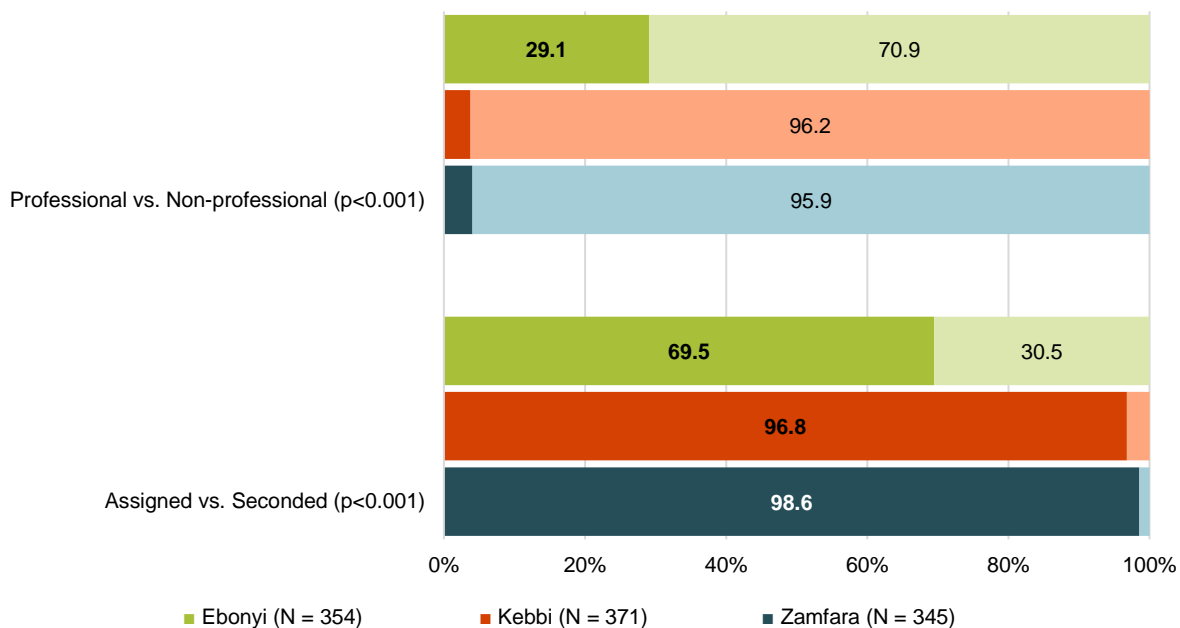
¹⁴ 'Public health officer' is not an official health worker cadre in Nigeria but is used in the evaluation to describe other professional clinical staff that are engaged in public health activities.

¹⁵ The expected roles and responsibilities of Environmental Health Officers at public PHCs include visiting homes to support maintenance of proper sanitary conditions (including inspections, reporting, and prescription of fines after warnings) and visiting food vendor/restaurant premises for inspection, routine tests for food handlers, and prescription of fines and closure of premises. In practice, environmental health officers tend to be deployed for specific auxiliary clinical functions due to human resources for health shortages. These auxiliary functions typically include supportive duties in the PHCs and can include providing support to ANC and FP clinics or supporting the PHC's outpatient department by taking readings (i.e., weight, temperature, etc.).

community health officers, community health extension workers (CHEWs), junior community health extension workers (JCHEWS), community nurses and midwives, nurse aids, and other health workers with no technical qualifications.

Nearly 30 percent of providers interviewed in Ebonyi were professional healthcare workers, compared to 4 percent in Kebbi and Zamfara ($p < 0.001$). In Ebonyi, registered nurses and registered nurse midwives comprised most of the professional health cadre, compared to registered midwives in Kebbi and Zamfara. Most nonprofessional health workers in all three states were CHEWs, followed by JCHEWS. Approximately 15 percent of nonprofessional providers in Kebbi and Zamfara were environmental health officers, compared to only 2 percent in Ebonyi, which is important to note as environmental health training is not specific to most clinical practice. Lastly, nearly all providers in Kebbi and Zamfara were assigned to their current facility, compared to 30 percent who were seconded in Ebonyi (Figure 3).

Figure 3. Occupational category and provider status, by state



Note: Dark shading indicates professional occupational category at the top of the graph and assigned provider status at the bottom.

Experience and Tenure

In each of the three states, providers reported receiving their technical qualifications or basic training an average of 13 years ago (Figure 4A). Providers in Ebonyi had a significantly shorter tenure at their current facility than providers in Kebbi or Zamfara ($p < 0.001$). Health workers had been at their current facility an average of three years in Ebonyi, with nearly 30 percent only working at the current facility for six to 11 months. The averages were higher in Kebbi and Zamfara (eight and 10 years, respectively), with 26.2 percent of providers in Kebbi and 38.6 percent in Zamfara working at their current facility for eleven or more years (Figure 4B). These differences may be explained in part by Ebonyi providers being more likely to be seconded in their current role (30.5 percent, Figure 3).

Figure 4A. Years since received qualification/basic training, by state ($p=0.007$)

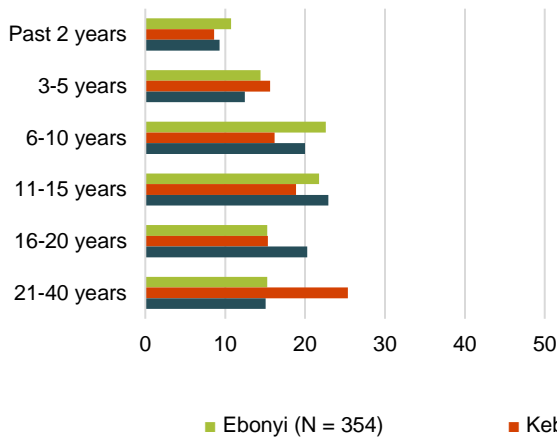
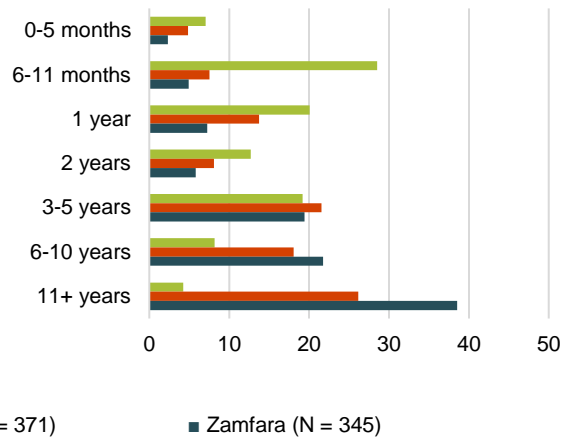


Figure 4B. Time working at current facility, by state ($p<0.001$)



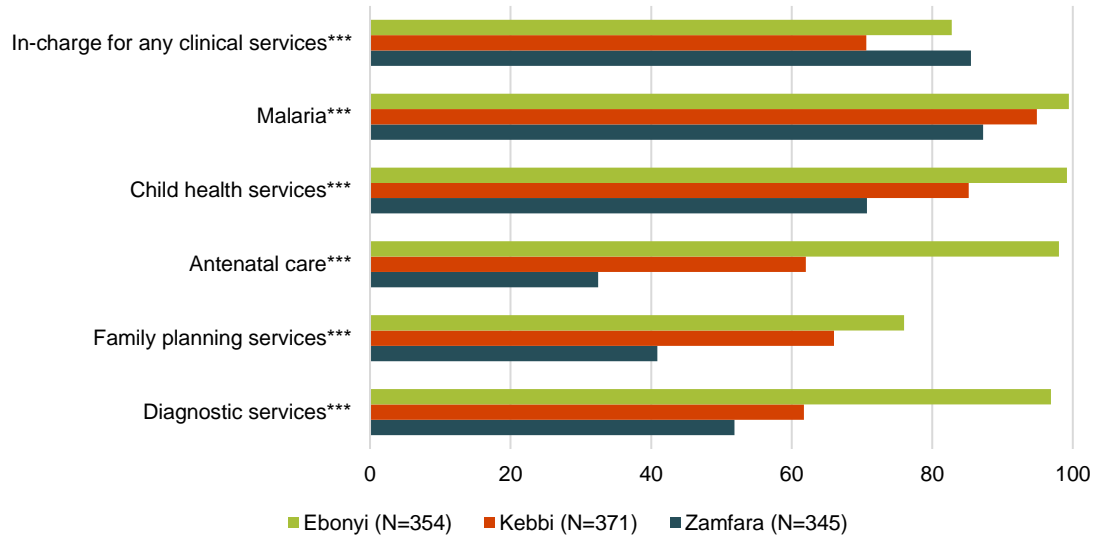
Services Provided

The provider survey focused on four major clinical care areas: malaria, child health services, ANC, and FP. Health workers were asked if they were in-charge for any clinical services, whether they provided specific services in their current position at the sampled facility, and whether they *regularly* provided services for pediatric fever, ANC, or FP.

Most respondents were in-charge for at least one clinical service, ranging from 85.5 percent in Zamfara to 70.6 percent in Kebbi ($p<0.001$, Appendix Table D1). The largest percentage of surveyed health workers performing each of the specified services was in Ebonyi, where nearly all health workers provided malaria, child health, ANC, and diagnostic services, and over three-fourths provided FP services. The lowest percentage of surveyed health workers performing specific services across all service areas was in Zamfara. Nearly all providers who provided diagnostic services in their current position at the sampled facility performed malaria rapid diagnostic test (mRDTs), while very few conducted malaria microscopy (0.9 percent in Ebonyi, 6.1 percent in Kebbi, and 6.2 percent in Zamfara, $p=0.001$) (Appendix Table D1).

In Ebonyi, the same health workers were likely to perform multiple types of services, but this was less common in Kebbi and Zamfara, particularly for ANC and FP (Figure 5). The percentages of providers reporting that they *regularly* provided a service were similar to the percentages reporting that they performed the service at all in their current role (Appendix Table D1).

Figure 5. Services provided in current position at facility, by state



Note: *** $p < 0.001$

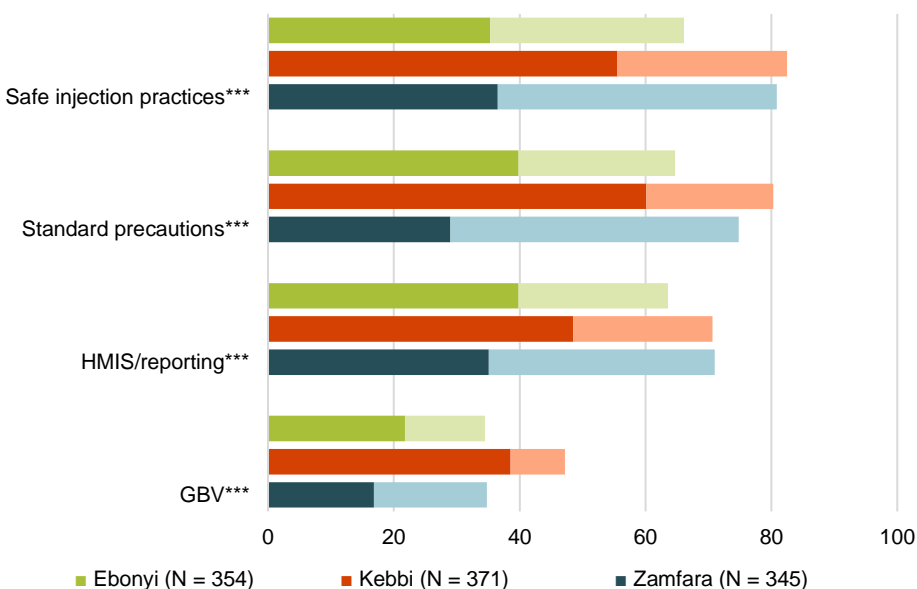
Results: Provider Training

Providers were asked about any in-service training, training updates, or refresher trainings they had received as either a stand-alone training or covered within another training topic. Health workers indicated if they had ever received the training, and if so, whether they had received training within the past 24 months. Results presented here are restricted to those providers who personally provided specific services in their current position in the sampled facility; expanded results for all providers are presented in Appendix D, Table D2.

General Training

General training topics of interest included safe injection practices, standard precautions around hygiene and injury prevention, health management information systems or reporting requirements, and GBV. The percentage of providers who reported ever receiving training on various general clinical topics was high in Kebbi and Zamfara (roughly 70 percent to 80 percent of providers indicating they had ever trained on the specified topics), compared to fewer than two-thirds of Ebonyi providers. Training was most recent in Kebbi and least recent in Zamfara; among those providers who indicated they had received training on a general topic, over 70 percent had been trained in the past two years in Kebbi, compared to 53 percent to 63 percent in Ebonyi and fewer than half in Zamfara. GBV training was low across all three states (Figure 6).

Figure 6. Percentage of providers who received training on general topics, by state



Note: The total length of each bar represents the percentage of health workers who ever received training; dark shading indicates training was in the past two years and light shading indicates over two years ago. *** p<0.001.

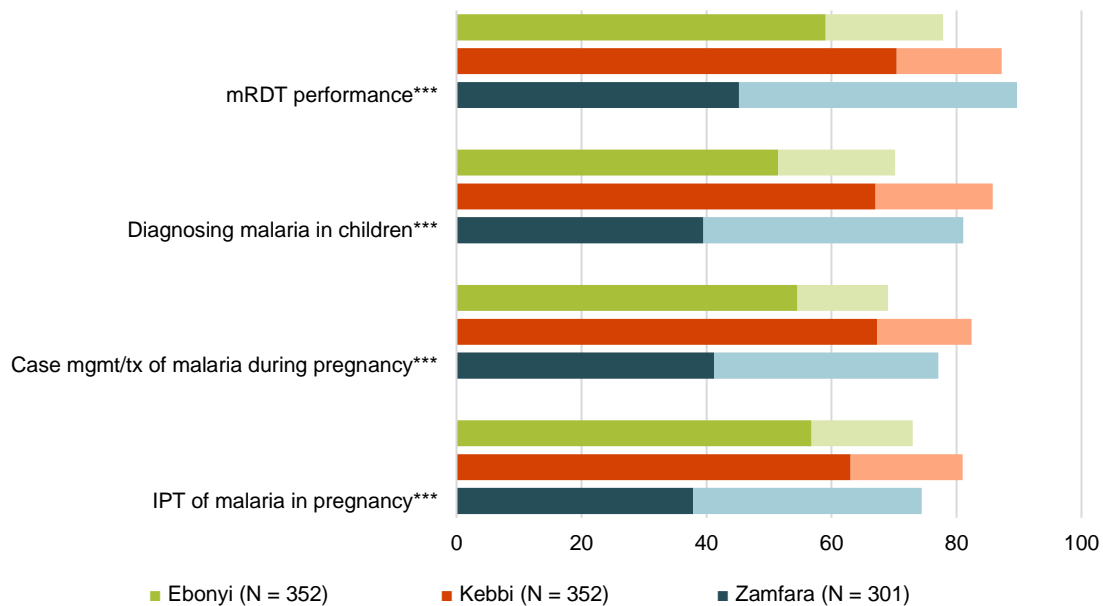
Malaria

Nearly all providers in Ebonyi (99 percent) and Kebbi (95 percent), and 87 percent in Zamfara, reported that they diagnosed or treated malaria in their current position. The percent of malaria

providers who reported receiving training in any of the specified malaria topics was lower in Ebonyi (79 percent) than Kebbi (89 percent) and Zamfara (95 percent, $p < 0.001$).

Training levels for malaria-specific topics including mRDT performance, diagnosis of malaria in children, case management/treatment of malaria in pregnancy (MIP), and IPT of MIP are presented in Figure 7. Training ever received on various malaria topics was highest in Kebbi, where approximately 80 percent of training was reported during the past two years. While overall training levels were higher in Zamfara than Ebonyi, nearly half of malaria training reported in Zamfara occurred more than two years prior to the survey, compared to between 73 percent to 79 percent in Ebonyi.

Figure 7. Percentage of malaria providers who received training on malaria topics, by state



Note: The total length of each bar represents the percentage of health workers who ever received training; dark shading indicates training was in the past two years and light shading indicates over two years ago. *** $p < 0.001$

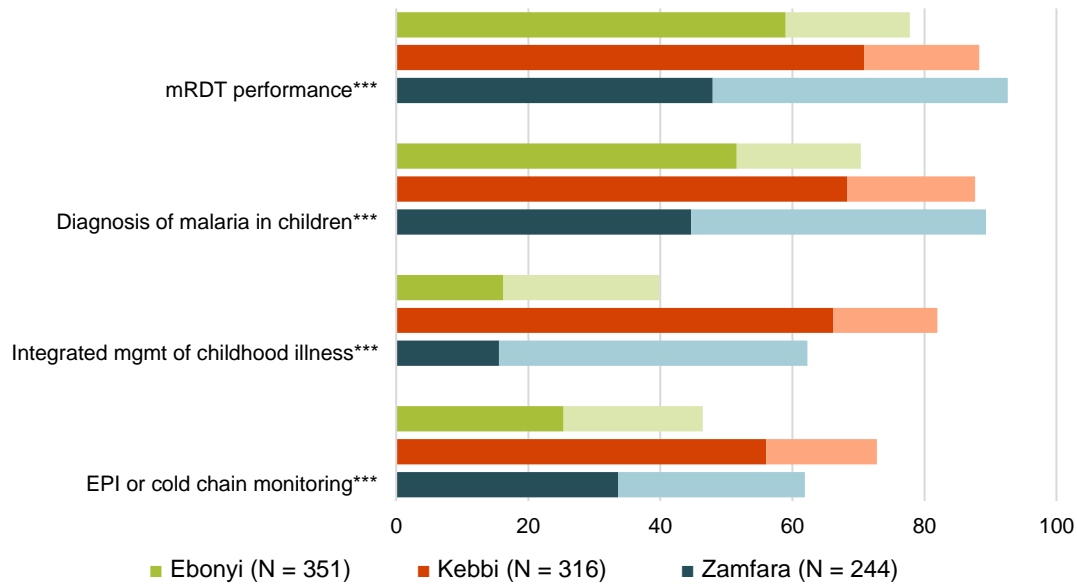
Child Health Services

The percentage of surveyed providers who reported personally treating children as part of their current position at the sampled facility differed among states, with 99.2 percent of providers in Ebonyi, 85.2 percent in Kebbi, and 70.7 percent in Zamfara ($p < 0.001$) currently providing services. Among those providers currently treating children, 94 percent in Kebbi and Zamfara reported receiving any training on topics related to child health or childhood illness, compared to 80.9 percent in Ebonyi ($p < 0.001$).

Child health providers were asked about two general child health topics (integrated management of childhood illness and Expanded Program on Immunization (EPI) or cold chain monitoring) and two malaria-related topics (diagnosis of malaria in children and mRDT performance). Malaria-related training levels were higher and more recent in each state than general child health topics. The percentage of providers who had ever received training on integrated management or EPI/cold chain monitoring was highest in Kebbi (73 percent to 82

percent), followed by Zamfara (62 percent), and lowest in Ebonyi (40 percent to 46 percent). Among those providers who had received training on the two general child health service topics, roughly 80 percent had done so in the past two years in Kebbi, compared to half or fewer in Ebonyi and Zamfara (Figure 8).

Figure 8. Percentage of child health service providers who received training on child health topics, by state

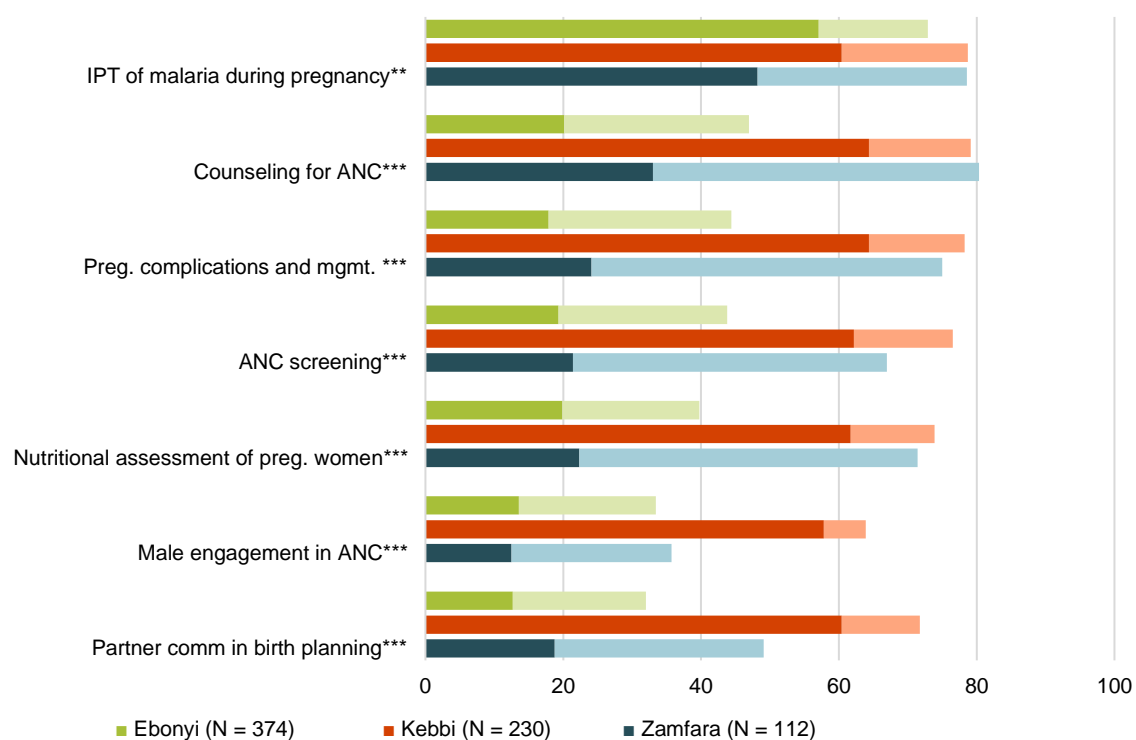


Note: *** $p < 0.001$.

Antenatal Care

Ninety-eight percent of respondents in Ebonyi, 62 percent in Kebbi, and 32 percent in Zamfara reported providing ANC services in their current position ($p < 0.001$). ANC training topics included ANC screening (e.g., blood pressure, urine glucose and protein), ANC counseling (e.g., nutrition, family planning, newborn care), complications of pregnancy and their management, nutritional assessment of the pregnant woman, IPT of malaria during pregnancy, partner communication in birth planning, and male engagement in ANC (Figure 9).

Figure 9. ANC providers who received training on ANC topics, by state



Note: The total length of each bar represents the percentage of health workers who ever received training; dark shading indicates training was in the past two years and light shading indicates over two years ago. ** $p < 0.01$, *** $p < 0.001$.

Levels of training on ANC topics were highest in Kebbi, where most ANC-specific training was received in the past 24 months. While there was low ANC service provision in Zamfara, providers tended to have moderate to high levels of training, although most of the training was reported to have occurred more than two years ago. Training specific to male engagement and partner communication in ANC and birth planning were low in Ebonyi (33 percent) and Zamfara (36 percent to 49 percent), and higher in Kebbi (64 percent to 72 percent).

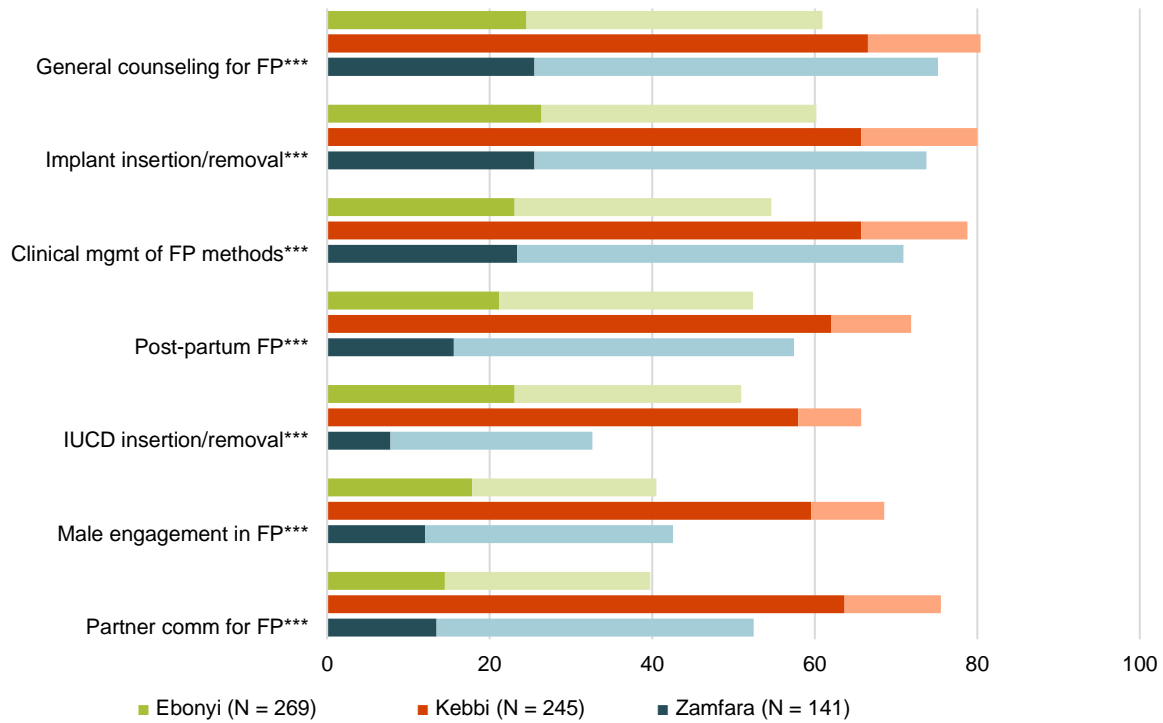
Family Planning

The percentage of respondents that reported providing FP services in their current position was highest in Ebonyi (76 percent), followed by Kebbi (66 percent) and Zamfara (41 percent). The percent of FP providers who reported receiving training in any of the specified FP topics ranged from a low of 65 percent in Ebonyi to a high of 84 percent in Kebbi ($p < 0.001$). Training topics included general counseling for FP, intrauterine contraceptive device (IUCD) insertion/removal, implant insertion/removal, clinical management of FP methods, PFP, partner communication for family planning, and MEFP.

FP training levels were highest in Kebbi, where over 80 percent of training occurred within the past two years. Most training in Ebonyi (50 percent to 55 percent) and Zamfara (65 percent to 76 percent) occurred over two years ago. Training levels varied widely by topic in Zamfara, from a low of 33 percent of providers reporting ever receiving training on IUCD insertion or removal,

to a high of 75 percent reporting ever being trained in general FP counseling. Training specific to male engagement and partner communication for FP were low in Ebonyi (40 percent) and Zamfara (43 percent to 53 percent) compared to Kebbi (69 percent to 76 percent, Figure 10).

Figure 10. Percentage of family planning providers who received training on family planning topics, by state

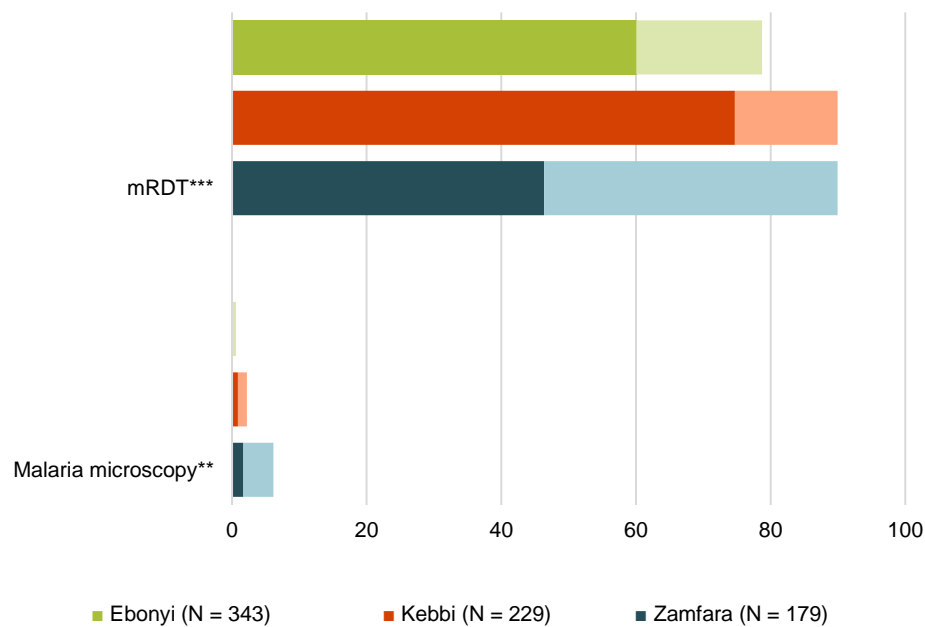


Note: *** p<0.001.

Diagnostic Services

Lastly, providers were asked if they personally conducted laboratory tests in their current position as part of their work for the sampled facility. Ninety-seven percent of providers in Ebonyi, 62 percent in Kebbi, and 52 percent in Zamfara ($p < 0.001$) provided diagnostic services, mostly mRDT (very few providers perform malaria microscopy services). Among providers who currently conducted laboratory testing, 90 percent in Kebbi and Zamfara and 79 percent in Ebonyi had received training in either mRDT or malaria microscopy ($p < 0.001$). Nearly all of the reported training was for mRDT services, the majority of which occurred in the past two years across all three states (Figure 11).

Figure 11. Percentage of diagnostic service providers who received training on specific diagnostic tests, by state

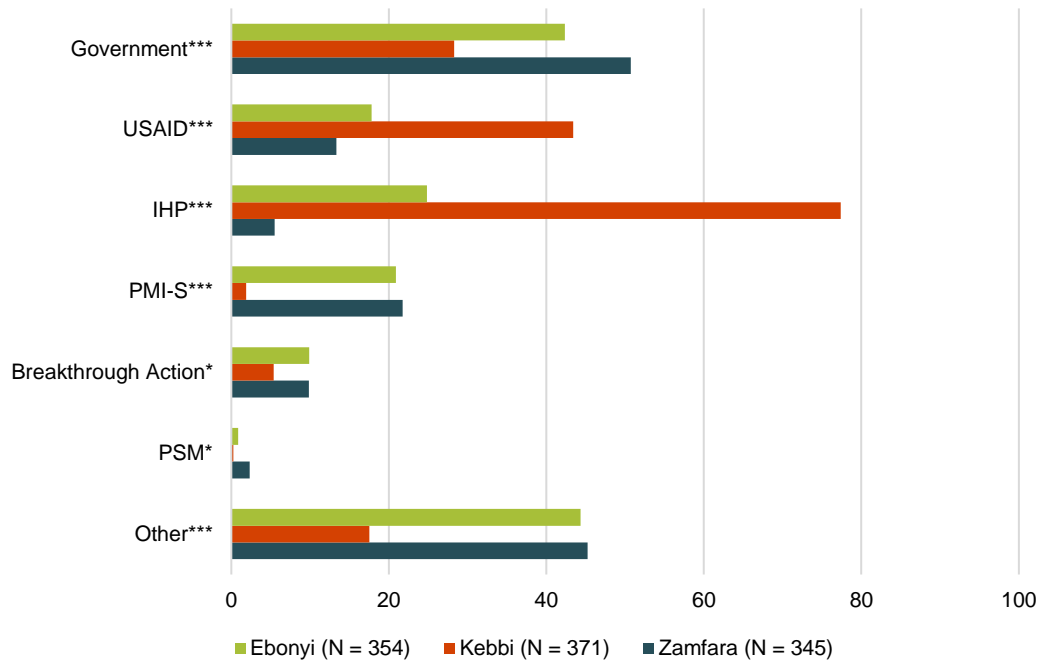


Note: ** $p < 0.01$, *** $p < 0.001$.

Training Providers

All interviewed health workers who reported ever receiving general, malaria, child health, ANC, FP, or diagnostic training were asked to name all groups that provided any received trainings. Figure 12 presents the most frequently named training providers, with most trainings provided by IHP, the Government of Nigeria, and USAID.

Figure 12. Training providers reported by ever-trained health workers, by state



Note: The most common 'other' training providers included UNICEF, Marie Stopes International, WHO, Save the Children, AFENET, Saving One Million Lives initiative, MNCH2, MCSP, MAPS, Malaria Consortium, MSF, and Jhpeigo. * $p < 0.05$, *** $p < 0.001$.

Results: Clinical Vignettes

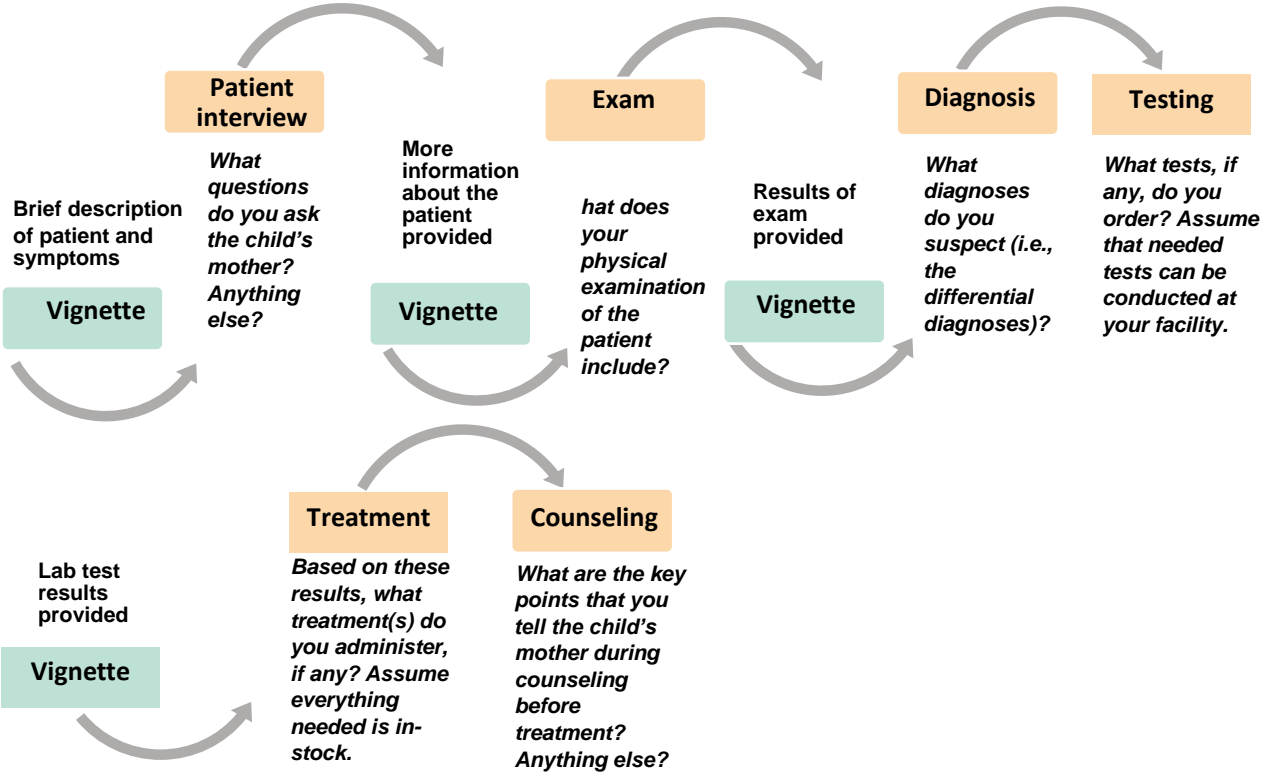
Vignette Approach

Vignettes were used to assess providers’ knowledge and self-reported clinical practices. Five clinical vignettes were administered that covered malaria in children, MIP, hypertension in pregnancy and GBV, side effects of FP implants, and PFP. Scores were calculated for each vignette based on a standard rubric (Appendix C).

Vignette Structure

The structure of the vignettes reflected a typical medical visit that has a provider carrying out a patient interview based on the presenting complaint, followed by clinical examination, then investigations to support differential diagnosis, and thereafter, treatment and counseling. These are shown in orange in Figure 13. The patient or caregiver’s responses to the provider’s inquiries and other information elicited from examination and testing are given to the provider to enable them to decide on how to manage the patient or client. These are shown in green (Figure 13).

Figure 13. Vignette structure



Child Health Vignette

Respondents

Providers were eligible to complete the child health vignette if they regularly provided child health services for fever. Nearly all providers in Ebonyi provided such services, compared to 84 percent in Kebbi and 70 percent in Zamfara ($p < 0.001$). A total of 904 health workers across the three states responded to the child health vignette.

Scenario

The child health vignette involved a hypothetical boy, age five years, who was tired, hot to the touch, and had loss of appetite and a mild cough. History taking revealed that the child was weak, listless, had no vomiting or diarrhea, drinks spring water, and used a shared pit latrine. On exam the boy was found to be a well-nourished 20kg child who was alert, not pale, and had an axillary temperature of 38.5°C. The rest of the physical examination was normal.

Full provider response frequencies for each domain of the child health vignette are provided in Appendix D, Table D3.1. Figure 14 presents responses included in the child health vignette scoring rubric and vignette scores are given in Table 2.

Patient History

Key items health workers were expected to ask about during the medical history were the patient's temperature, treatments given thus far, vomiting or diarrhea, the child's appetite and drinking, details about the child's cough, the family's housing, water, and sanitation conditions, and background information on household members. Most providers in Kebbi and Zamfara asked about temperature and diarrhea/vomiting, whereas providers in Ebonyi focused on treatments given (Figure 14, Panel A). Reported inquiries into the family's water and sanitation environment were generally low (22 percent in Ebonyi, compared to 6 percent in Kebbi and 8 percent in Zamfara, $p < 0.001$).

A maximum of seven points was possible for the history domain of the child health vignette. Providers in each state received an average of 31 percent of possible points (Table 2).

Physical Exam

Providers were expected to examine the child's weight and nutritional status, temperature, pulse and respiratory rate, to check for signs of dehydration and examine pallor, and to examine the child's ears and throat for infection. Most providers indicated they would take the child's temperature. Providers in Ebonyi were more likely to indicate their exam would include assessing the child's heart and respiratory rates, weight/nutritional status, and pallor (Figure 14, Panel B). Child health exam domain scores were significantly higher in Ebonyi, where providers received an average of 47 percent of the six possible points, compared to 41 percent in Kebbi and 39 percent in Zamfara ($p < 0.001$).

Preliminary Diagnosis

Nearly all health providers correctly identified malaria as the likely diagnosis. In Ebonyi, additional preliminary diagnoses of pneumonia and upper respiratory infection were reported

by approximately 20 percent of providers each (Figure 14, Panel C). The average child health diagnosis domain score was 67 percent in Ebonyi and 55 percent in Kebbi and Zamfara ($p < 0.001$), reflecting the low prevalence of providers who reported considering potential non-malaria preliminary diagnosis (Table 2).

Tests Ordered

Respondents were next asked what test(s) they would order; 99 percent of providers across the three states correctly indicated a mRDT. The percentage of providers ordering mRDT and the percentage ordering microscopy testing was greater than 100 percent in two states, indicating some respondents would order both tests (103 percent in Kebbi and 107 percent in Zamfara, Figure 14, Panel D).

Providers received one point in the testing domain score if they mentioned either mRDT or malaria microscopy and received an additional point if they mentioned testing hemoglobin, hematocrit, or ordering a chest X-ray. The average score among providers ranged from 54.5 percent in Kebbi to 66.5 percent in Ebonyi ($p < 0.001$, Table 2).

Treatment

After the provider was asked to give a preliminary diagnosis and order laboratory tests, the interviewer revealed that testing indicated the boy had malaria. Nearly all providers correctly responded that they would prescribe artemisinin-based combination therapy (ACT) for malaria. Fifty-six percent of providers in Ebonyi, 42 percent in Kebbi, and 38 percent in Zamfara indicated they would treat for fever, which is good practice to prevent convulsions in cases of high fever (Figure 14, Panel E). Some providers also recommended antibiotics, contrary to guidelines and training materials; antibiotic overuse was particularly high in Zamfara, where 100 percent of providers indicated they would prescribe ACT and 42 percent would also prescribe antibiotics (Appendix D3, Table D3.1).

Providers received one point for administering ACT, and an additional point if they treated for fever. The average score in Ebonyi was 77 percent, compared to just under 70 percent in Kebbi and Zamfara ($p < 0.001$, Table 2).

Counseling

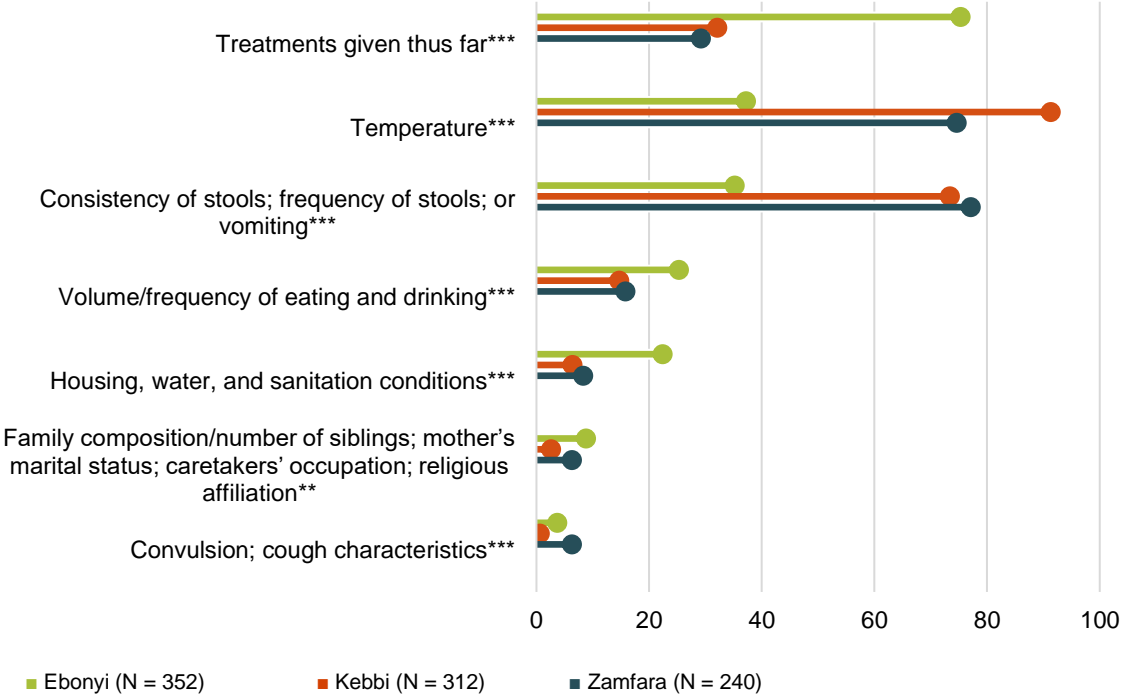
Health workers were asked to describe the counseling they would give the boy's mother before administering treatment. Key topic areas included (1) explanation of the diagnosis, (2) discussion of malaria transmission and prevention methods including bed nets and environmental sanitation, (3) how to administer medications and the importance of completing medication as prescribed, and (4) signs indicative of worsening malaria infection and when to return for follow-up. While most providers discussed prevention strategies and medications, very few indicated that they would explicitly discuss the diagnosis with the patient's mother (5 percent Ebonyi, 1 percent Kebbi, and 6 percent Zamfara, Figure 14, Panel F). The average counseling domain score was slightly over 50 percent of five possible points in each state.

Child Health Service Provision Quality Scores

A summary of the child health vignette domain-specific and overall weighted scores is presented in Table 2. The mean total child health vignette score was five percentage points higher in Ebonyi than in Kebbi or Zamfara (56 percent compared to 51 percent, $p < 0.001$), and domain-specific scores were generally significantly higher in Ebonyi than Kebbi or Zamfara.

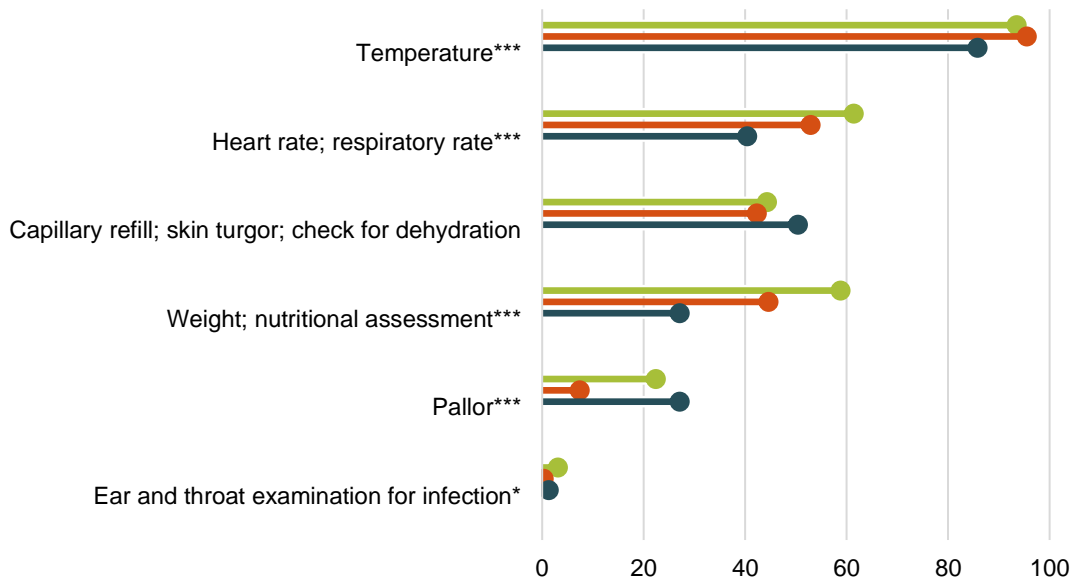
Figure 14. Child health vignette rubric response frequencies, by state

A. Percentage of health workers who asked about aspects of medical history

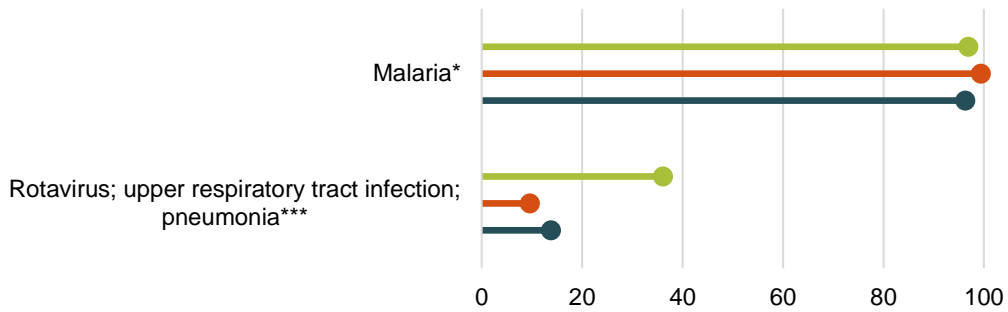


Notes: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

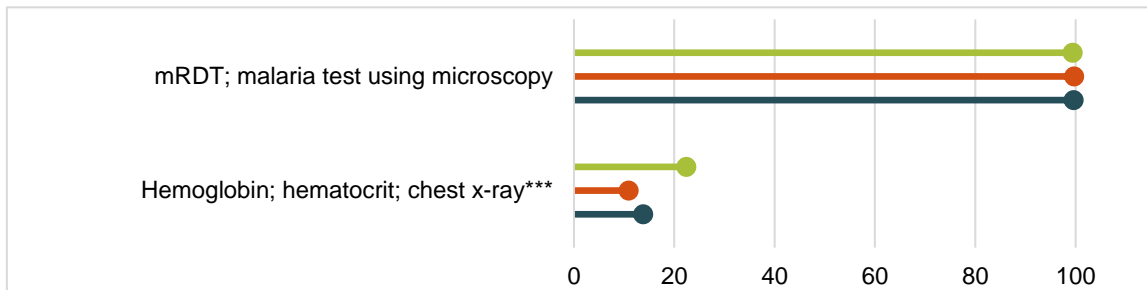
B. Percentage of health workers indicating specific physical examination



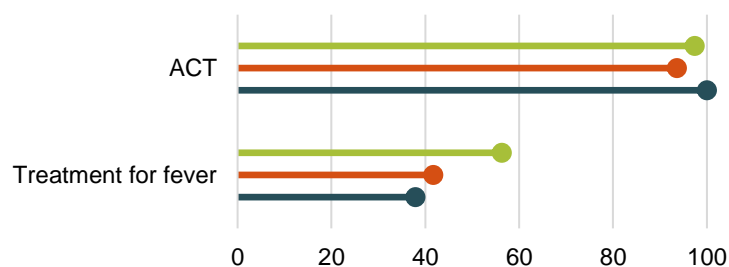
C. Percentage of health workers indicating specific preliminary differential diagnoses



D. Percentage of health workers who ordered specific laboratory tests



E. Percentage of health workers who mentioned specific treatment options



F. Percentage of health workers who mentioned specific messages for counseling

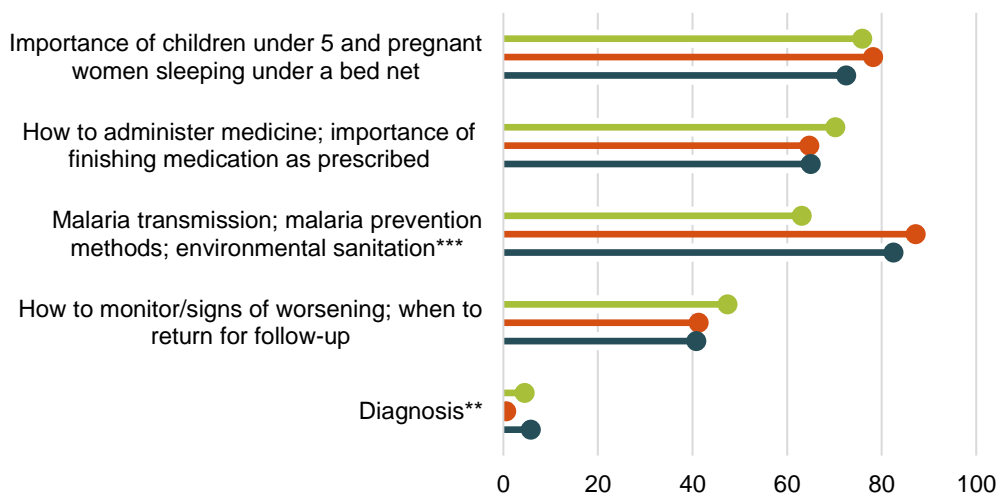


Table 2. Child health vignette domain and total scores, by state

Domain	Average % points obtained			p-value
	Ebonyi N = 352	Kebbi N = 312	Zamfara N = 240	
History (7 points)	29.7	31.6	31.1	0.234
Exam (6 points)	47.3	40.5	38.7	0.000
Diagnosis (2 points)	66.5	54.5	55.0	0.000
Testing (2 points)	60.9	55.3	56.7	0.000
Treatment (2 points)	76.8	67.6	69.0	0.000
Counseling (5 points)	52.2	54.4	53.3	0.321
Weighted total score (24 points)	55.6	50.7	50.6	0.000

ANC Vignette: Gender-Based Violence

Respondents

Providers were eligible to complete the two ANC vignettes if they self-reported regularly providing ANC services. Approximately 96 percent of providers in Ebonyi provided such services, compared to 59 percent and 31 percent in Kebbi and Zamfara, respectively. A total of 664 health workers across the three states responded to the ANC vignettes.

The first ANC vignette was designed to test provider knowledge of preeclampsia and gender-based violence. It was determined during preliminary baseline results validation meetings with stakeholders and content experts that the vignette content was indicative of hypertension in pregnancy rather than meeting clinical guidelines for preeclampsia diagnosis. Baseline data analysis indicated that health workers overwhelmingly diagnosed preeclampsia relative to hypertension (ranging from 62 percent of Zamfara providers to 85 percent of Kebbi providers diagnosing preeclampsia, compared with 2 percent of Ebonyi to 6 percent of Kebbi providers diagnosing hypertension). However, because preeclampsia was a pre-coded data capture response option and hypertension was not, it was not possible to discern whether enumerators conflated provider responses of hypertension in pregnancy with a preeclampsia diagnosis during data capture or if providers were diagnosing preeclampsia at such high rates. Given this data limitation, only the GBV content of the first ANC vignette was scored; detailed provider responses to hypertension in pregnancy content is presented in Appendix E.

Scenario

The hypertension in pregnancy and GBV vignette involved a hypothetical nineteen-year-old woman on her first ANC visit for her first pregnancy. She is 20 weeks pregnant, anxious, and nervous, and complains of recent mild headaches and swelling in her feet and ankles. She reveals that her older sister died in childbirth, and comments that her husband is often jealous, and it leads to fights. On physical exam, she is found to be 1.7 m tall and weighs 73 kgs. Her blood pressure is 142/93, pulse 85 beats per minute, and respiratory rate is 16 breaths per minute. She does not have a fever or edema, fetal movement is detected, and she has significant bruises on her arms.

GBV content was explicitly integrated throughout the first ANC vignette. Providers had the opportunity to give GBV responses at multiple points throughout the vignette as more evidence was revealed about GBV risk. The GBV rubric accounts for the multiple points at which providers could, for example, implement GBV screening (Appendix C). The GBV content can be interpreted using three main components: (1) screening, (2) exam and diagnosis, and (3) provider responses.

Complete response frequencies for the ANC GBV vignette content are provided in Appendix Table D3.2. Figure 15 presents responses scored for the GBV component, and scores are summarized in Table 3.

GBV Screening

Health workers could ask GBV screening questions about the patient's relationship status and safety during the initial history component of the exam, and again after learning about her social

isolation and marital problems of jealousy and fights. The provider could also indicate that they would implement GBV screening after receiving physical exam results indicating significant bruising. As shown in Figure 15, less than 15 percent of providers across states asked preliminary screening questions, and roughly 40 percent of providers reported they would ask GBV screening questions.

GBV Examination and Diagnosis

GBV engagement during the physical examination and differential diagnosis phases of the vignette were low across all three states (Figure 15 and Table 3). Seven percent of providers in Ebonyi reported they would check for GBV on exam, compared to 5 percent in Kebbi and 2 percent in Zamfara. When the exam revealed significant bruising on the woman's arms, less than 5 percent of providers in Ebonyi and Kebbi and zero percent in Zamfara diagnosed the patient as a potential GBV risk.

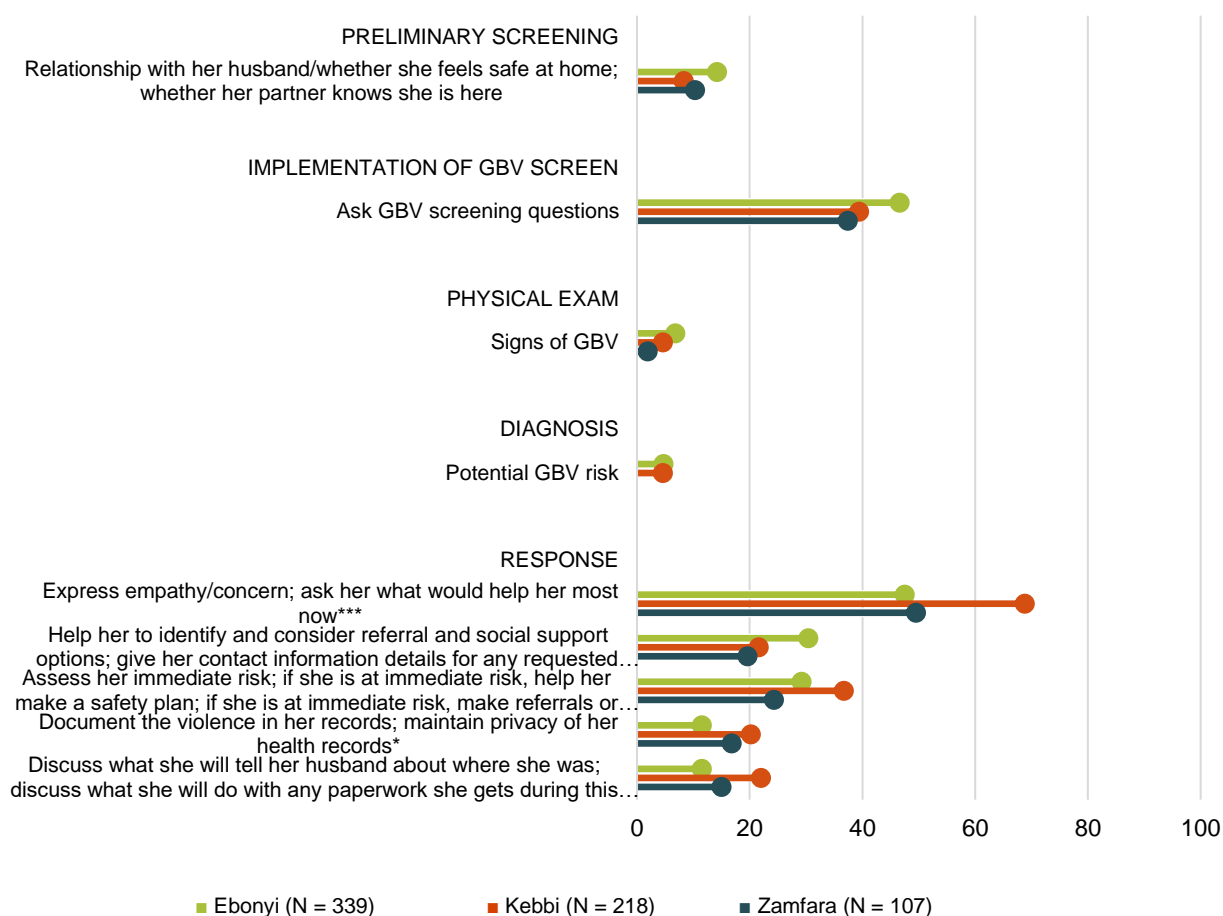
Provider GBV Response

After the patient indicated her husband had been physically violent, providers in Kebbi were significantly more likely to indicate they would express concern and ask what would most help the patient, assess risk and discuss safety planning, document the violence/maintain privacy, and discuss with the patient how to navigate conversations about the visit with her husband (Figure 15). Health workers in Ebonyi were significantly more likely to discuss referral options with the woman (30 percent, compared to 20 percent in Ebonyi and Kebbi, $p=0.019$).

GBV Service Provision Quality Scores

A summary of GBV domain-specific and overall scores are presented in Table 3. The average total GBV score was 19.7 percent in Ebonyi, 18.1 percent in Kebbi, and 14.9 percent in Zamfara ($p=0.044$).

Figure 15. ANC GBV vignette rubric response frequencies, by state



Notes: *** p<0.001, ** p<0.01, * p<0.05

Table 3. ANC GBV vignette domain and total scores, by state

Domain	Average % points obtained			p-value
	Ebonyi N = 339	Kebbi N = 218	Zamfara N = 107	
Preliminary screening (1 point)	14.2	8.3	10.3	0.094
Implementation of GBV screen (1 point)	46.6	39.4	37.4	0.117
Physical exam (1 point)	6.8	4.6	1.9	0.120
Diagnosis (1 point)	4.7	4.6	0.0	0.074
Counseling/Response and Next Steps (5 points)	26.0	33.9	25.0	0.000
Weighted total score (9 points)	19.7	18.1	14.9	0.044

ANC Vignette: Malaria in Pregnancy

Respondents

The same providers that responded to the first ANC vignette responded to the MIP vignette.

Scenario

The MIP vignette presents a hypothetical case of a 23-year-old pregnant woman with malaria who comes to the facility for her second ANC visit. The woman has symptoms of malaria such as tiredness, chills, headaches, and a fever, and the physical exam results were normal except for a mild fever.

It is important to note that the MIP vignette was written about treating a pregnant woman who has malaria rather than from the vantage point of routine ANC, which includes provision of intermittent preventative treatment of malaria during pregnancy (IPTp, currently sulfadoxine-pyrimethamine); the vignette instrument does not include pre-coded responses related to IPTp. As a result of the vignette frame of reference and structure, provider knowledge and practice of IPTp is not explicitly measured at evaluation baseline.

Provider response frequencies for each MIP domain are provided in Appendix D, Table D3.3. Figure 16 presents the response frequencies of scored responses, and domain-specific and total MIP scores are listed in Table 4.

Patient History

After learning that the patient is 26 weeks pregnant, has been feeling tired, and fetches water from a tube well daily, health workers were expected to ask about obstetric history, the current pregnancy, general and reproductive health history, and sociodemographic history. Fifty percent of providers in Ebonyi and 41 percent in Kebbi and Zamfara asked about complaints during the current pregnancy (Figure 16, Panel A). The average MIP history domain score was 38 percent in each state (Table 4).

Physical Exam

Key components of the physical exam included checking vital signs, especially temperature, examining fetal health via abdominal palpation, fundal height, and/or checking the fetal heart rate, and checking for the presence of edema. Nearly 90 percent or more of all providers indicated they would check the woman's vital signs. Fetal monitoring responses were significantly lower in Kebbi, where 58 percent of providers reported fetal health checks compared to over 70 percent of providers in Ebonyi and Zamfara ($p > 0.000$, Figure 16). MIP exam domain scores were high across the three states and were significantly higher in Ebonyi (84.6 percent) than Kebbi and Zamfara (77.1 percent and 78.5 percent, respectively, $p < 0.000$, Table 4).

Tests Ordered

After learning from the physical exam that the patient has a mild fever, respondents are asked what tests they would order. Nearly all providers correctly ordered a test for malaria, and over 30 percent ordered hemoglobin or hematocrit testing (Figure 16). Average testing domain scores

were statistically similar across the three states, ranging from 63.7 percent in Ebonyi to 68.2 percent in Zamfara (Table 4).

Diagnosis and Treatment

Providers were then told the woman had a positive mRDT result and negative anemia test result. Nearly all providers correctly diagnosed the woman with malaria (99 percent in Ebonyi and Zamfara, 100 percent in Kebbi). Over 90 percent of providers correctly indicated that they would treat with ACT. (Figure 16, Panel D).

Counseling

Lastly, health workers were asked what key points they would tell the patient during counseling. Sixty percent of providers in Ebonyi and Zamfara and 53 percent in Kebbi reported they would counsel on how to take malaria medications (Figure 16, Panel E). More than three-fourths of providers would counsel on the benefits of sleeping under a bed net (85.0 percent Zamfara and 81.7 percent Kebbi, compared to 74.3 percent Ebonyi, $p=0.024$). The MIP counseling domain score averaged approximately 60 percent in each state (Table 4).

ANC MIP Service Provision Quality Scores

Domain-specific scores were very similar among the three states, and the average total MIP vignette score was 72 in each state (Table 4).

Table 4. ANC malaria in pregnancy vignette score distributions, by state

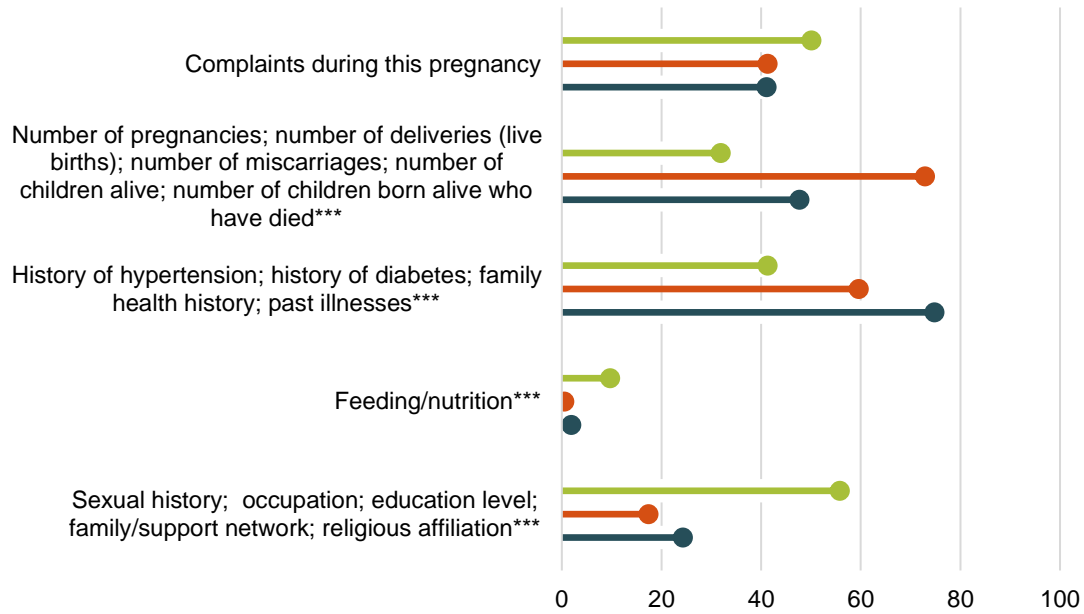
Domain	Average % points obtained			p-value
	Ebonyi N = 339	Kebbi N = 218	Zamfara N = 107	
History (5 points)	37.8	38.3	37.9	0.948
Exam (3 points)	84.6	77.1	78.5	0.000
Testing (2 points)	63.7	67.0	68.2	0.143
Diagnosis (1 point)	99.4	100.0	99.1	0.431
Treatment (1 point)	90.6	91.3	93.5	0.653
Counseling (5 points)	58.6	60.7	60.4	0.535
Weighted total score (17 points)	72.4	72.4	72.9	0.910

Figure 16. ANC malaria in pregnancy vignette rubric response frequencies, by state

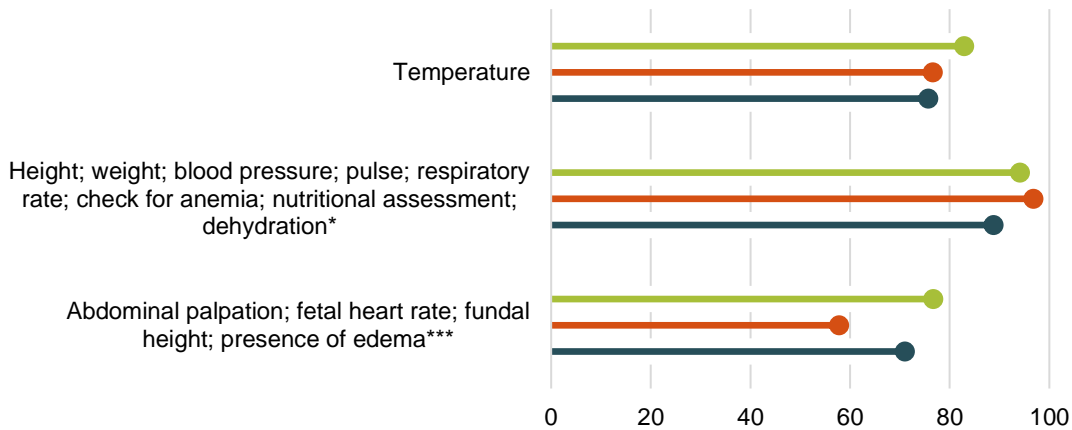
■ Ebonyi (N = 339) ■ Kebbi (N = 218) ■ Zamfara (N = 107)

Notes: *** p<0.001, ** p<0.01, * p<0.05

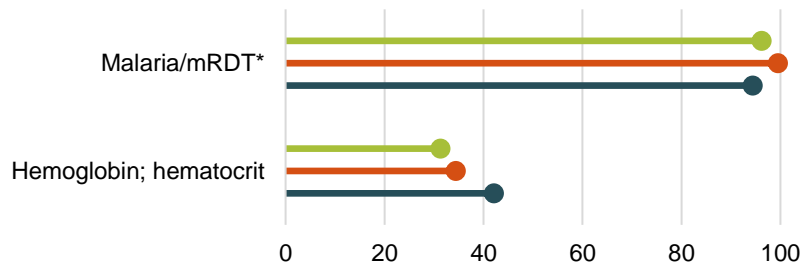
A. Percentage of health workers who asked about aspects of medical history



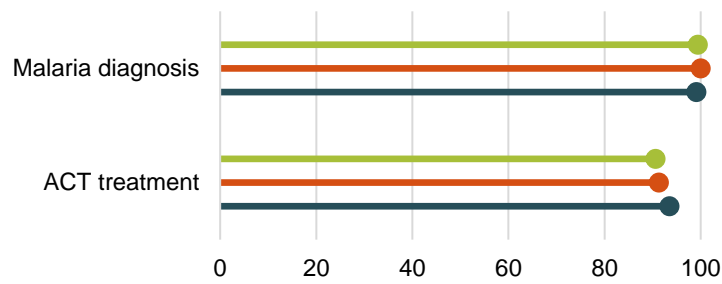
B. Percentage of health workers indicating specific physical examination components



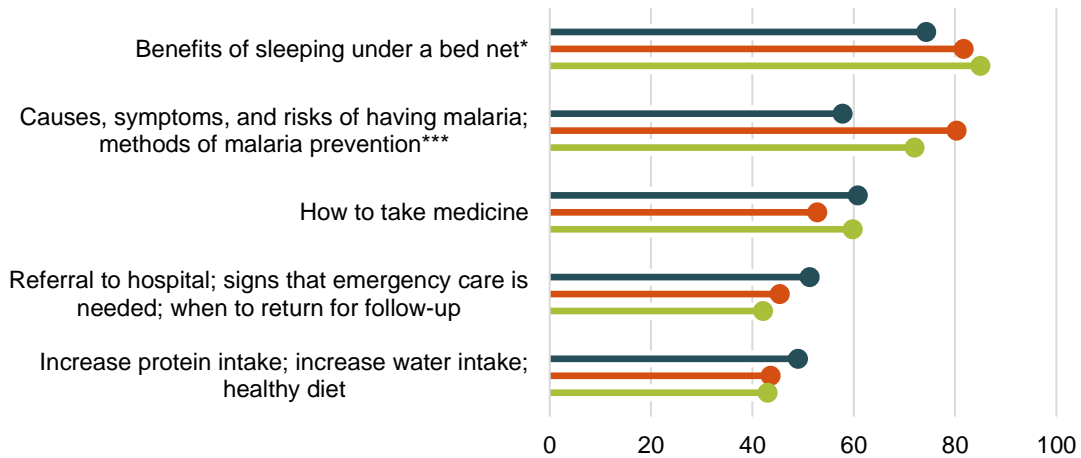
C. Percentage of health workers who ordered specific laboratory tests



D. Percentage of health workers indicating specific diagnoses and treatment options



E. Percentage of health workers who mentioned specific messages for counseling



Family Planning Vignette: Implant Side Effects

Respondents

Providers were eligible to complete the two FP vignettes if they regularly provided FP services. Over two-thirds of providers in Ebonyi provided such services, compared to 55 percent in Kebbi and 31 percent in Zamfara. A total of 550 health workers across the three states responded to the FP vignettes.

Scenario

The implant side effects vignette involved a hypothetical 30-year-old woman who began using Implanon five months ago. She has been experiencing irregular menstrual bleeding for the past few months and is considering changing methods because the bleeding is bothersome to her and her partner. She does not report any breast tenderness or other signs of pregnancy, she is not postpartum and wants to wait at least three years to have another child. She does not smoke or have any history of deep vein thrombosis.

Provider response frequencies for each side effect vignette section are reported in Appendix D, Table D3.4. Scored response frequencies are presented in Figure 17, and domain-specific and total FP side effect service quality scores are given in Table 5.

Patient History

Providers were expected to ask the patient about her current bleeding pattern and other symptoms, menstrual history prior to using the implant, gynecologic and obstetric history, pregnancy intentions, and health and drug history, including contraceptive use. Roughly 60 percent or more of providers across the three states asked about current bleeding pattern and/or menstrual history, and over 30 percent asked about drug history/contraceptive use or other health conditions (Figure 17, Panel A). History domain scores were generally low, with average scores ranging from 39 percent in Ebonyi and Zamfara to 45 percent in Kebbi ($p=0.018$, Table 5).

FP Method Counseling

Providers were asked if they would counsel the woman on other FP methods. Over 75 percent of providers in Ebonyi and 86 percent in Kebbi indicated that they would, compared to only 60 percent in Zamfara ($p<0.001$). The most frequently reported reason cited by providers who said they would not counsel to switch methods was that side effects are normal (between 77.6 percent in Ebonyi to 89.7 percent in Kebbi, Appendix D, Table D3.4). Health workers who indicated they would counsel on other methods were asked what information they would provide: over 70 percent of providers in Ebonyi and Kebbi reported they would counsel on methods available at the PHC on the day of the visit, compared to 39.1 percent in Zamfara (Appendix D, Table D3.4).

Figure 17, Panel B presents the percentage of all FP providers who indicated they would provide FP counseling, as well as the percentage of *all* FP providers who would counsel on specific content (in contrast to counseling content presented in Appendix D, which is restricted to those providers who said they would counsel on another method). Among all FP providers, those in Kebbi were significantly more likely to counsel on all contraceptive methods available from any

source (53.4 percent, compared to 25 percent in Ebonyi and Zamfara, $p < 0.001$) and to counsel on the effectiveness and duration of protection against pregnancy of methods (47.5 percent Kebbi, 36.0 percent Ebonyi, and 25.2 percent Zamfara, $p < 0.001$). The average FP counseling content score was highest in Kebbi (38.7 percent) and lowest in Zamfara (26.4 percent, Table 5).

Provider Action Factors

All FP providers were asked what factors they would consider when determining which course of action to recommend. Based on clinical guidelines and training materials, health workers were expected to consider the client's method preference, medical history and breastfeeding, and method-relevant information such as effectiveness, side effects, the patient's fertility preferences, and her confidence in using the method correctly and consistently. Providers in Kebbi were significantly more likely to mention method effectiveness, side effects, the patient's pregnancy timing preferences, or the patient's confidence in correct and consistent method use (71 percent, compared to 49.4 percent in Ebonyi and 44.9 percent in Zamfara, $p < 0.001$, Figure 17, Panel C). Between 15 percent and 26 percent of providers reported they would consider the patient's method preference. Provider action factor average scores ranged from a 34.3 percent in Zamfara to 54.2 percent in Kebbi ($p < 0.001$).

Method Availability

Providers were then told that after counseling and discussion, the woman decided she would like to switch to contraceptive injections, but injections are not currently being offered at the clinic. Among all FP providers, approximately 70 percent in Ebonyi and Kebbi reported they would refer the patient to another clinic that provides injections, collect the method from a nearby facility, or source the method and reschedule the appointment, compared to 39 percent in Zamfara ($p < 0.001$, Figure 17 Panel D). Over 25 percent of FP providers in Zamfara indicated they would tell the woman to choose another option (Appendix D, Table D3.4).

Patient Confidentiality

Lastly, the provider is told that the woman's husband wants her to discontinue FP due to the bleeding, but she does not want to get pregnant and asks that her decision be kept confidential. Over 70 percent of all FP providers in Ebonyi and Kebbi responded that they would reassure the patient they would not tell anyone, compared to 36.4 percent in Zamfara ($p < 0.001$). Providers in Zamfara were significantly more likely to encourage the patient to tell other people (12.1 percent, compared to 2.9 percent Kebbi and zero percent Ebonyi, $p < 0.001$, Figure 17, Panel D).

FP Side Effects Service Provision Quality Scores

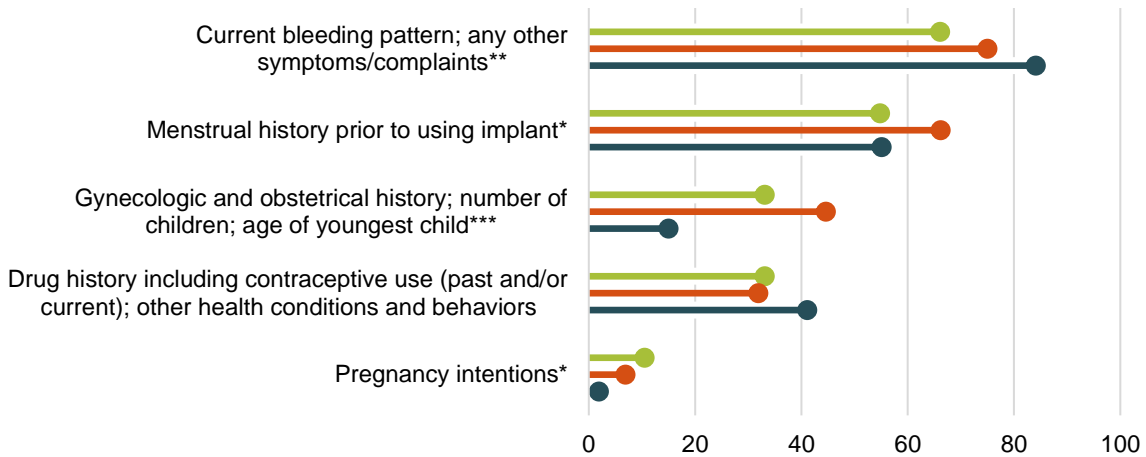
Providers who indicated they would not counsel the patient on other FP methods only received points for the patient history component of the quality scores; they received zero points for all other FP side effects vignette score components. Total mean scores ranged from a low of 37 percent in Zamfara to a high of 55 percent in Kebbi ($p < 0.001$, Table 5).

Figure 17. FP implant side effects vignette rubric response frequencies, by state

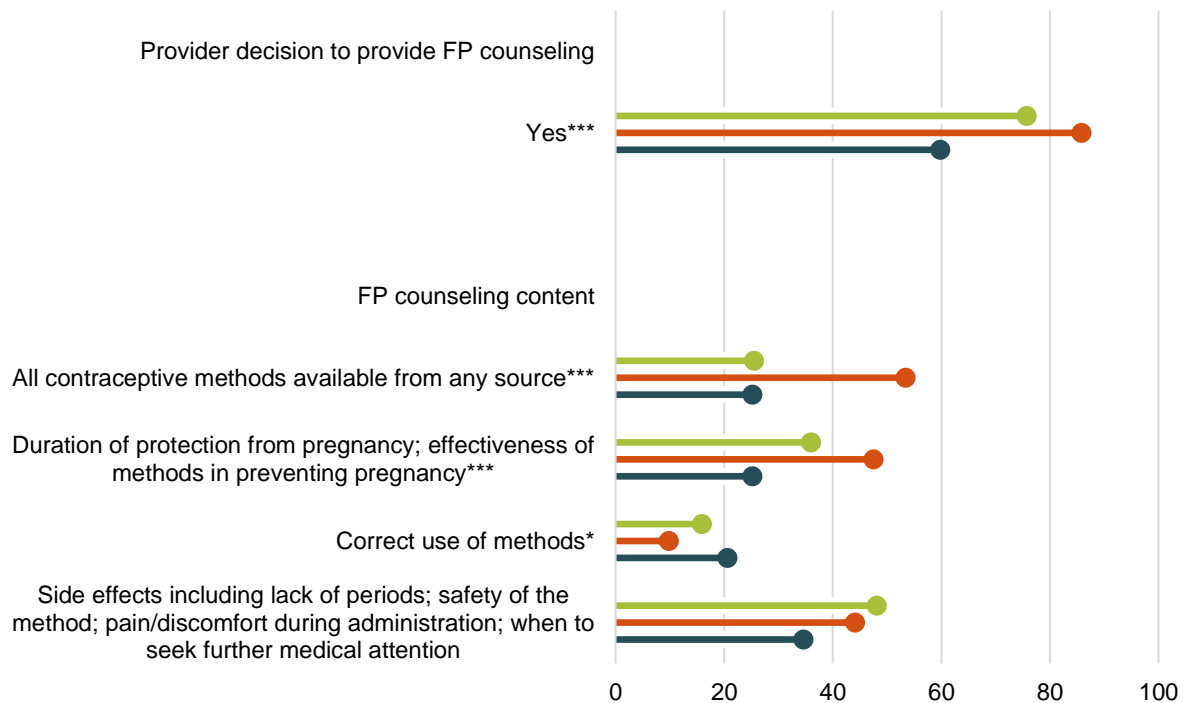
■ Ebonyi (N = 239) ■ Kebbi (N = 204) ■ Zamfara (N = 107)

Notes: *** p<0.001, ** p<0.01, * p<0.05

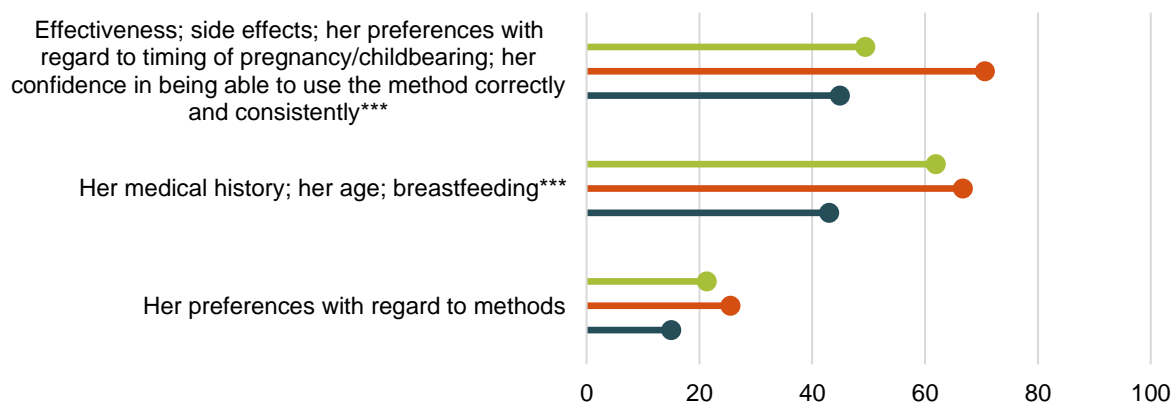
A. Percentage of health workers who asked about aspects of patient history



B. Percentage of health workers reporting whether they would provide FP counseling and who mention specific FP counseling topics



C. Percentage of health workers who report specific factors they consider when deciding family planning course of action



D. Percentage of health workers who report specific actions in response to patient's preferred FP method being unavailable and patient request for confidentiality

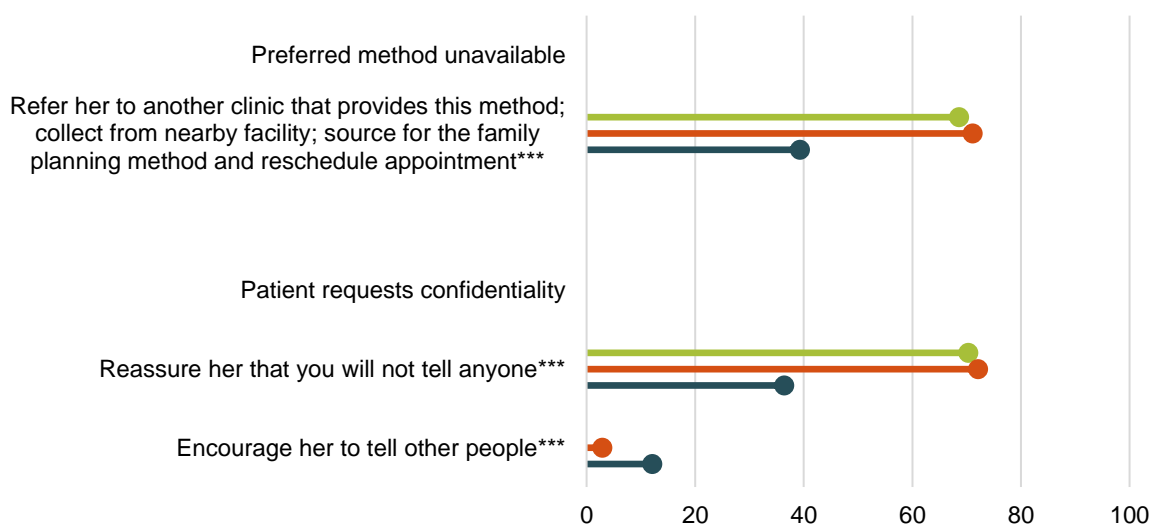


Table 5. FP implant side effects vignette score distributions, by state

Domain	Average % points obtained			p-value
	Ebonyi N = 239	Kebbi N = 204	Zamfara N = 107	
History (5 points)	39.5	44.9	39.4	0.018
Provider decision to provide FP counseling (1 point)	75.7	85.8	59.8	0.000
FP counseling content (4 points)	31.4	38.7	26.4	0.000
Provider action factors (3 points)	44.2	54.2	34.3	0.000
Method unavailable (1 point)	68.6	71.1	39.3	0.000
Patient confidentiality (2 points)	35.1	37.5	24.3	0.000
Weighted total score (16 points)	49.1	55.4	37.2	0.000

Family Planning Vignette: Postpartum Family Planning

Respondents

The same providers who responded to the implant side effect vignette responded to the PFP vignette.

Scenario

The PFP vignette involved a hypothetical young woman 21-years of age who was 26 weeks pregnant and generally healthy on her second ANC visit. This was her second pregnancy; her first child was born at her mother's home in a faraway place 18 months ago. No one told her about FP during her first pregnancy, and on returning to her husband's home she realized she was pregnant again. The couple wants to wait to have their third child but are too scared and shy to ask about FP methods. The husband has heard rumors that FP use during breastfeeding is bad for the baby and could cause difficulties getting pregnant again. At the patient's first ANC visit for her current pregnancy the midwife mentioned post-delivery FP, but the patient was unsure. She has come to the clinic now to specifically learn more about PFP. She has never used any contraceptive method, aside from occasional condom use, and has no allergies or other health issues.

Patient History

Providers were expected to ask the woman about her gynecologic and obstetrical history, menstrual history, drug history including contraceptive use, contraceptive knowledge and preferences, and key sociodemographic background items. Fewer than one-third of FP providers across the three states indicated they would ask about the patient's contraceptive preferences or knowledge of family planning (Figure 18, Panel A). The average PFP history domain score was low across the three states, ranging from 31.5 percent in Zamfara to 40.1 percent in Kebbi ($p=0.007$, Table 6).

Postpartum FP Counseling

Health workers were asked if they would counsel the woman on PFP; approximately 95 percent of providers in each state indicated they would. The most reported reason for not offering PFP counseling among those few FP providers who said they would not counsel on postpartum contraception included that it was too soon and/or would be better to wait until after delivery (Appendix D, Table D3.5). Providers who indicated they would provide PFP counseling were asked what the earliest time was the woman could begin contraceptives: over 70 percent of providers in Ebonyi and Kebbi responded immediately after delivery, compared to 46.5 percent in Zamfara (Appendix D, Table D3.5).

Figure 18, Panel B presents the percentage of all FP providers who indicated they would provide PFP counseling, as well as the percentage of *all* FP providers who would counsel on specific content (in contrast to counseling content presented in Appendix D, Table D3.5, which is restricted to those providers who said they would provide PFP counseling). Over 60 percent of all FP providers reported they would counsel on method characteristics such as duration and effectiveness of pregnancy prevention, correct use and safety of the methods, pain/discomfort

during administration, and STD/HIV protection provided by different methods. Providers in Kebbi were significantly more likely to counsel on types of contraceptive methods than providers in Ebonyi or Zamfara ($p=0.002$). Roughly half of all FP providers in Kebbi and Zamfara indicated they would counsel on methods that can be used during breastfeeding, compared to 27.2 percent of Ebonyi FP providers ($p<0.001$). Average PFP counseling content scores were generally low, ranging from 34.0 in Ebonyi to 39.2 in Kebbi ($p=0.014$).

Provider Action Factors

Lastly, FP providers were asked which factors they would consider when determining which course of PFP action to recommend. Over 75 percent of providers in Ebonyi and Kebbi said they would consider the patient’s medical history and/or age, compared to 64.5 percent in Zamfara ($p<0.001$). Only one-third of FP providers in Kebbi and one-fourth in Zamfara responded that they would consider the patient’s preferences with regard to methods, compared to 18.7 percent in Zamfara ($p=0.018$). The mean provider action factor domain score was highest in Kebbi (61.1 percent), compared to 53.4 percent in Ebonyi and 51.7 percent in Zamfara ($p=0.001$, Table 6).

PPFP Service Provision Quality Scores

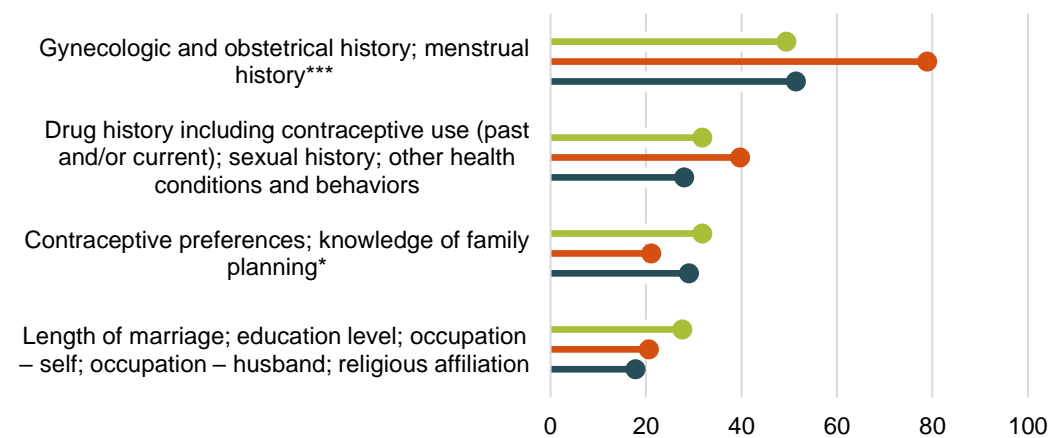
Providers who indicated they would not offer PFP counseling only received points for the patient history component of the PFP quality score; these providers received a score of zero points for all other PFP score domains. The average total PFP vignette score was highest in Kebbi (58.9 percent) and lowest in Zamfara (53.4 percent, $p=0.003$, Table 6).

Figure 18. Postpartum FP vignette response frequencies, by state

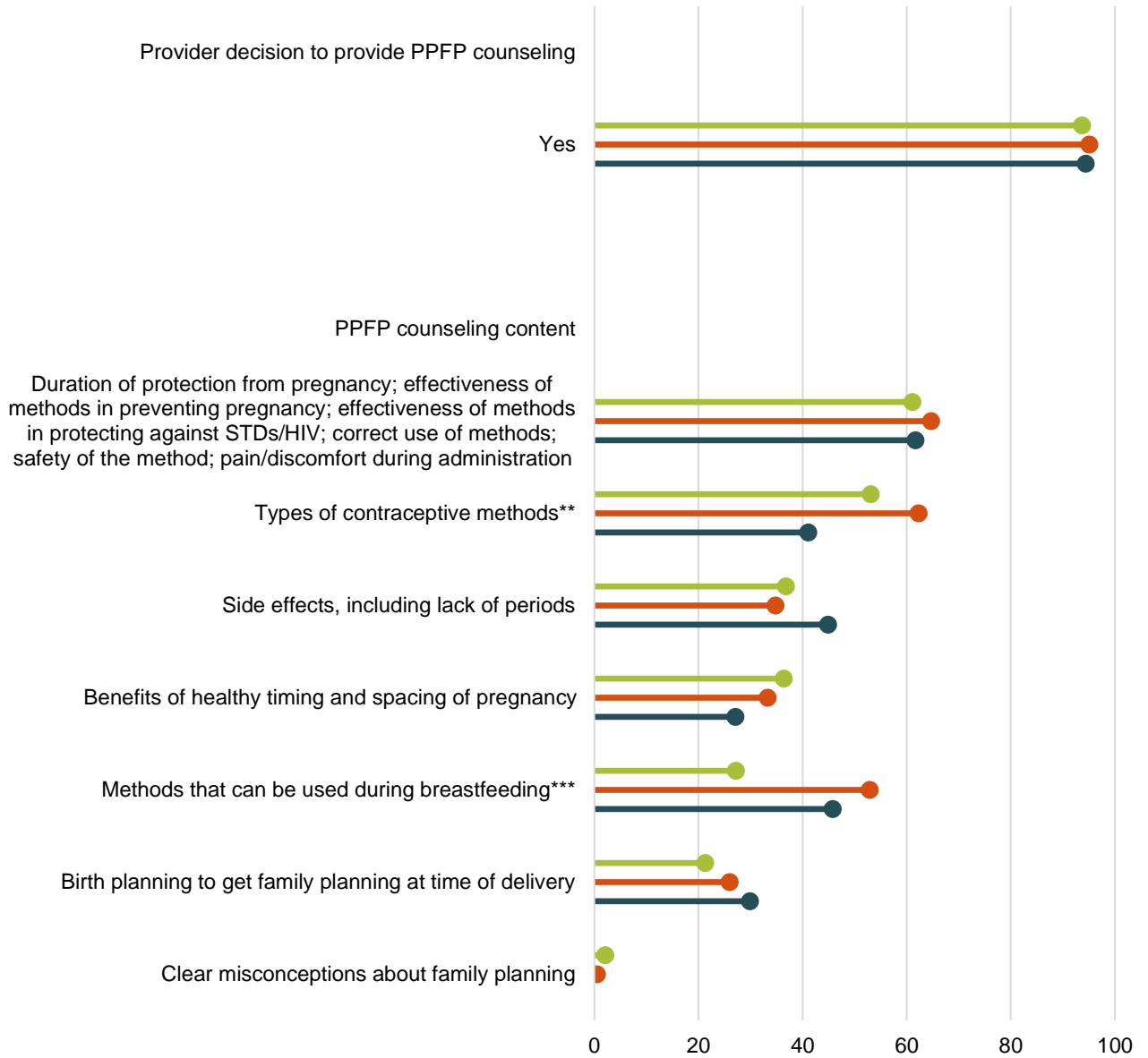
■ Ebonyi (N = 239) ■ Kebbi (N = 204) ■ Zamfara (N = 107)

Notes: *** $p<0.001$, ** $p<0.01$, * $p<0.05$

A. Percentage of health workers who asked about aspects of patient history



B. Percentage of health workers reporting reasons whether they would provide PFP counseling and FP counseling topics



C. Percentage of health workers who report specific factors they consider when deciding postpartum FP recommendations

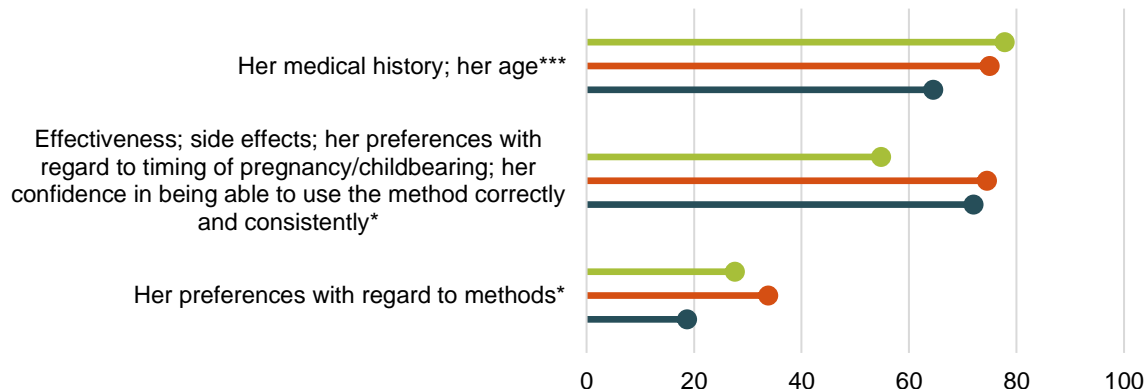


Table 6. Postpartum FP vignette score distributions, by state

Domain	Average % points obtained			p-value
	Ebonyi N = 239	Kebbi N = 204	Zamfara N = 107	
History (4 points)	35.1	40.1	31.5	0.007
Provider decision to provide PFP counseling (1 point)	93.7	95.1	94.4	0.823
PFP counseling content (7 points)	34.0	39.2	35.8	0.014
Provider action factors (3 points)	53.4	61.1	51.7	0.001
Weighted total score (15 points)	54.1	58.9	53.4	0.003

Family Planning Vignettes: Male Engagement in Family Planning

MEFP indications and prompts were woven throughout both family planning vignettes, and MEFP content for both vignettes was scored separately from the implant side effect and PFP service provision content. Both FP vignettes included four key opportunities for providers to mention MEFP: (1) during the patient history component, (2) when discussing patient counseling content, (3) when explaining what factors they would consider when making FP method or PFP recommendations, and (4) when discussing if they would advise the woman to engage her partner in counseling (Appendix C).

Patient History

All health workers who responded to the FP vignettes had the opportunity to ask about partner involvement in FP during the patient history components of the FP side effects and the PFP vignettes. MEFP during the initial patient interview was lower in the FP side effects vignette compared to the PFP vignette. Between 4.7 percent (Zamfara) and 15.7 percent (Kebbi, $p=0.014$) of FP providers indicated they would ask if the implant side effects patient's husband knew she was at the clinic or if the couple made FP decisions together, compared to approximately 30 percent or more of providers during the PFP vignette (Figure 19). MEFP engagement during the patient history component of the FP vignettes was low, with average

history domain scores ranging from 16.8 percent in Zamfara to 23 percent in Ebonyi and Kebbi (Table 7).

FP Counseling

Providers who indicated that they would counsel the patient on alternate FP methods or on PFP had the opportunity to indicate they would discuss MEFP during patient counseling components of both FP vignettes. Between 6 to 15 percent of FP providers said they would counsel the patient on the importance of making FP decisions together with her partner and/or suggest she bring her partner to the next session during the FP side effects vignette, compared to between 5 percent to 10 percent in the PFP vignette (Figure 19). Male engagement during family planning was very low during patient FP counseling; average counseling domain scores ranged from 5.1 percent in Zamfara to 10.3 percent in Kebbi ($p=0.027$).

Provider Action Factors

Family planning providers were asked to indicate factors they consider when determining their course of action on both FP vignettes. FP providers were somewhat more likely to report they would consider acceptability of method use by the patient's husband in the PFP vignette (14.0 percent to 22.5 percent) than in the side effects vignette (4.7 percent to 15.2 percent, Figure 19). MEFP provider consideration factor scores were significantly higher in Ebonyi and Kebbi (18.9 percent and 16.3 percent, respectively) than in Zamfara (9.3 percent, $p=0.023$, Table 7).

Partner Counseling

Lastly, FP providers are scored on whether they explicitly mentioned suggesting that the patient bring her husband with her for FP counseling during both FP vignettes, and if they offer to coach the patient on how to discuss FP with her husband in the PFP vignette. FP providers were much more likely to suggest the patient bring her husband to future counselling sessions during the PFP vignette (10.5 percent in Ebonyi to 32.7 percent in Zamfara, $p<0.001$) compared to the implant side effects vignette (1.7 percent in Ebonyi to 4.7 percent in Zamfara). Only between 2.1 percent to 5.6 percent of FP providers said they would coach the patient on discussing FP with her partner in the implant side effects vignette (Figure 19). MEFP partner counseling domain scores were low in all three states, from 4.7 percent in Ebonyi to 14.3 percent in Zamfara ($p<0.000$, Table 7).

Male Engagement in Family Planning Service Provision Quality Scores

MEFP was generally low across the three states. The average MEFP score was highest at 16.1 percent in Kebbi, 13.5 percent in Ebonyi, and lowest at 11.4 percent in Zamfara ($p=0.035$, Table 7).

Figure 19. Male engagement in family planning vignette response frequencies, by state

■ Ebonyi (N = 239) ■ Kebbi (N = 204) ■ Zamfara (N = 107)

Notes: *** p<0.001, ** p<0.01, * p<0.05

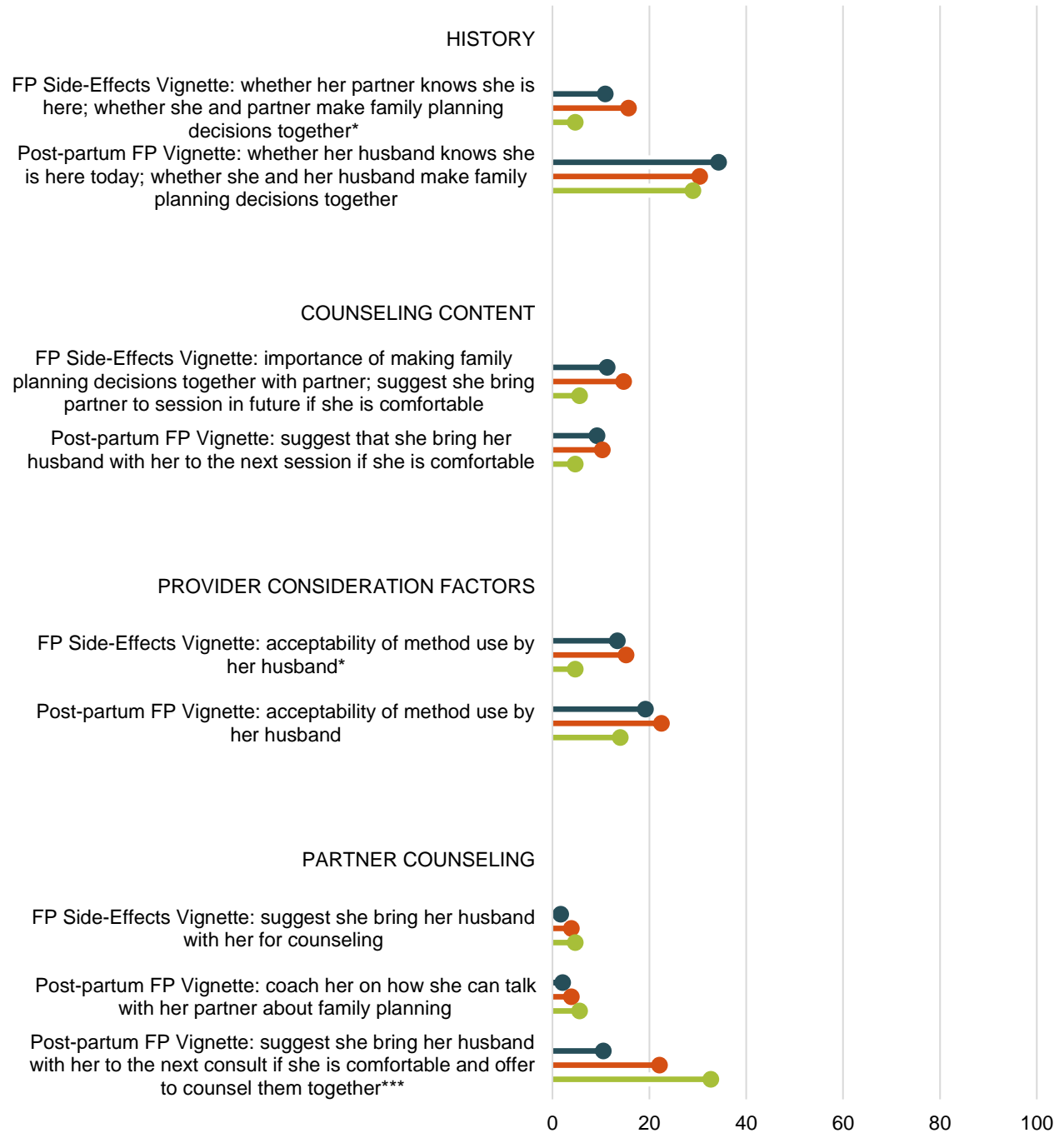


Table 7. Male engagement in family planning vignette score distributions, by state

Domain	Average % points obtained			p-value
	Ebonyi N = 239	Kebbi N = 204	Zamfara N = 107	
History (2 points)	22.6	23.0	16.8	0.212
Counseling (2 points)	10.3	12.5	5.1	0.027
Provider consideration factors (2 points)	16.3	18.9	9.3	0.023
Partner counseling (3 points)	4.7	10.0	14.3	0.000
Weighted total score (9 points)	13.5	16.1	11.4	0.035

Results: Provider Attitudes and Norms

The baseline provider survey collected information on provider attitudes toward malaria, FP, and ANC clinical practices, as well as providers' perceptions of professional community norms. All respondents were eligible to respond to this section of the questionnaire. Respondents were first asked to describe their agreement with statements about malaria case management, FP, and ANC service provision, and were then asked to describe how often they thought other providers in their LGA performed the activities. Questions on clinical practice attitudes and norms were adapted from Breakthrough RESEARCH's Nigeria Behavioral Sentinel Survey baseline questionnaire (Johansson, et al., 2020).

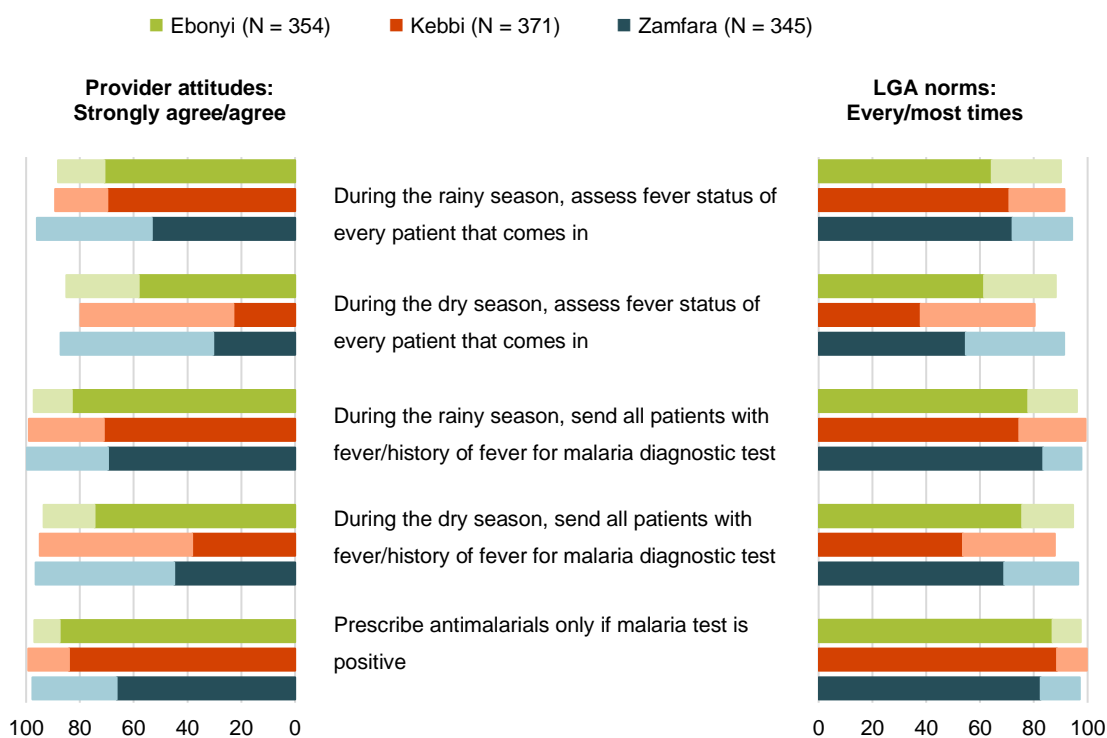
Detailed responses are presented in Appendix D4, Tables D4.1 and D4.2. Figures 20-22 show comparisons of the percentage of providers who agreed or strongly agreed with a statement to the percentage of providers who thought other providers in their LGA performed the action most or every time. This approach provides insight into whether provider attitudes differ from their perceived professional community norms.¹⁶

Malaria Case Management

Health workers were asked about malaria case management attitudes and norms around assessing patient fever status during the rainy and dry seasons, ordering malaria diagnostic tests for all patients with fever during both seasons, and only prescribing antimalarials when malaria test results are positive. Most providers in each state agreed or strongly agreed that it is important to assess the fever status of patients during both the rainy and dry seasons, with agreement levels slightly higher for the rainy season (roughly 90 percent across states) than the dry season (roughly 85 percent). Providers in Zamfara were significantly more likely to agree or strongly agree about the importance of assessing fever during the rainy ($p < 0.001$) and dry seasons ($p = 0.020$) than providers in Ebonyi and Kebbi. Provider attitudes aligned with perceptions of community norms, with over 90 percent of providers in each state believing that other providers in their LGA assessed fever status most or every time in the rainy season, and 80 to 91 percent in the dry season. A larger percentage of providers in each state agreed that all patients with fever should be tested for malaria in both seasons than agreed with fever assessment, and most providers felt this was the norm among local practitioners in both seasons. Seasonal discrepancy between provider attitudes and perceived LGA practice norms was largest in Kebbi, where the percentage of providers who felt fever assessment was important was nine percentage points lower in the dry season than the rainy season, and the percentage who felt other providers assessed fever and tested all patients with fever for malaria was 11 percentage points lower in the dry season. Lastly, nearly all providers agreed and thought it was common practice in their community to only prescribe antimalarials when malaria tests are positive (Figure 20).

¹⁶ Provider attitudes are presented on the left side of each graph; the x-axis is reversed, and the total length of each bar indicates the percentage of providers who agreed or strongly agreed, with dark shading representing those that strongly agreed. Similarly, on the right side of the graph the total length of each bar indicates the percentage of providers who thought other providers in their LGA would perform the action most or every time, with dark shading representing those that responded every time.

Figure 20. Provider attitudes and norms for malaria case management topics, by state



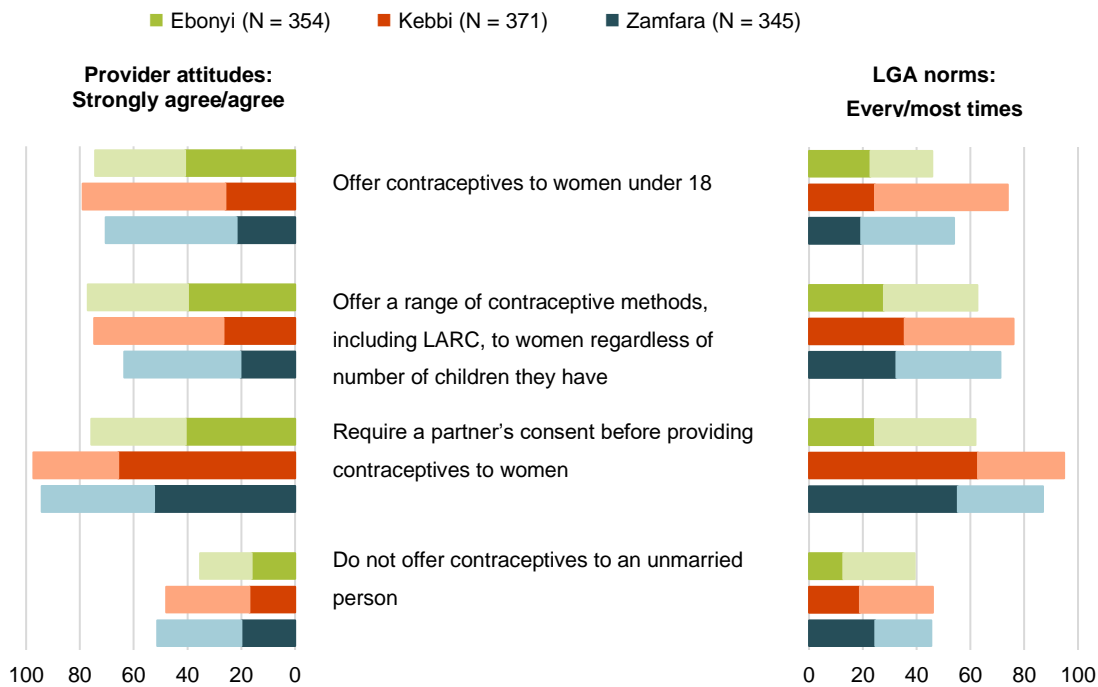
Note: Dark shading represents the percentage of providers who strongly agreed or felt other providers in their LGA would perform the action every time.

Family Planning

Respondents were next asked about offering contraceptives to women under 18, offering a range of contraceptive methods, requiring partner consent before providing contraceptives, and not offering contraceptives to unmarried people. Levels of provider agreement and perceived prevalence of community practice norms were less aligned with clinical guidelines for FP topics than for malaria or ANC, and divergence between provider attitudes and perceived community norms was more common. Most providers (over 70 percent) agreed that it is appropriate to offer contraceptives to women under 18 if requested in each state. Similarly, approximately 74 percent of providers in Kebbi thought other providers in their LGA offered contraceptives to women under 18 if requested every or most of the time, in contrast to 54 percent of Zamfara and 46 percent of Ebonyi providers ($p < 0.000$). Most respondents in each state agreed with the importance and thought it was common practice in their LGA to offer a range of contraceptive methods, including long-acting reversible contraception (LARC), to women regardless of the number of children they have. Compared to Ebonyi and Kebbi, providers in Zamfara were approximately 10 percentage points less likely to agree/strongly agree with the importance of offering a range of contraceptive methods ($p < 0.000$), and approximately 10 percentage points less likely to believe that other providers offered a range of contraceptive options to women every or most of the time ($p = 0.015$). Nearly all providers in Kebbi and Zamfara and 75 percent in Ebonyi agreed that it is important to require partner consent before providing contraceptives to women ($p < 0.000$). Similarly, 87 percent of Zamfara providers and 95 percent of Kebbi

providers thought that other providers in their LGA require partner consent before providing contraceptives to women every/most of the time, compared to 62 percent of providers in Ebonyi ($p < 0.000$). Lastly, the percentage of providers who agreed that it is not appropriate to offer contraceptives to an unmarried person and the percentage who thought clinicians in their LGA did not offer FP to unmarried persons every or most of the time were lowest in Ebonyi and highest in Zamfara (Figure 21). Providers in Ebonyi were significantly less likely to agree/strongly agree that it is not appropriate to offer contraceptives to an unmarried person compared to providers in Kebbi and Zamfara ($p < 0.000$).

Figure 21. Provider attitudes and norms for FP topics, by state



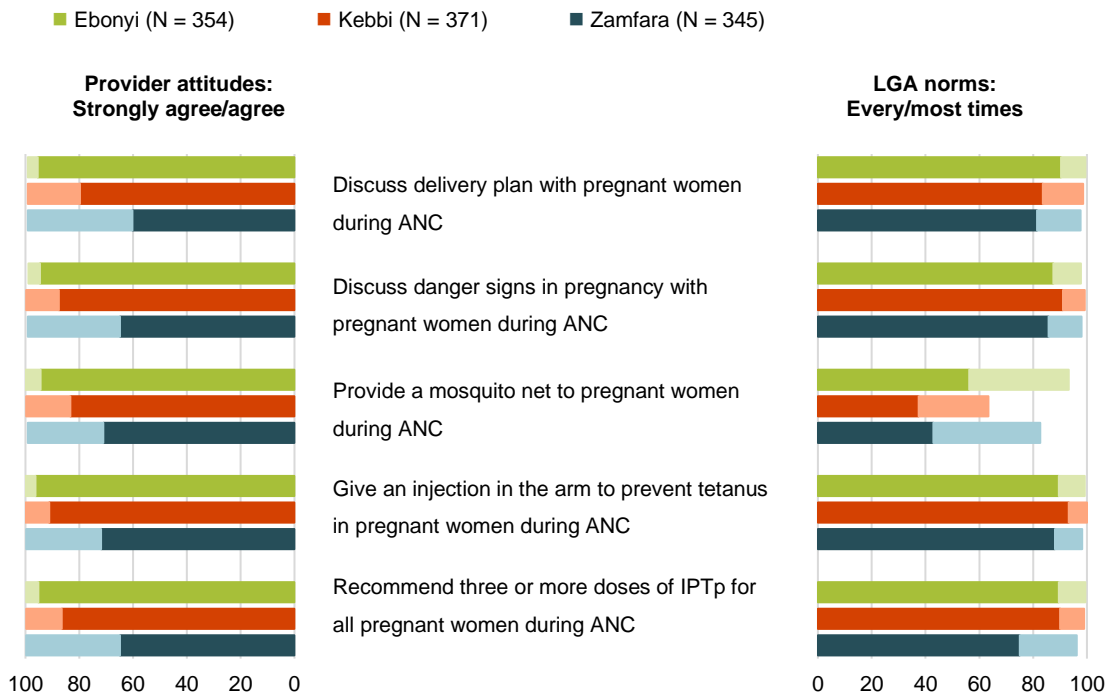
Note: Dark shading represents the percentage of providers who strongly agreed or felt other providers in their LGA would perform the action every time.

ANC

Lastly, health workers were asked about ANC practices including discussing delivery plans and pregnancy danger signs during ANC, providing mosquito nets to pregnant women as a component of ANC, providing tetanus injections during ANC, and recommending three or more doses of IPTp for all pregnant women during ANC. The percentage of providers who strongly agreed/agreed with ANC practice statements and the percentage who thought other providers in their LGA performed the ANC practice norm every or most of the time was nearly 100 percent in each state for including delivery planning, review of pregnancy danger signs, provision of tetanus shots, and provision of three or more IPTp doses during ANC. There were differences between provider attitudes and perceived community norms around the provision of mosquito nets as a component of ANC: 100 percent of providers in Ebonyi and Kebbi and 99 percent in Zamfara agreed that it is important to provide mosquito nets to pregnant women during ANC,

however the percentage of respondents who thought other providers in their LGA implemented this practice every or most of the time was 37 percentage points lower than provider agreement levels in Kebbi, 17 percentage points lower in Zamfara, and seven percentage points lower in Ebonyi (Figure 22).

Figure 22. Provider attitudes and norms for ANC topics, by state



Note: Dark shading represents the percentage of providers who strongly agreed or felt other providers in their LGA would perform the action every time

Results: Gender Attitudes and Norms

Health workers were asked to describe how strongly they agreed or disagreed with gender-related statements. The first section asked all providers about their own attitudes about gender roles and relations; these items were used to create a gender attitudes scale. The second section asked respondents about their perceptions of provider-client interactions and reproductive, maternal, and newborn health (RMNH) service provision dynamics among other providers in their LGA who perform similar services; these items comprised a gender-sensitive community RMNH quality of care (QOC) attitude scale. Lastly, the third section was restricted to FP or ANC service providers. All respondents were eligible to complete the first two sections. Detailed results are available in Appendix D5, Table D5.

Provider Gender Attitudes

The baseline assessment followed the methodology of Doyle, et al.'s 2021 gender norms and provider attitudes study from Rwanda. The provider survey included 14 questions related to gender roles, reproductive health and decision making, and intimate-partner violence. Most statements were phrased such that disagreement with them (a higher score) indicated a more gender-equitable attitude; items where agreement indicated a more equitable attitude were reverse coded for analysis (i.e., agreement was coded to have a higher score).

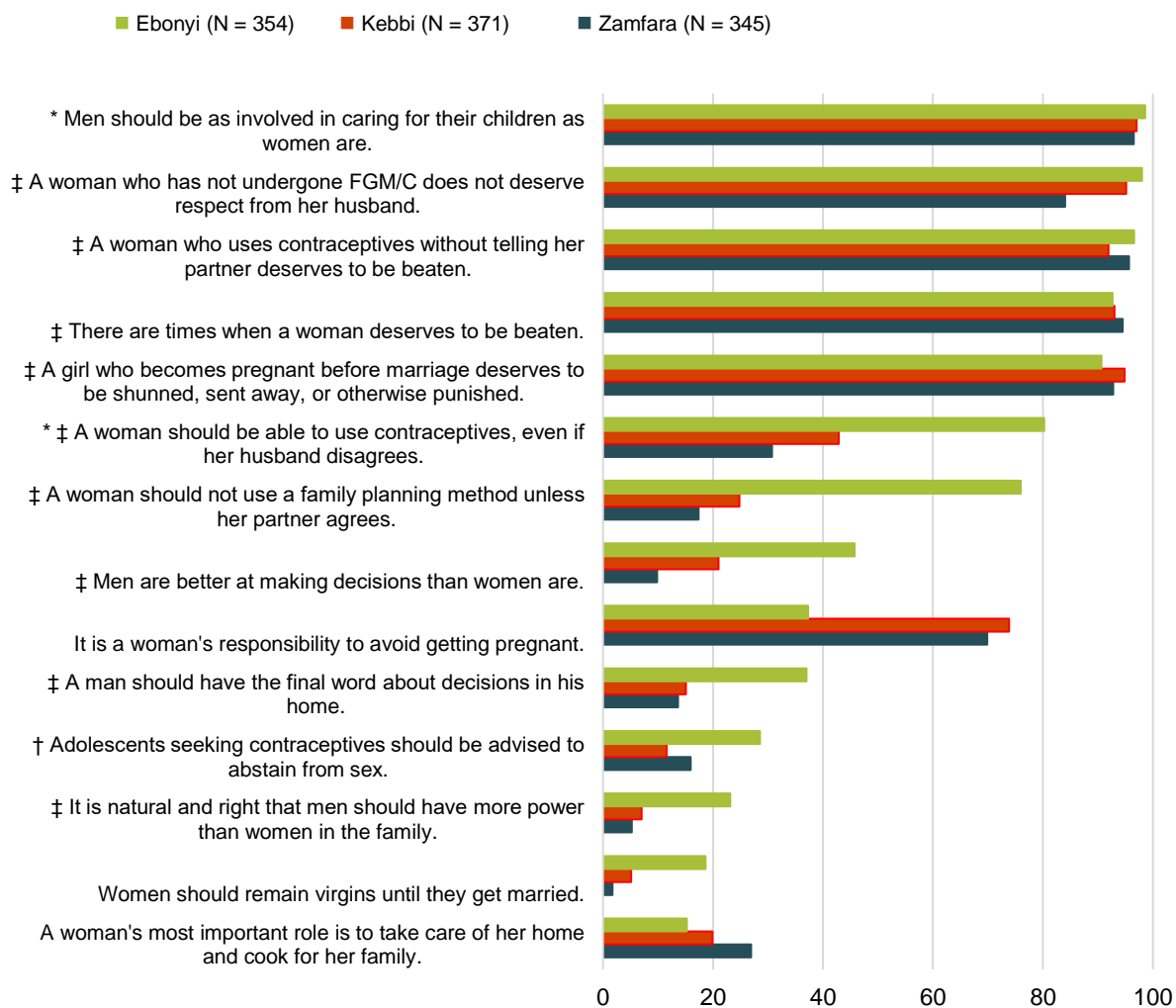
Figure 23 shows the percentage of providers who disagree or strongly disagree with each gender attitude statement (percentage strongly agree or agree shown for reverse coded statements such that a longer bar indicates a more gender-equitable response for all statements). Ebonyi providers gave more progressive responses for nearly all statements, whereas providers in Zamfara were typically the least progressive.

We conducted exploratory factor analysis (EFA) including 13 of the 14 statements,¹⁷; the solution was restricted to one factor, and we retained items with factor loadings greater than or equal to 0.40. The EFA resulted in a nine-item gender attitude scale. Cronbach's alpha, a measure of scale internal consistency or reliability, improved from 0.66 (minimally acceptable) in the unadjusted scale to 0.74 (respectable) in the adjusted scale. A gender attitude score was then calculated for each respondent from the EFA-adjusted score; scores ranged from one to four, with higher scores indicating more gender-equitable attitudes.

Figure 24 presents the EFA-adjusted provider gender attitude scores for each state. Providers in Ebonyi had the highest mean score (3.1), indicating the most gender-equitable provider attitudes, followed by Kebbi (2.6) and Zamfara (2.4).

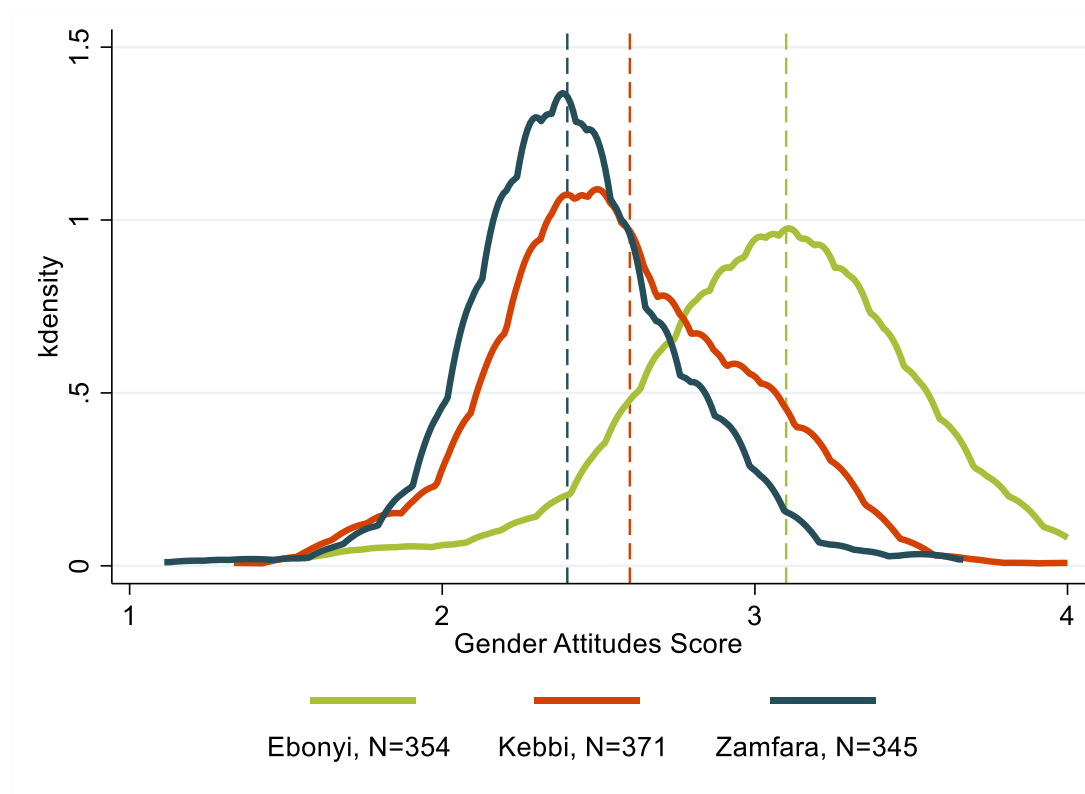
¹⁷ We excluded the statement about adolescents seeking contraceptives as it was not specifically related to gender (Doyle, et al., 2021).

Figure 23. Percentage of providers who disagree/strongly disagree with gender attitude statement, by state



* Reverse coded (graphed percent strongly agree/agree); † Not included in factor analysis; ‡ Item retained in adjusted score.

Figure 24. Distribution of EFA-adjusted provider gender attitudes scores, by state



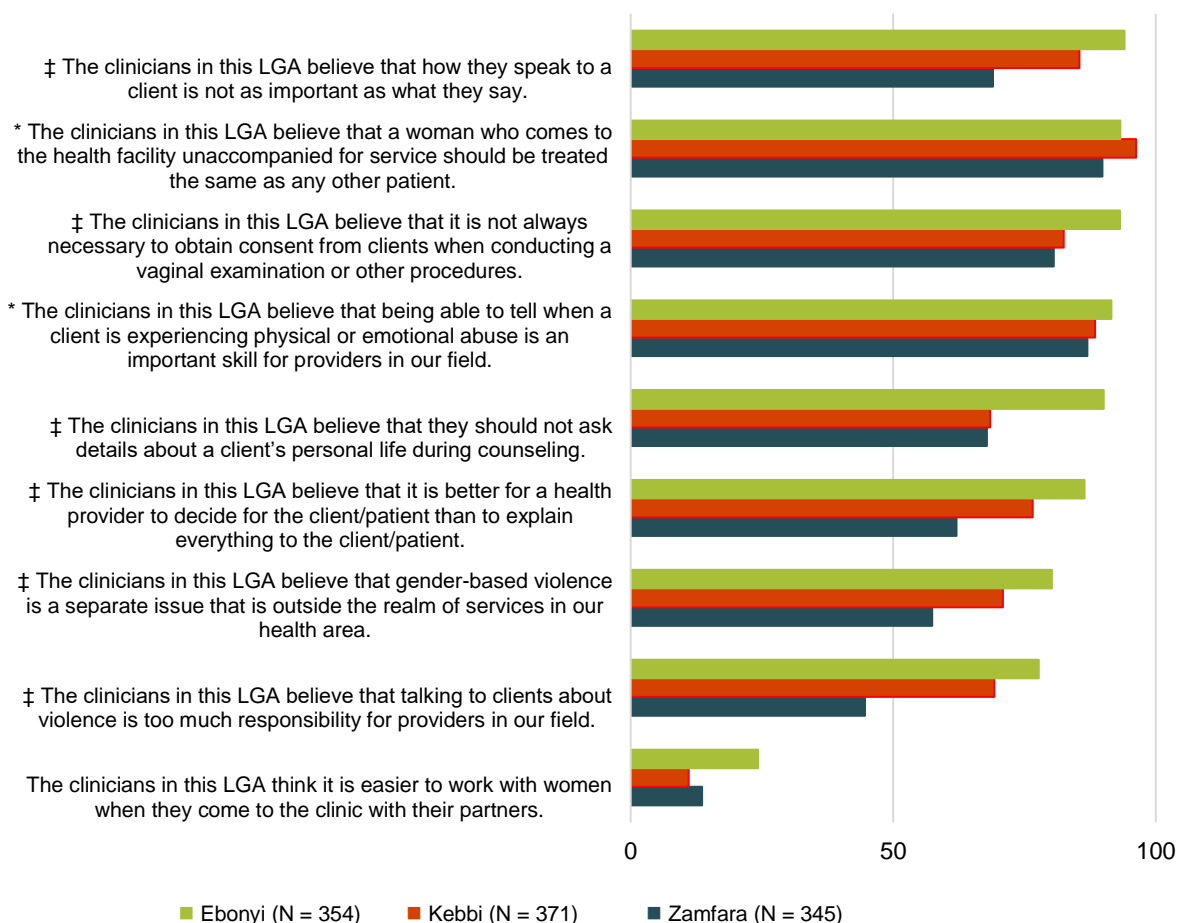
Note: Vertical dashed lines indicate state-level mean scores.

Gender-Sensitive Community RMNH QOC Norms

The second set of items included in the gender norms and attitudes section included nine statements about gender-sensitive RMNH QOC among other providers in the respondent's LGA. Providers were asked about their perceptions of similar providers in their LGA regarding attitudes and beliefs around gender-sensitive communication, addressing GBV, and promoting individual agency. Items in this section were adapted from the Doyle, et al. study (2021), D4I's FP provider gender competency assessment tool (2021), and from the literature. Most items were phrased such that a higher score or disagreement with the statement indicates a more gender-equitable norm, and items where agreement indicated a more equitable attitude were reverse coded for analysis.

The percentage of health workers who disagreed or strongly disagreed with each statement about similar providers in their LGA is presented in Figure 25 (percentage strongly agree or agree shown for reverse coded statements such that a longer bar indicates a more gender-equitable response for all statements). Providers in Ebonyi gave more progressive responses for eight of the nine statements, whereas providers in Zamfara gave the least progressive responses on eight of nine items.

Figure 25. Percentage of providers who disagree/strongly disagree with gender-sensitive community RMNH QOC norms statements, by state

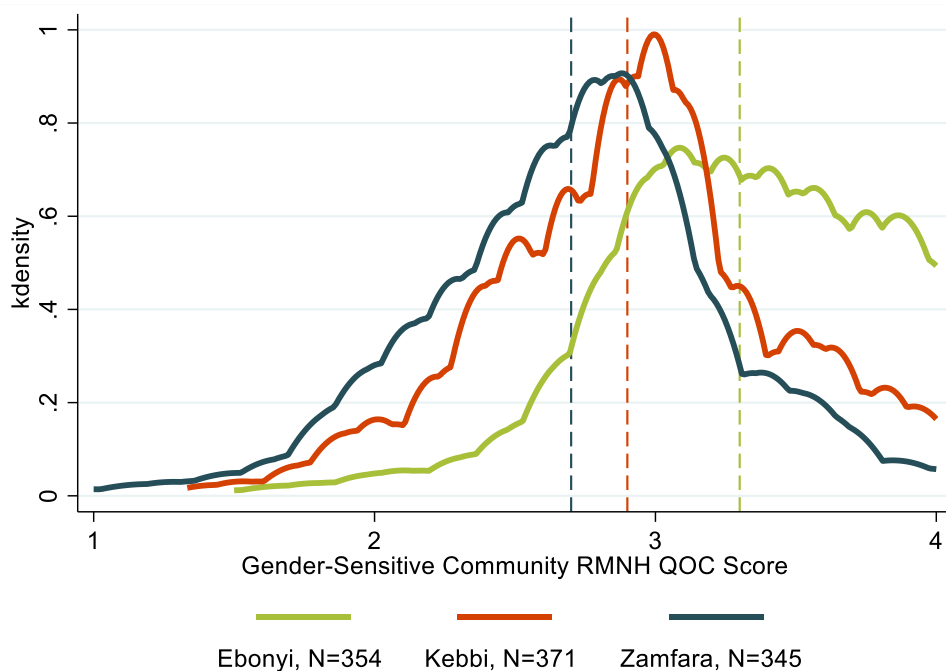


* Reverse coded (graphed percent strongly agree/agree); ‡ Item retained in adjusted score

A second EFA was conducted on the responses to the nine statements to create a gender-sensitive community RMNH QOC scale following the methodology described above. The EFA resulted in a six-item scale, which was used to calculate a RMNH QOC score for each respondent; the scores ranged from one to four, with higher scores indicating more gender-equitable attitudes. Cronbach's alpha improved from 0.71 (respectable) in the unadjusted scale to 0.77 (respectable) in the adjusted scale.

Distributions of the EFA-adjusted RMNH QOC norm scores are shown in Figure 26. Like the provider gender attitude scores, providers in Ebonyi had the highest mean score (3.3), indicating greater perceived gender-equitable norms among other providers in the LGA, followed by Kebbi (2.9) and Zamfara (2.7).

Figure 26. Distribution of EFA-adjusted perceived gender-sensitive community RMNH QOC norms, by state



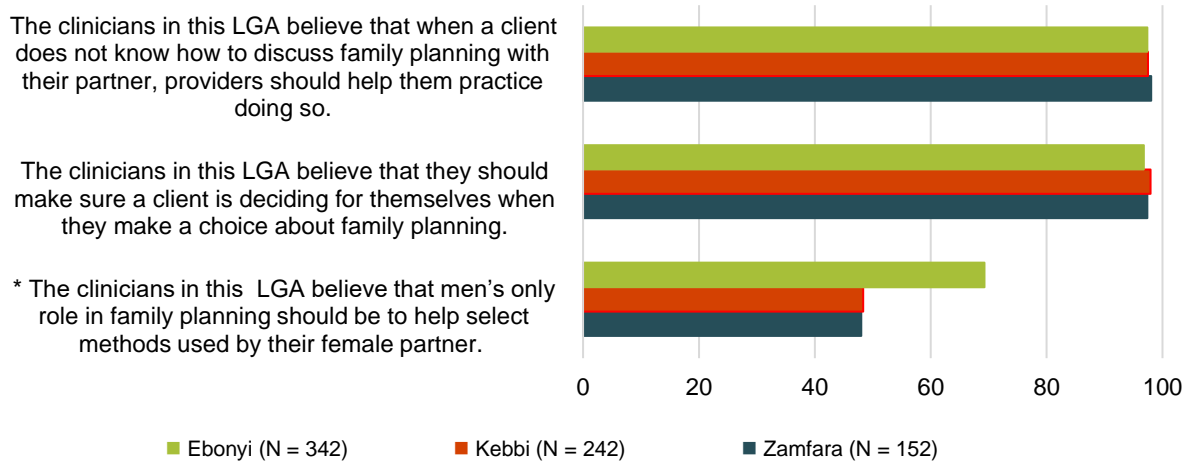
Note: Vertical dashed lines indicate state-level mean scores.

Perceived Gender-Sensitive FP/ANC Service Provision Community Norms

Lastly, the baseline provider survey asked about providers' agreement with three statements on couples' communication, promoting individual agency, and engaging men as partners and users of family planning. Eligible respondents included FP/ANC providers, and respondents were instructed to consider other providers in their LGA who provide FP or ANC services when evaluating the statements. Two of the three statements were phrased such that agreement indicates a more gender-equitable norm.

Nearly all FP/ANC providers in each state agreed or strongly agreed that other FP/ANC providers in their LGA supported coaching clients on discussing FP with their partner and ensuring that patients make their own contraceptive decisions. Over two-thirds of providers in Ebonyi disagreed or strongly disagreed with the statement that men's only role in FP should be to help select contraceptive methods for their female partner to use, compared to 48 percent who disagreed/strongly disagreed in Kebbi and Zamfara ($p < 0.000$, Figure 27).

Figure 27. Percentage of providers who strongly agree/agree with statements on gender-sensitive FP/ANC service provision norms in their LGA, by state



* Reverse coded (graphed percent disagree/strongly disagree); † Not included in factor analysis; ‡ Item retained in adjusted score

Summary and Implications

The purpose of this study was to assess levels of health provider training, KAP, CPI, and QOC at the baseline of D4I's portfolio-level evaluation of four USAID/Nigeria HPN activities. Results are based on surveys of health workers at public primary healthcare centers in Ebonyi (N = 354), Kebbi (N = 371), and Zamfara (N = 345).

Training

Levels of training ever received and recently received within the past two years were highest in Kebbi across training topics. While training ever received was lowest in Ebonyi across nearly all topics, most of the training on general, GBV, malaria, child health, and diagnostic topics occurred in the past two years. Conversely, most providers interviewed in Zamfara reported moderately high levels of ever receiving training on all non-gender related topics, but 50 percent to 75 percent of training occurred over two years ago.

Over 80 percent of Kebbi providers who reported ever receiving training indicated that the training occurred in the past two years for nearly all specified topics. This finding on breadth of recent training content aligns with IHP's integrated approach in Kebbi and is reflective of IHP's support in Kebbi for over two years at the time of the D4I provider survey baseline.

Low levels of training ever received in Ebonyi may be partially explained by higher education and professional qualification levels among respondents, as well as a health workforce that has higher secondment and shorter tenure at their current facility. Recent training is higher for malaria-related content in Ebonyi, whereas recency is low for integrated service training; these levels correspond to PMI-S's presence in Ebonyi for 18 months, compared to 15 months for IHP at evaluation baseline.

Findings on training levels and recency in Zamfara also align with USAID/Nigeria activity focus and duration in the state: PMI-S was working in Zamfara for 11 to 12 months at the time of baseline data collection. Over 80 percent of Zamfara providers had been trained on malaria-specific topics, and about half of that training had occurred in the past two years. Low levels of recent training in ANC and FP align with USAID's disease-focused approach in Zamfara, and higher levels of ANC and FP training ever received reflect the long history of multiple USAID activities in the state.

Malaria

Nearly all providers in Ebonyi personally provided malaria and child health services and regularly provided child health services for fever in their current position at the sampled facilities. Malaria-specific training was high (between 70 percent to 80 percent) and recent (roughly 75 percent in the past two years). Nearly all providers agreed or strongly agreed that it is important to test all patients with fever for malaria in both the rainy and dry seasons, and to only prescribe ACT with a positive malaria test result. Most providers also agreed that it was important to assess the fever status of all patients in both seasons, but agreement was lowest at 85 percent during the dry season. Ebonyi health workers demonstrated strong performance on the critical components of the pediatric and ANC malaria clinical vignettes: nearly all respondents correctly ordered malaria tests, diagnosed malaria, and prescribed ACT to treat

malaria, however, 15 percent incorrectly indicated they would treat malaria-positive children with antibiotics.

Nearly all providers in Kebbi provided malaria services, but only 84 percent regularly provided child health services for fever. The percentage of providers ever trained and recently trained was highest in Kebbi compared to Ebonyi and Zamfara across malaria training topics and service areas, with roughly 80 percent to 90 percent of respondents reporting ever receiving training on various malaria topics, and 80 percent of training reported during the previous two years. Nearly all providers agreed that it was important to test all patients with fever for malaria, and 92 percent agreed that ACT should only be given to malaria-positive patients. Agreement levels were lowest for assessing all patients for fever during the rainy season (89 percent) and during the dry season (80 percent). Kebbi health workers also performed well on the critical components of the pediatric and ANC malaria vignettes, with 99 percent to 100 percent of providers correctly ordering malaria tests and diagnosing malaria, and over 90 percent correctly treating with ACT. Over 20 percent of respondents incorrectly indicated they would also prescribe antibiotics for pediatric malaria cases.

Malaria service provision was lowest among respondents in Zamfara, where 87 percent of respondents personally provided malaria services and 70 percent regularly provided child health services for fever. While 80 percent to 90 percent of respondents had ever received training across malaria-specific topics, nearly half of reported training occurred over two years ago. Similar to Ebonyi and Kebbi, almost all providers agreed or strongly agreed that it was important to test fever patients for malaria in both rainy and dry seasons and to only prescribe ACT with a positive malaria test result. Nearly all providers also agreed that it was important to assess fever status among all patients during the rainy season, and 87 percent agreed for the dry season. Respondents in Zamfara also performed well on the testing, diagnosis, and treatment components of the pediatric malaria and MIP ANC vignettes, with nearly all providers correctly testing for, diagnosing, and treating malaria. Forty-two percent of respondents—the largest of all states—indicated they would treat malaria-positive children with both ACT and antibiotics.

Implications of Baseline Malaria Findings for Anticipated Evaluation Results

Two implications for the multi-activity HPN evaluation emerge from the baseline malaria findings:

1. Indicators related to malaria (training, vignettes, attitudes, and norms) tend to be highly positive in all three states, suggesting there is relatively little scope for these to increase by endline; and
2. There is evidence that high performance on malaria provider outcomes can be achieved with an integrated programming approach (e.g., Kebbi) even at this early point in the evaluation.

Planned triangulation of these findings with data on facility readiness to provide malaria services (from the evaluation baseline health facility assessment), on service provision from the DHIS2, and from recent malaria-related population-based surveys (e.g., the MIS and the UNICEF Multiple Indicator Cluster Survey) on general and child-specific outcomes can provide further insights into how provider results interact with other parts of the evaluation theory of change to influence malaria outcomes.

ANC

Over 95 percent of respondents in Ebonyi personally and regularly provided ANC services in their current position. The majority of ANC training was received over two years ago, and fewer than half of ANC providers reported ever receiving job-related training on ANC screening, counseling, identification/management of pregnancy complications, or nutritional assessment. Low ANC training levels in Ebonyi may be partly explained by the short average tenure and relatively higher facility secondment and professional qualifications of health workers at public PHCs, particularly if ANC training has been targeted to nonprofessional providers and/or assigned staff during the initial phase of IHP's work in the state. Despite low training coverage and recency, however, provider attitudes toward ANC care practices strongly aligned with ANC clinical care guidelines. Between 99 percent and 100 percent of respondents in Ebonyi agreed or strongly agreed that important ANC components include delivery planning, discussions of danger signs in pregnancy, administering tetanus injections to pregnant women, recommending three or more IPTp doses to all pregnant women, and providing mosquito nets.

Approximately 60 percent of health workers surveyed in Kebbi personally or regularly provided ANC services. Overall and recent training levels among ANC providers were roughly 80 percent for all four ANC-specific topics, and all or almost all providers agreed or strongly agreed with the five ANC clinical norms statements.

One-third of health workers interviewed in Zamfara personally or regularly provided ANC services. While the percentage of ANC providers who ever received training on the four ANC topics was roughly 75 percent, only about one-third of reported training occurred during the previous two years. Nearly 100 percent of respondents agreed or strongly agreed with the five ANC clinical norm statements.

Family Planning

Seventy-six percent of respondents in Ebonyi provided family planning services, compared to 99 percent who provided malaria services and 98 percent who provided ANC; 68 percent of health workers regularly provide FP services. Reported receipt of FP-specific training on general FP counseling, clinical management of FP methods and side effects, IUCD insertion/removal, implant insertion/removal, and postpartum FP were low overall in Ebonyi, ranging from 51 percent to 61 percent of FP providers, and roughly 60 percent of reported FP training had been received more than two years before baseline data collection. Provider clinical and gender attitudes and norms around FP topics were more varied than around malaria or ANC topics. Approximately 75 percent of providers agreed that it was appropriate/important to offer FP to women under age 18 if requested and to offer a range of contraceptive methods, including LARC, to women regardless of the number of children they have, and 65 percent of Ebonyi respondents disagreed with the statement that it is *not* appropriate to offer contraceptives to an unmarried person. Three-fourths of providers agreed that it is important to require a partner's consent before providing contraceptives to women.

Ebonyi FP provider performance on family planning side effects and PFP clinical vignettes was mixed: 94 percent of providers indicated they would counsel women on PFP, but only 76 percent agreed they would counsel a woman on alternate FP methods if she was experiencing side effects and wanted to switch methods, and only 29 percent of FP providers indicated they

would consider the patient's method preference when deciding the course of action in both FP vignettes.

In Kebbi, two-thirds of respondents personally provided FP services and 55 percent regularly provided them. Overall and recent levels of training on FP-specific topics were highest in Kebbi compared to Ebonyi and Zamfara, with roughly 75 percent of FP providers ever receiving training on specific FP topics, and about 85 percent of reported training was received in the previous two years, which likely reflects IHP's presence since April 2019. Over one-quarter of health workers felt it is appropriate to offer FP to women under age 18 and important to offer a range of methods, and over half felt it is appropriate to offer FP to unmarried people. However, nearly all providers agreed or strongly agreed that it is important to require partner consent before providing contraceptives to women.

Kebbi providers had the highest vignette domain and total scores for both FP vignettes. Eighty-six percent of providers in Kebbi said that they would counsel on other family planning methods in the side effects vignette and 95 percent said they would counsel on FP in the PFP vignette. Thirty percent to 36 percent of providers reported considering the patient's preferences and 66 percent to 68 percent reported considering method side effects when taking actions in the two FP vignettes.

Only 41 percent of interviewed health workers in Zamfara provided FP services, and only 31 percent regularly provided FP services. While overall FP training levels are high—81 percent of FP providers in Zamfara reported ever receiving training on the specified FP topics, similar to levels in Kebbi (84 percent) and significantly higher than Ebonyi (65 percent)—less than one-third of reported FP training was received in the previous two years (compared to over 40 percent in Ebonyi and 84 percent in Kebbi). About two-thirds of Zamfara health workers responded that it was appropriate to offer FP to women under age 18 and important to offer a range of methods. Only half, however, felt it was appropriate to offer FP to unmarried people. Similar to Kebbi, most providers (94 percent) agreed or strongly agreed that it is important to require partner consent before providing contraceptives to women.

Zamfara FP provider performance on family planning side effects and PFP clinical vignettes was weaker than that of the other states. While 94 percent of providers reported that they would counsel patients on PFP, only 60 percent indicated they would counsel women on alternate FP methods if she was experiencing side effects and wanted to switch methods. For both vignettes, roughly 60 percent of providers reported considering side effects and about 20 percent reported considering the patient's preferences when determining action steps.

Gender

Gender-related training was significantly higher and more recent in Kebbi than in Ebonyi and Zamfara, reflecting the fact that IHP has been working in Kebbi since April 2019 and Ebonyi since April 2020. The highest gender-related training levels were found for FP topics, including partner communication for FP (40 percent of Ebonyi FP providers to 76 percent of Kebbi FP providers ever trained, $p < 0.001$) and MEFP (41 percent of Ebonyi FP providers to 69 percent of Kebbi FP providers ever trained, $p < 0.001$), followed by ANC topics including partner communication around birth planning (32 percent of Ebonyi ANC providers to 72 percent of Kebbi providers, $p < 0.001$) and male engagement in ANC (33 percent of Ebonyi providers to 64

percent of Kebbi providers, $p < 0.001$). Training was lowest for GBV among all providers, ranging from 35 percent of providers in Ebonyi and Zamfara to 47 percent of Kebbi providers ever trained, ($p < 0.001$). Training across the five gender-related training topics was most recent in Kebbi, where 85 percent of ever-trained providers received training within the previous two years, compared to 45 percent of similar providers in Ebonyi and 35 percent in Zamfara. Notably, GBV training was more recent than the FP or ANC gender-related training in Ebonyi (63 percent GBV training in the previous two years, compared to about 40 percent FP and ANC gender-related training in the previous two years) and in Zamfara (48 percent GBV training in the previous two years, compared to about 32 percent FP and ANC gender-related training in the previous two years).

Providers reported on their individual gender attitude beliefs and the research team used these responses to calculate provider gender attitude scores by state. Ebonyi had the highest mean score (3.1), indicating the most gender-equitable provider attitudes, followed by Kebbi (2.6) and Zamfara (2.4). Looking at the gender attitude statement responses individually, providers across the states reported similar levels of disagreement with the individual statements relating to GBV, shunning pregnant girls, and men's involvement in caring for their children; nearly all providers expressed equitable gender attitudes for these statements. For the remaining individual gender attitude statements, however, provider report varied greatly by state, with Zamfara providers typically reporting the least gender-equitable beliefs. Providers were also asked about perceived gender-sensitive RMNH QOC among other providers in their LGAs. Providers in Ebonyi gave more progressive responses for eight of the nine statements, whereas providers in Zamfara gave the least progressive responses on eight of nine items.

Across the states, providers rarely mentioned screening for GBV in the hypertension in pregnancy/GBV ANC vignette, and the percentage was highest in Ebonyi even though training on GBV was highest in Kebbi. Similarly, GBV risk assessment and management was poor in all states, with few providers discussing immediate risk assessment and safety planning, referral/social support options and other recommended actions. These findings, together with the more gender-equitable provider attitudes in Ebonyi relative to Kebbi, may suggest that local norms and provider beliefs have greater weight than the training provided in influencing provider GBV practices.

MEFP scores were generally low in FP vignettes in all states. In both FP vignettes, few providers mentioned during counseling the importance of joint FP decision making or suggested bringing a partner to a future session. Similarly, few providers considered acceptability of the FP method to the husband when determining a course of action, suggested joint future counseling, or coached the woman on discussing FP with her partner. The MEFP vignette findings, when considered alongside FP-related provider clinical attitudes and provider gender attitudes, suggest that there may be some tension in promoting male engagement in FP while also supporting female autonomy to make their own FP decisions, especially in Kebbi and Zamfara. For example, in Ebonyi, 76 percent of providers agree/strongly agree that partner consent should be required before providing contraceptives to women, but 80 percent agree/strongly agree that women should be able to use contraceptives even if their husband disagrees, and 76 percent disagree/strongly disagree that women should not use a FP method unless their partner agrees. In Kebbi and Zamfara, norms favoring male permission appear to be more prevalent: over 94 percent of providers agree/strongly agree that partner consent should be required

before providing contraceptives to women and over 75 percent of providers agree/strongly agree that women should not use a FP method unless her partner agrees, compared to 31 percent of Zamfara providers and 43 percent of Kebbi providers who agree/strongly agree that a woman should be able to use contraceptives even if her husband disagrees.

Conclusions

In conclusion:

- In general, providers in Kebbi are more likely to have received training and their training is more recent than providers in Ebonyi and Zamfara. This finding is expected since IHP has been operating longer in Kebbi than in Ebonyi and longer than PMI-S in Zamfara.
- In all three states, indicators related to malaria tend to be highly positive for training, clinical vignettes, and provider clinical attitudes and norms.
 - Both the disease-focused and the integrated approach are associated with positive indicators for malaria at evaluation baseline.
 - High baseline levels of malaria indicators suggest there will be little room for improvement in these indicators in the evaluation endline provider survey.
- Indicator levels for ANC and FP were more varied than those for malaria.
 - Providers in Kebbi generally performed well on FP and ANC indicators, which could reflect that IHP has been working there longer and that the integrated approach is associated with stronger indicators for ANC and FP as well as for malaria.
 - Providers in Ebonyi often have similar results on vignette indicators to providers in Kebbi even though they have less training. This could be associated with a more professional health workforce in Ebonyi.
 - Providers in Zamfara tend to perform worse than those in the other states on ANC and FP indicators. The malaria-focused approach implemented by PMI-S was not designed to influence these areas, which is a disadvantage of the disease-focused approach relative to the integrated approach. Vertical programs focused on ANC and FP would be needed to compliment the malaria programming under this model to reach these components.
 - There is little variation in attitudes and norms for ANC, and more variation for FP.
- Gender was integrated throughout the provider survey. Training on gender issues was low in Ebonyi and Zamfara but moderate in Kebbi where it has been included in IHP training. However, few providers in any state mentioned screening for GBV in the hypertension in pregnancy/GBV ANC vignette, and the percentage who did was highest in Ebonyi even though training on GBV was highest in Kebbi. Gender attitudes and norms among providers were most gender equitable in Ebonyi and least gender equitable in Zamfara. Results suggest, overall, that context rather than training may be a more important influence on provider gender-related attitudes and practices than it is for other clinical service areas.

Programmatic Implications

The study identified outcomes that can be improved through activity-supported strategies and interventions. These results and possible solutions to identified gaps were discussed with evaluation stakeholders to determine programmatic recommendations based on evaluation baseline findings. Recommendations are summarized below.

Malaria Programming

- Activities should address training and support for comprehensive malaria care provision, particularly around patient history, physical exam, and counseling domains, as well as incorrect prescription of antibiotics for pediatric malaria. This recommendation is based on the survey findings of low overall raw scores for the child health vignette and MIP/ANC vignette and 15 percent to 42 percent of providers incorrectly suggesting antibiotic prescription for the pediatric malaria case.

ANC and FP Programming

Given the current programming scope, recommendations related to gender, ANC, and FP are more relevant to the integrated programming in Ebonyi and Kebbi; given the disease-focused malaria programming in Zamfara, it is unlikely that these recommendations can be addressed under the scope of current USAID programming there.

- **More emphasis is needed on GBV screening, risk assessment, and management in activity training and support.** This recommendation is based on survey vignette findings that only 37 percent to 47 percent of providers mentioned GBV screening even though the patient shared isolation and argument risks and the physical exam showed significant bruising; in addition, providers rarely mentioned GBV risk assessment and management strategies during the counseling and next steps component.
- **Activities should craft interventions to shift negative gender-related attitudes and norms on FP service provision and encourage male engagement in FP.** Clinical vignette MEFP scores were low across the states and providers commonly reported individual attitudes and LGA norms supporting negative gender-related attitudes. Attitudes and norms tended to be least gender equitable in Zamfara and Kebbi.
- **Activities should address FP QOC gaps, particularly in history taking, counseling content, and provider consideration of key factors to determine course of action.** In both FP vignettes, provider scores in these domains were low in all three states.

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Appendix A. Nigeria HPN Evaluation Health Facility Assessment and Provider Survey Baseline Sampling Strategy

The Nigeria HPN evaluation baseline sampling strategy was designed based on programming approaches and implementing partner data collection plans prior to evaluation baseline in early 2021. The process to select health facilities in Ebonyi and Kebbi states followed IHP program implementation targeting, whereas the selection strategy in Zamfara state used a modified version of the Ebonyi/Kebbi approach based on PMI-S program targeting.

Background

Implementation Partner Programming

IHP was working in approximately 220 health facilities in Ebonyi and Kebbi during D4I's evaluation baseline planning.¹⁸ IHP's selection of health facilities is based on Nigeria's Primary Health Care Under One Roof (PHCUOR) policy, which maintains that there should be one functional primary healthcare center (PHC) in each ward. IHP is working in these designated 'functional' PHCs in selected wards in each state. In Kebbi, IHP is working only in public health facilities. In Ebonyi, IHP is working in both public and private health facilities because there is a history of working with private facilities in this state.

PMI-S is working in approximately 713 health facilities in Zamfara. Selection criteria for these facilities is in part based on where PSM is working and following these criteria:

1. Functionally on DHIS2 (exist and are reporting);
2. Accessibility (security);
3. Staff strength; and
4. Patient turnover.

PMI-S is also working in Ebonyi, but D4I did not obtain the list of health facilities in Ebonyi because IHP facility lists were used for sampling purposes in Ebonyi.

Sources of Data

IHP conducted a baseline HFA in all of its program facilities in Ebonyi and Kebbi (approximately 220 per state). The Kebbi HFA was conducted in Fall 2020 and the Ebonyi HFA in Summer 2021.

PMI-S also conducted a baseline HFA in Ebonyi and Zamfara. The sample of facilities for its HFA is small relative to IHP's baseline (~ 30 facilities/state). The reason for this is that PMI-S powered its sample on patient/visit-level data from DHIS2, not on facility-level indicators.

D4I Sampling Approach

D4I needed comparable data across all three evaluation states and sought to leverage existing data collection as much as possible. For this reason, the D4I evaluation team made the decision to leverage IHP data collection in Ebonyi and Kebbi, while collecting additional information in those states, as needed. D4I collected similar information in Zamfara where IHP is not working. Although PMI-S is also

¹⁸ As of December 2022, IHP is working with at least one main PHC per ward (158 wards in Ebonyi and 226 wards in Kebbi).

collecting HFA data in Ebonyi and Zamfara, its sample size is small and a decision was made to use those data where possible as a reference, but not to rely on it for analysis.

Health Facility Assessment Sampling

To select facilities for the HFA, D4I sought to obtain as comparable a sample as possible across the three states selected for the evaluation. Because IHP is working in Ebonyi and Kebbi, and has conducted extensive HFAs in those states, and because we are leveraging their data collection for the HFA analysis, D4I sought to generate a baseline evaluation sample as comparable to IHP's HFA sample as possible, which also mirrors their programming. Thus, the main goal was to select a representative sample of IHP facilities in Ebonyi and Kebbi and a comparable sample in Zamfara. The four main inclusion criteria for the D4I HFA were that the facility must be a (1) public health facility, (2) primary healthcare facility (no secondary or tertiary facilities), (3) receiving direct support from IHP or PMI-S, and (4) the designated 'functional' PHC facility¹⁹ by PHCUOR policy (one per ward). This resulted in a different sampling strategy in each state.

- **Kebbi:** D4I received a list of facilities surveyed in the IHP baseline HFA from IHP. The IHP HFA in Kebbi is theoretically comprised of designated 'functional' public facilities only. Thus, the sample was limited to primary health facilities and a random selection of 120 wards was drawn.
- **Ebonyi:** The IHP HFA in Ebonyi included both public and private facilities; D4I received the list of facilities surveyed in the IHP Ebonyi HFA baseline from IHP. From this list, D4I restricted the Ebonyi sample frame to include only public primary health facilities, and a random selection of 120 wards was drawn.
- **Zamfara:** D4I obtained the list of 731 public facilities in which PMI-S is working; in most areas, PMI-S was supporting more than one facility per ward. D4I received an updated PMI-S facility list in early June 2021, which was used to update our baseline sample frame. We restricted the Zamfara sample frame to primary health facilities, and 120 wards were randomly selected. Once the 120 wards were selected for the sample, the 'functional' PHC was then selected in each sampled ward by using the list of 'functional' PHCs provided by PMI-S. PMI-S was not working in the 'functional' PHC in a small number of wards; in instances where one of these wards was sampled, D4I prioritized selecting the public PHC where PMI-S was implementing project activities rather than including the 'functional' PHC that was not receiving IP support in our baseline sample.

Lastly, 10 replacement wards/facilities were randomly selected from each state.

Provider Survey Sampling

D4I also conducted interviews with healthcare providers in a sample of program facilities in the three case study sites. We asked the providers about three different types of services, although not all providers were able to answer about each service type; for example, providers were only eligible to answer the scenarios for the types of services they provided (e.g., family planning services or ANC services).

IHP conducted a survey in Kebbi state in 225 health facilities in 2020, and shared information from the HFA about the number of providers in each facility with D4I. We used those data to give us a better understanding of the number and types of providers we could expect to find in the health facilities during D4I's HFA and provider interviews. We found, based on the number of providers per facility from the Kebbi survey, interviewing up to five providers in half of the facilities would give us about 350

¹⁹ A small number of selected facilities in Zamfara were not the ward's 'functional' public PHC; see explanation for PMI-S facilities.

providers (See Table A1). Based on that information, we decided to sample up to five providers in 120 health facilities per state.

We calculated the minimum detectable effect size (MDE) without accounting for clustering at the facility level. With parameters of mean=0.5, power=0.80, alpha=0.05, and standard deviation=0.2, the estimated MDE for a 350 provider interviews per state sample size is 4.2 percent.

Table A1. Number of providers in surveyed facilities in Kebbi, 2020

Number providers/facility	Number facilities	Number interviews in half of the facilities
0*	7	3.5
1	43	21.5
2	42	42
3	36	54
4	26	52
5+	71	177.5
Total	225	350.5

Note: * Assume one provider per facility is available.

We also calculated the MDE for facility-level indicators under two standard deviation scenarios. In both scenarios, the parameters included a mean=0.5 to maximize potential variance, power=0.80, and alpha=0.05. For a 120 facility per state sample size, under the SD=0.2 scenario the estimated MDE is 7.3 percent, and under the SC=0.3 scenario the estimated MDE is 10.9 percent.

Field Sampling of Providers

A random number table was created in Excel to enable sampling of providers at facilities during data collection. Field supervisors and field staff received training on how to use the random number table to generate a random sample of eligible providers in instances where a sampled facility had more than five eligible health providers.

Adaptive Sample Substitution for Security Concerns

As previously described, a random sample of 120 wards was drawn without replacement for each state (Phase 1 sample), with an additional 10 randomly selected wards per state drawn as alternates (Phase 2 sample). Final sample implementation differed in each state given security concerns in northern Nigeria during baseline data collection.

Sample Implementation: Ebonyi

No revisions were necessary for the Ebonyi sample frame or original sample. Ninety-seven percent of sampled wards were from the Phase 1 sample: we successfully interviewed 116 of the originally sampled 120 facilities and substituted four facilities from the Phase 2 alternates sample to complete the sample of 120 facilities.

Sample Implementation: Kebbi

DRMC's initial security assessment found that nine of the original 120 Phase 1 Kebbi wards and one of the Phase 2 Kebbi wards were not accessible. The original Phase 1 and Phase 2 samples were combined for an updated list of 120 accessible wards, and an additional 10 replacement wards were randomly drawn from the sample frame. Interviews were conducted in 98 percent of the updated Phase 1 sampled wards, and three alternate facilities were sampled to complete the Kebbi sample of 120 facilities.

Sample Implementation: Zamfara

A phased sample design was implemented in Zamfara given the evolving security concerns affecting ward accessibility and the need to minimize fieldwork delays.

DRMC completed an initial security assessment of all originally sampled wards (120) and alternate wards (10) in Zamfara at the beginning of fieldwork. Based on the number of sampled wards deemed inaccessible compared to the total number of wards with PMI-S supported facilities, it became evident that D4I would need to sample all accessible PMI-S supported wards, and to resample wards with multiple PMI-S supported facilities, in order to achieve the 120-facility sample size. Table A2 presents the phased sample design. Within each fieldwork region, DRMC prioritized interviewing as many Phase 1 facilities as were safely accessible; replacement order for non-accessible facilities in the 120 Phase 1 list was to visit all accessible Phase 2 facilities, then accessible Phase 3 facilities, followed by revisiting wards to interview a second facility from the Phase 4 priority list, and lastly interviewing facilities from the Phase 4 non-priority list until the 120 facility sample size was achieved.

Phase 1: The Phase 1 sample included 120 wards sampled without replacement from a list of 144 PMI-S supported wards; one sampled ward was dropped from the list because PMI-S was no longer supporting any ward facilities at the time of baseline data collection. Only 75 of the 119 Phase 1 sampled wards were determined to be accessible (63 percent).

Phase 2: The Phase 2 sample included an additional 10 wards, randomly sampled without replacement as alternates for the Phase 1 sample. Only five of these 10 wards were deemed accessible.

Phase 3: The Phase 3 sample included the remaining 15 PMI-S supported wards, seven of which were deemed accessible.

Phase 4: The final step in the phased sample design was to draw the sample of wards where a second facility would be selected. Phase 4 eligible wards included all accessible wards with multiple PMI-S-supported public PHCs (confirmed or potential additions/replacements). D4I planned to draw a randomly selected second facility from these sampled wards that was receiving PMI-S support at the start of baseline data collection.

- **Priority wards:** Within the Phase 4 sample, 19 wards were prioritized where the previously selected facility (in Phases 1-3) was not a PMI-S confirmed facility (it was either a proposed addition or replacement); this ensured that we would have at least one confirmed PMI-S supported facility in as many sampled wards as possible in case some of the proposed PMI-S facilities were not funded.
- **Non-priority wards:** The remaining 64 Phase 4-eligible wards were included in a randomly ordered non-priority list. DRMC visited facilities within fieldwork regions in numeric order until the 120 facility sample size was reached.

Zamfara interview results are presented in Table A3. Approximately 66 percent of the Phase 1 sample, 80 percent of the Phase 2 sample, 67 percent of the Phase 3 sample, 58 percent of the Phase 4 priority sample, and 54 percent of the attempted Phase 4 non-priority sample (not all Phase 4 non-priority wards were used) were visited. Among the 120 interviewed Zamfara facilities, 65 percent were from the Phase 1 sample, and one-fifth were selected from duplicated wards (9.2 percent from Phase 4 priority wards and 11.7 percent from Phase 4 non-priority wards). Thirty-seven of the 120 sampled facilities (30.8 percent) were not the ward's designated 'functional' PHC per PHCUOR policy; of the 80 Zamfara wards with only one sampled facility, 16 were not the designated functional ward PHC, and of the 40 facilities sampled from 20 wards with two facilities/ward, 21 facilities were not the designated functional ward PHC.

Table A2. Zamfara phased sample design

	Phase 1 Sample	Phase 2 Sample	Phase 3 Sample	Phase 4 Sample
Sample	119	10	15	
Accessible	75	5	7	
Not accessible	44	1	8	
Unknown		4		
Priority				19
Non-priority				64

Notes: The 144-ward sample frame included all wards with PMI-S supported public PHCs.

Table A3. Zamfara sample results by accessibility and functional PHC status, by sampling phase

	Phase 1	Phase 2	Phase 3	Phase 4 Priority	Phase 4 Non-Priority
Sample	119	10	15	19	64 (24 used)
Not accessible	41	2	6	8	10
Achieved	78	8	9	11	14
Ward's designated 'functional' PHC					
Yes	66	8	8	0	1
No	12	0	1	11	13

Notes: The difference between the number of sampled wards and achieved wards equals wards that were not accessible due to security concerns in the Phase 2, Phase 3, and Phase 4 priority sample areas. The Zamfara sample included 78 Phase 1 wards (65.0 percent), 8 Phase 2 wards (6.7 percent), 10 Phase 3 wards (8.3 percent), 11 Phase 4 priority wards (9.2 percent), and 13 Phase 4 non-priority wards (10.8 percent).

LGA-Level Sample Summary

A total of 13 IHP-supported LGAs in Ebonyi, 21 IHP-supported LGAs in Kebbi, and 14 unique PMI-S supported LGAs in Zamfara were included in the baseline sample. The average number of providers interviewed per facility was 2.95 in Ebonyi, 3.01 in Kebbi, and 2.88 in Zamfara.

Appendix B. Provider Survey Instrument

Health Worker Interview: Nigeria HPN Evaluation		
Cover sheet		
Question #	Question	Responses
	Enumerator ID	
	Supervisor ID	
	Date	
	State	1) Kebbi 2) Zamfara 3) Ebonyi
4	Local Government Area	
5	Ward	
6	Health facility name	
9	Provider number	
10	Provider sex	1) Male 2) Female
10.a	Provider age	
11	Provider status	1) Assigned 2) Seconded
12	Indicate if the provider was previously interviewed in another facility. If yes, record the name of the facility number where he/she was interviewed.	1) Yes, previously interviewed, name of facility _____ 2) No, not previously interviewed
		If previously interviewed, end the survey after collecting GPS
13	Collect the GPS of the facility	latitude longitude altitude accuracy

Education and Experience		
Question #	Question	Responses
1.1	I would like to ask you some questions about your educational background. How many years of education have you completed in total, starting from your primary, secondary and further education?	
1.2	What is your current occupational category or qualification? For example, are you a registered nurse, or generalist medical doctor or a specialist medical doctor?	Medical officer (excluding Specialists/Consultants and Youth Corp doctors) Specialist/Consultant Youth Corp doctor Registered nurse Registered midwife Registered nurse midwife Community nurse Community health officer CHEW JCHEW Environmental office No technical qualifications/Nurse aide Other
1.3a	What year did you graduate (or complete) with this qualification? IF NO TECHNICAL QUALIFICATION , ASK: What year did you complete any basic training for your current occupational category?	YEAR:
1.4	In what month and year did you start working in this facility?	MONTH: YEAR:
1.5	Are you an in-charge for any clinical services?	Yes No

Training					
	Instruction: I would now ask you a few questions about services you personally provide in your current position in this facility and any in-service training, training updates or refresher trainings you may have received related to that service. Please remember we are talking about services you provide in your current position in this facility. The training topics I will mention may have been covered as a stand-alone training, or covered as part of another training topic.				
General training					
	I would like to ask you a few questions about in-service training you have received related to your work. In-service training refers to training you have received related to your work since you started working. I will start with some general topics. Note that the training topics I will mention may have been covered as standalone trainings, or they may have been covered under another training topic.				
2	Have you received any in-service training, training updates, or refresher training in any of the following topics? (Include both onsite and offsite trainings, updates and refreshers) [READ TOPIC]				
	IF YES, ASK: Was the training, training update or refresher training within the past 24 months or more than 24 months ago? If the training was in the last 24 months, ask the month and year of the most recent training.	Yes, within past 24 months	If yes, Month/Year of most recent training	Yes, over 24 months ago	No in-service training or updates
2.1	Standard precautions, including hand hygiene, cleaning and disinfection, waste management, needle stick and sharp injury prevention?	1	Month Year	2	3
2.2	Any specific training related to injection safety practices or safe injection practices?	1	Month Year	2	3
2.3	Health Management Information Systems (HMIS) or documentation/reporting requirements for any service?	1	Month Year	2	3
2.4	Gender-based violence	1	Month Year	2	3
Malaria					
3.1	In your current position, and as a part of your work for this facility, do you personally diagnose and/or treat malaria?	Yes	1		
		No	2		
3.2	Have you received any in-service training, training updates or refresher trainings on topics related to diagnosis and/or treatment of malaria?	Yes	1		
		No	2	skip to 4.1	

3.3	Have you received any in-service training, training updates or refresher trainings in any of the following topics [READ TOPIC]:	Yes, within past 24 months	If yes, Month/Year of most recent training	Yes, over 24 months ago	No in-service training or updates
	IF YES: Was the training, training update or refresher training within the past 24 months or more than 24 months ago?				
3.3.1	DIAGNOSING MALARIA IN CHILDREN	1	Month Year	2	3
3.3.2	HOW TO PERFORM MALARIA RAPID DIAGNOSTIC TEST	1	Month Year	2	3
3.3.3	CASE MANAGEMENT / TREATMENT OF MALARIA DURING PREGNANCY	1	Month Year	2	3
3.3.4	INTERMITTENT PREVENTIVE TREATMENT OF MALARIA IN PREGNANCY	1	Month Year	2	3
Child health services					
4.1	In your current position, and as a part of your work for this facility, do you personally treat children?	Yes	1		
		No	2		
4.2	Have you received any in-service training, training updates or refresher training on topics related to child health or childhood illnesses?	Yes	1		
		No	2	skip to 5.1	
4.3	Have you received any in-service training or training updates in any of the following topics [READ TOPIC] IF YES: Was the training, training update or refresher training within the past 24 months or more than 24 months ago?	Yes, within past 24 months	If yes, Month/Year of most recent training	Yes, over 24 months ago	No in-service training or updates
4.3.1	EPI OR COLD CHAIN MONITORING	1	Month Year	2	3
4.3.2	INTEGRATED MANAGEMENT OF CHILDHOOD ILLNESSES	1	Month Year	2	3
4.3.3	DIAGNOSIS OF MALARIA IN CHILDREN (skip if answered yes to 3.3.1)	1	Month Year	2	3

4.3.4	HOW TO PERFORM MALARIA RAPID DIAGNOSTIC TEST (skip if answered yes to 3.3.2)	1	Month Year	2	3
4.3.5	CASE MANAGEMENT / TREATMENT OF MALARIA IN CHILDREN	1	Month Year	2	3
Family planning services					
5.1	In your current position, and as a part of your work for this facility, do you personally provide any family planning services?	Yes	1		
		No	2		
5.2	Have you received any in-service training, training updates or refresher training on topics related to family planning?	Yes	1		
		No	2	Skip to 6.1	
5.3	Have you received any in-service training, training updates or refresher training in any of the following topics [READ TOPIC] IF YES: Was the training, training update or refresher training within the past 24 months or more than 24 months ago?	Yes, within past 24 months	If yes, Month/Year of most recent training	Yes, over 24 months ago	No in-service training or updates
5.3.1	GENERAL COUNSELING FOR FAMILY PLANNING	1	Month Year	2	3
5.3.2	IUCD INSERTION AND/OR REMOVAL	1	Month Year	2	3
5.3.3	IMPLANT INSERTION AND/OR REMOVAL	1	Month Year	2	3
5.3.6	CLINICAL MANAGEMENT OF FP METHODS, INCLUDING MANAGING SIDE EFFECTS	1	Month Year	2	3
5.3.8	POST-PARTUM FAMILY PLANNING	1	Month Year	2	3
5.3.9.	Partner communication for family planning	1	Month Year	2	3
5.3.10	Male engagement in family planning	1	Month Year	2	3

5.3.11	OTHER TRAINING ON FAMILY PLANNING (SPECIFY)	1	Month Year	2	3
Antenatal care					
6.1	In your current position, and as a part of your work for this facility, do you personally provide any antenatal care services?	Yes	1		
		No	2		
6.2	Have you received any in-service training, training updates or refresher training on topics related to antenatal care?	Yes	1		
		No	2	skip to 7.1	
6.3	Have you received any in-service training, training updates or refresher training in any of the following topics [READ TOPIC] IF YES: Was the training, training update or refresher training within the past 24 months or more than 24 months ago?	Yes, within past 24 months	If yes, Month/ Year of most recent training	Yes, over 24 months ago	No in- service training or updates
6.3.1	ANC screening (e.g., blood pressure, urine glucose and protein)?	1	Month Year	2	3
6.3.2	Counseling for ANC (e.g., nutrition, FP and newborn care)?	1	Month Year	2	3
6.3.3	Complications of pregnancy and their management?	1	Month Year	2	3
6.3.4	Nutritional assessment of the pregnant woman, such as Body Mass Index calculation?	1	Month Year	2	3
6.3.5	Intermittent preventive treatment of malaria during pregnancy	1	Month Year	2	3
6.3.6	Partner communication in birth planning	1	Month Year	2	3
6.3.7	Male engagement in ANC	1	Month Year	2	3

Diagnostic services					
7.1	In your current position, and as a part of your work for this facility, do you personally conduct laboratory tests? CIRCLE 'NO' IF THE PROVIDER ONLY COLLECTS SPECIMENS.	Yes	1		
		No	2	Skip to 7.5	
7.2	Please tell me if you personally conduct any of the following tests as part of your work in this facility:	Yes	No		
7.2.1	Hematology testing, such as anemia testing	1	2		
7.2.2	Malaria microscopy	1	2		
7.2.3	Malaria rapid diagnostic test (mRDT)	1	2		
7.3	Have you received any in-service training, training updates or refresher training on topics related to the different diagnostic tests you conduct?	Yes	1		
		No	2	Skip to 7.5	
7.4	Have you received any in-service training, training updates or refresher training in any of the following topics [READ TOPIC] IF YES: Was the training, training update or refresher training within the past 24 months or more than 24 months ago?	Yes, within past 24 months	If yes, Month/Year of most recent training	Yes, over 24 months ago	No in-service training or updates
7.4.1	Malaria microscopy	1	Month Year	2	3
7.4.2	Malaria rapid diagnostic test (mRDT)	1	Month Year	2	3
General					
7.5	Which groups provided the training? Select all that apply.	Government IHP PMI-S PSM Breakthrough Action USAID Other donors, specify _____ Other, specify _____			
7.6	Was your training onsite, offsite, or both?	Onsite Offsite Both onsite and offsite			

Vignettes

Instructions for the data collector: Read the following scenarios to the health worker and pose questions about the case. The health worker should not refer to any printed materials, the internet, or discuss the case with anyone else.

Instructions for the health worker: In this exercise we will lead you through hypothetical patient case descriptions while asking you case management questions along the way. We want you to form an image of the patient presented in the case description and to imagine that this person is sitting in front of you in your consultation room. The answers you provide will be confidential and will only be used for scientific research. You will not personally be evaluated based on your responses and the information you provide will not be shared with your facility's administration.

First, I will give a short description of the patient and their symptoms. I want to know what questions you would ask the patient in order to fully understand their situation. These questions could be about their health, their personal characteristics, and their family. Once you have asked your questions, I will give you more information about the patient.

Second, I will ask you to tell me how you would conduct your physical exam. I will tell you the results of the physical exam.

Third, based on the patient's symptoms and the physical examination, I will ask for your differential diagnosis. That means I would like to know which illnesses or conditions you most strongly suspect that the patient has.

Fourth, I will ask you which tests you would order. I will then give you the results of the tests. Fifth, I will ask you for your final diagnosis of the patient.

Sixth, you should tell me what medicines and/or treatments you would give.

Lastly, please describe the counseling that you would give to the patient before they leave your office. You will not personally be evaluated based on your responses and the information you provide will not be shared with your facility's administration.

Question #	Question	Responses
8.1	Do you regularly provide child health services for fever?	1) Yes
		2) No - Skip to 9.1

Child vignette

READ: Chukwudi (Ebonyi)/Musa (Kebbi and Zamfara), a boy aged 5 years is brought to your health facility's outpatient department. His mother, Chidima (Ebonyi)/Fatima (Kebbi and Zamfara) says he was well until this morning when he woke up and said he was feeling tired and refused his breakfast. When Chidima (Ebonyi)/Fatima (Kebbi and Zamfara) touched him, he felt hot. He started to have mild cough only this morning.

8.2	What questions do you ask the child's mother? Anything else? (select all that apply)	No questions
		Consistency of stools
		Frequency of stools
		Progression of diarrhea (worsening or getting better)
		Blood in stools
		Mucous in stools
		Temperature
		Vomiting

		Abdominal pain
		Volume and frequency of eating and drinking
		Treatments given thus far
		Has this happened before?
		Anyone else in household is sick?
		Mother's marital status
		Caretakers' occupation
		Housing, water, and sanitation conditions
		Family composition/number of siblings
		Religious affiliation
		Other (specify) _____

READ: Chukwudi (Ebonyi)/Musa (Kebbi and Zamfara) has felt very "hot" and has been weak and listless. He has been consuming small amounts of soft food and water. He has no vomiting or diarrhea. Chidima (Ebonyi)/Fatima (Kebbi and Zamfara) gave him a half tablet of paracetamol. His parents are married, and his father is a teacher. He lives in a mud brick house with his parents and two older siblings. The family gets their water from a nearby spring and uses a pit latrine that they share with another family.

8.3	What does your physical examination of the patient include? Anything else? (select all that apply)	No examination	
		Affect/demeanor	
		Temperature	
		Heart rate	
		Respiratory rate	
		Chest indrawing	
		Capillary refill	
		Skin turgor	
		Abdominal palpation	
		Weight	
		Other (specify)	

READ: When you examine Chukwudi (Ebonyi)/Musa (Kebbi and Zamfara), you find a well-nourished 20kg child, alert, not pale, and with axillary temperature of 38.5°C. The rest of the physical examination is normal.

8.4	What diagnoses do you suspect (i.e. the differential diagnoses)? (list all that apply)	Rotavirus
		E-Coli
		Cryptosporidium
		Malaria
		Anemia
		Upper respiratory tract infection
		Pneumonia
		TB
		Others (specify) _____
		Don't know

8.5	What tests, if any, do you order? Assume that the needed tests can be conducted at your facility. (select all that apply)	No tests
		mRDT
		Malaria test using microscopy
		Direct microscopic stool examination
		Stool culture
		Hemoglobin
		Hematocrit
		WBC
		Chest X-ray
		Other (specify) _____

READ: Testing indicates that the Chukwudi (Ebonyi)/Musa (Kebbi and Zamfara) has malaria.

8.6	Based on these results, what treatment(s) do you administer, if any? Assume that everything that is needed is in-stock in the facility. (select all that apply)	No treatment
		ACT, specify dose _____ and route
		(oral/parenteral)
		Quinine
		Antibiotic
		Other medicine (specify) _____
		Fluids (oral)
		Fluids (IV)
		Treatment for fever
		Other (specify) _____

8.7	<p>What are the key points that you tell the child's mother during counseling before treatment?</p> <p>Anything else? (select all that apply)</p>	<p>No counseling</p> <p>Diagnosis</p> <p>How the infection is transmitted</p> <p>How to administer medicine</p> <p>Importance of finishing medication as prescribed</p> <p>Feeding</p> <p>Hydration</p> <p>Malaria prevention methods</p> <p>Importance of children aged 5 and under and pregnant women sleeping under bed nets</p> <p>How to monitor/signs of worsening Home remedies to manage fever When to bring him back for follow-up</p> <p>Other (specify) _____</p>
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ANC Vignette

Question #	Question	Responses
9.1	Do you regularly provide antenatal care services?	<p>1) Yes</p> <p>2) No, Skip to 10.1</p>
ANC vignette: Pre-E/GBV		
<p>READ: A nineteen-year-old woman, Amaka (Ebonyi)/Amina (Kebbi, Zamfara), comes to you for her first antenatal care visit. She is visibly pregnant and estimates that she is at least 20 weeks along. She seems anxious and nervous. She has not taken a pregnancy test and did not come earlier because she lives far from the health center.</p>		
9.2	<p>What questions do you ask her?</p> <p>Anything else? (select all that apply)</p>	<p>No questions</p> <p>Number of pregnancies</p> <p>Number of deliveries (live births)</p> <p>Number of miscarriages</p> <p>Number of children alive</p> <p>Number of children born alive who have died</p> <p>Timing of last menstrual period</p> <p>History of hypertension</p> <p>History of diabetes</p> <p>Family health history</p> <p>Past illnesses</p> <p>Complaints during this pregnancy</p> <p>Sexual history (e.g. sexual activity, number of sexual partners)</p>

		Relationship with her husband/whether she feels safe at home/etc.
		Whether her partner knows she is here.
		Marital status
		Occupation
		Education level
		Family/support network
		Religious affiliation
		Other (specify) _____

READ: Amaka (Ebonyi)/Amina (Kebbi, Zamfara) tells you that this is her first pregnancy. She was vomiting at the beginning of her pregnancy but has not vomited for at least 3 weeks. She complains of recent mild headaches and swelling in her feet and ankles. There is a history of twins in her family. Her older sister died in childbirth three years ago. She does not know the reason. She has been married for a year and works on her family's farm. She comments that she does not see friends anymore since she got married because her husband is often jealous and it leads to fights.

9.3	What questions do you ask her now? Anything else? (select all that apply)	No questions
		History of hypertension
		History of diabetes
		Family health history
		Past illnesses
		Sexual history (e.g. sexual activity, number of sexual partners)
		Relationship with her husband/whether she feels safe at home/etc.
		GBV screening questions
		Religious affiliation
		Other (specify) _____

9.4	What does your physical examination of the patient include? Anything else? (select all that apply)	No examination
		Height
		Weight
		Temperature
		Blood pressure
		Pulse
		Respiratory rate
		Abdominal palpation
		Breast exam
		Fetoscope
		Vaginal exam

		Fundal height
		Presence of edema
		Signs of GBV
		Other (specify) _____
<p>READ: Amaka (Ebonyi)/Amina (Kebbi, Zamfara) is 1.7 m tall and weighs 73 kgs. Her blood pressure is 142/93, pulse 85 beats per minute, and respiratory rate is 16 breaths per minute. She does not have a fever or edema. You observe significant bruises on her arms. You detect fetal movement.</p>		
9.5	<p>What tests, if any, do you order? Assume that the needed tests can be conducted at your facility. (select all that apply)</p>	<p>No tests</p> <p>Pregnancy test</p> <p>Urinalysis</p> <p>HIV</p> <p>Syphilis</p> <p>Malaria</p> <p>Hemoglobin</p> <p>Hematocrit</p> <p>Blood grouping</p> <p>Echography</p> <p>Other (specify) _____</p>
<p>READ: The tests indicate that she is positive for pregnancy and proteinuria (protein/creatinine ratio of 60 mg/mmol) and negative for HIV and syphilis.</p>		
9.6	<p>Based on the history, exam and test results, what is your assessment of the patient?</p>	<p>Preeclampsia</p> <p>Healthy pregnancy</p> <p>Potential GBV risk</p> <p>Other (specify) _____</p> <p>Don't know</p>
9.7	<p>What is your next step? Assume that everything that is needed is in-stock in the facility. Indicate the frequency and dose if applicable.</p>	<p>No treatment</p> <p>Ask GBV screening questions</p> <p>Transfer to hospital Hypotensive drug</p> <p>Anti-convulsive drug</p> <p>Induction of labor</p> <p>Other (specify) _____</p>

READ: You ask GBV screening questions, and she indicates that her husband has been physically violent.

<p>9.8</p>	<p>What is your next step? Anything else?</p>	<p>Nothing Move on to other counseling Express empathy/concern Ask her what would help her most now Help her to identify and consider referral and social support options Give her contact information details for any requested referrals Assess her immediate risk If she is at immediate risk, help her make a safety plan If she is at immediate risk, make referrals (for example, shelter, safe housing) or help identify a safe place where she can go Document the violence in her records Maintain privacy of her health records Discuss what she will do with any paperwork she gets during this session Discuss what she will tell her husband about where she was Other (specify) _____</p>
<p>9.9</p>	<p>What other key points that you would tell Amina during counseling? Anything else?</p>	<p>No counseling Causes, symptoms, and risks of having preeclampsia Referral to hospital How to take medicine Reduced physical activity Bed rest Minimize salt intake Increase water intake Increase protein intake Signs that emergency care is needed Benefits of sleeping under a bed net Methods of malaria prevention When to return for follow-up Other (specify) _____</p>

ANC vignette: Malaria in pregnancy

READ: Ada (Ebonyi)/Mariam (Kebbi, Zamfara) is 23 years old and has been married for 4 years. She arrives for her second visit to the ANC clinic at 26 weeks after her last menstrual period. Ada's (Ebonyi)/Mariam's (Kebbi, Zamfara) husband works in a distant village and visits her occasionally. She lives with her mother, father and sister-in-law. Her mother-in-law has accompanied her to the clinic. Ada (Ebonyi)/Mariam (Kebbi, Zamfara) complains of feeling tired. She has to carry buckets of water from a nearby tube well every day.

9.10	What questions do you ask her? Anything else? (select all that apply)	No questions
		Number of pregnancies
		Number of deliveries (live births)
		Number of miscarriages
		Number of children alive
		Number of children born alive who have died
		Timing of last menstrual period
		History of hypertension
		History of diabetes
		Family health history
		Past illnesses
		Complaints during this pregnancy
		Sexual history (e.g. sexual activity, number of sexual partners)
		Marital status
		Relationship with her husband/whether she feels safe at home/etc
		Whether her partner knows she is here

READ: She tells you that this is her second pregnancy. She has had chills and a fever for a few days and also complains of headaches. The only notable elements from her social history are that she has been married for 4 years and works on her family's farm.

9.11	What does your physical examination of the patient include? Anything else? (select all that apply)	No examination
		Height
		Weight
		Temperature
		Blood pressure
		Pulse

		Respiratory rate
		Abdominal palpation
		Breast exam
		Fetal heart rate
		Vaginal exam
		Fundal height
		Presence of edema
		Signs of GBV
		Other (specify) _____
READ: Ada (Ebonyi)/Mariam (Kebbi, Zamfara) is 1.5 m tall and weighs 70 kgs. Her blood pressure is normal, pulse is 65 beats per minute and no edema. But her body feels warm and temperature reading is 37.8. You detect fetal movement.		
9.12	What tests, if any, do you order? Assume that the needed tests can be conducted at your facility. (select all that apply)	No tests
		Pregnancy test
		Urinalysis
		HIV
		Syphilis
		Malaria/mRDT
		Hemoglobin
		Hematocrit
		Blood grouping
		Echography
		Other (specify) _____
READ: The mRDT test is positive. She is not anemic.		
9.13	Based on the history, exam and test results, what is your assessment of the patient? (select all that apply)	Malaria
		Pneumonia
		Influenza
		Typhoid fever
		Healthy pregnancy
		Other (specify) _____
		Don't know
9.14	What is your next step? Assume that everything that is needed is in-stock in the facility. Indicate the frequency and dose if applicable.	No treatment
		Ask GBV screening questions
		Transfer to hospital

		ACT, specify dose _____ and route (oral/parenteral)
		Induction of labor
		Other (specify) _____
9.15	What are the key points that you would tell Ada (Ebonyi)/Mariam (Kebbi, Zamfara) during counseling? Anything else? (select all that apply)	No counseling
		Causes, symptoms, and risks of having malaria
		Benefits of sleeping under a bed net
		Methods of malaria prevention
		Referral to hospital
		How to take medicine
		Reduced physical activity
		Bed rest
		Minimize salt intake
		Increase water intake
		Increase protein intake
		Signs that emergency care is needed
		When to return for follow-up
		Encourage her to bring her husband with her to the next visit, if she is comfortable
		Other (specify) _____

Family Planning Vignette

Question #	Question	Responses
10.1	Do you regularly provide family planning services?	1) Yes
		2) No, skip to 11.1
Family planning vignette: implant side-effects		
READ: A 30-year-old woman recently began using Implanon. She has been experiencing irregular menstrual bleeding for the past few months and is considering changing methods because the bleeding is bothersome to her and her partner.		
10.2	What questions do you ask her? Anything else? (select all that apply)	No questions
		Current bleeding pattern (frequency and amount)
		Menstrual history prior to using implant (e.g. first day of last menstrual period, length of bleeding (days), menstrual frequency, other patterns of uterine/vaginal bleeding)
		Gynecologic and obstetrical history (e.g. pregnancy/-ies, recent delivery, miscarriage, or termination)

		Drug history including contraceptive use (past and/or current) Recent intercourse Other health conditions and behaviors (e.g. allergies, breastfeeding, hypertension, smoking). Marital status Length of marriage Education level Occupation (self) Occupation (husband) Number of children Age of youngest child Pregnancy intentions (including timing and spacing if children are desired) Contraceptive preferences Sexual history (e.g. sexual activity, sexual partners, past STD history) About her relationship with partner/whether she feels safe at home Whether her partner knows she is here Whether she and partner make FP decisions together Religious affiliation Other (specify) _____
<p>READ: You learn that she has been using the implant for 5 months. The bleeding began a couple of weeks after the implant was inserted and she has never experienced this type of irregular bleeding before. The implant is in her arm. She does not have any breast tenderness or other signs of pregnancy. She is not postpartum and wants to wait at least three years to have another child. She does not smoke cigarettes or have any history of DVT.</p>		
10.3	<p>Would you consider giving her the option of other methods through your counseling?</p> <p>Assume that there are multiple methods in-stock at your facility today.</p>	<p>Yes, Skip to 10.5</p> <hr/> <p>No</p>
10.4	<p>Why don't you counsel her in choosing another contraceptive method? Any other reason? (select all that apply)</p>	<p>Her husband is not with her at the health center. Side effects are normal.</p> <p>It is difficult to remove the implant. Provider not trained to remove the implant. It is too soon to remove the implant.</p> <p>Other (specify) _____</p> <p>All responses, skip to 10.6</p>

10.5	What information do you provide when counseling her about other family planning methods or options? Any others? (select all that apply)	<p>No counseling</p> <p>All contraceptive methods available from any source Types of contraceptive methods available today (e.g., condoms, oral contraceptives, injectable contraceptives, intrauterine device (IUD), implants, etc.)</p> <p>Types of contraceptive methods available consistently (i.e. never/rarely stocked out)</p> <p>Duration of protection from pregnancy Effectiveness of methods in preventing pregnancy</p> <p>Effectiveness of methods in protecting against STDs, such as HIV</p> <p>Correct use of methods</p> <p>Side effects including lack of periods Safety of the method</p> <p>Pain/discomfort during administration Cost of methods</p> <p>Importance of making FP decisions together with partner Suggest she bring partner to session in future, if she is comfortable</p> <p>Provider's recommendation of a specific method Other (specify) _____</p>
10.6	What factors do you consider when determining which course of action to recommend? (select all that apply)	<p>Effectiveness</p> <p>Side effects</p> <p>Her medical history</p> <p>Her age</p> <p>Her preferences with regard to methods Her preferences with regard to timing of pregnancy/childbearing</p> <p>Her confidence in being able to use the method correctly and consistently</p> <p>Acceptability of method use by her husband Acceptability of method use by her peers Cost of method</p> <p>Whether someone at the facility is trained and/or confident in their ability to administer the method</p> <p>Availability of the method on that day</p> <p>Other (specify) _____</p>
<p>READ: After counselling and discussion, she tells you that she would like to switch to contraceptive injections. However, this method is not currently being offered in your clinic.</p>		
10.7	What do you do?	<p>Refer her to another clinic that provides this method</p> <p>Tell her that she should choose another option End the consultation</p> <p>Other (specify) _____</p>

READ: She tells you her husband has asked her to discontinue FP because of the bleeding but she does not want to get pregnant. She asks you to keep her decision confidential.

10.8	What do you do?	Reassure her that you will not tell anyone. Encourage her to tell other people. Other (specify) _____
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Family planning vignette: postpartum FP

READ: Chineye (Ebonyi)/Fatima (Kebbi, Zamfara) is a young woman aged 21-years who is 26 weeks pregnant and is generally healthy. This is her second pregnancy. Her first child who is 18 months old was born at her mother's home in a faraway place. No one told her about family planning at that time. On returning to her husband's home she soon realized that she was pregnant again. She was told about the health facility by a friend and this is her second ANC contact. The couple wants to wait after this pregnancy to have their third child but are too scared and shy to ask. The husband has heard of rumors that using family planning while breastfeeding is bad for the baby and that it could make it difficult to get pregnant again. The midwife had mentioned post-delivery family planning in the first ANC contact, but Chineye (Ebonyi)/Fatima (Kebbi, Zamfara) was unsure. She has come to the clinic today specifically to learn more about postpartum family planning.

10.9	<p>What questions do you ask her? Anything else? (select all that apply)</p>	<p>No questions</p> <p>Menstrual history (e.g. first day of last menstrual period, length of bleeding (days), menstrual frequency, other patterns of uterine/vaginal bleeding)</p> <p>Gynecologic and obstetrical history (e.g. pregnancy/-ies, recent delivery, miscarriage, or termination)</p> <p>Drug history including contraceptive use (past and/or current) Recent intercourse</p> <p>Other health conditions and behaviors (e.g. allergies, breastfeeding, hypertension, smoking).</p> <p>Marital status Length of marriage Education level Occupation (self)</p> <p>Occupation (husband) Number of children Age of youngest child</p> <p>Pregnancy intentions (including timing and spacing if children are desired)</p> <p>Contraceptive preferences</p> <p>Sexual history (e.g. sexual activity, sexual partners, past STD history) About her relationship with her husband/whether she feels safe at home/etc.</p> <p>Whether her husband knows she is here today.</p> <p>Whether she and her husband make FP decisions together. Religious affiliation</p> <p>Other (specify) _____</p>
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READ: You learn that she has never used any contraceptive method, aside from the occasional use of condoms. She has no allergies or other health issues.

10.10	<p>Do you counsel her in choosing a post-partum contraceptive method? Assume that your facility offers several family planning options.</p>	<p>Yes, skip to 10.10b</p> <hr/> <p>No</p>
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10.10a	Why don't you counsel her in choosing a post-partum contraceptive method? Any other reason?	<p>She is married.</p> <p>She has only one child.</p> <p>Her husband is not with her at the health center. It is too soon/wait until after delivery.</p> <p>Condoms are sufficient.</p> <p>Provider's religious beliefs</p> <p>Other (specify) _____</p> <p>All responses, skip to 10.11</p>
10.10b	If so, when is the earliest time that she can commence contraception?	<p>Immediately after delivery Post-partum</p> <p>Six weeks at postnatal clinic</p> <p>After puerperium (between 6 weeks and 6 months) After 6 months of exclusive breastfeeding</p> <p>Other</p>
10.11	What information do you provide when counseling her about post-partum family planning methods? Any others? (select all that apply)	<p>No counseling</p> <p>Types of contraceptive methods (e.g., condoms, oral contraceptives, injectable contraceptives, intrauterine device (IUD), implants, etc.)</p> <p>Methods that can be used during breastfeeding</p> <p>Birth planning to get family planning at time of delivery Duration of protection from pregnancy</p> <p>Tell her about the benefits of healthy timing and spacing of pregnancy</p> <p>Suggest that she bring her husband with her to the next session, if she is comfortable.</p> <p>Effectiveness of methods in preventing pregnancy Effectiveness of methods in protecting against STDs, such as HIV</p> <p>Correct use of methods</p> <p>Side effects including lack of periods Safety of the method</p> <p>Pain/discomfort during administration Cost of methods</p> <p>Provider's recommendation of a specific method Other (specify) _____</p>

10.12	What factors do you consider when determining which course of action to recommend? (select all that apply)	<p>Effectiveness Side effects</p> <p>Her medical history Her age</p> <p>Her preferences with regard to methods Her preferences with regard to timing of pregnancy/childbearing</p> <p>Her confidence in being able to use the method correctly and consistently</p> <p>Acceptability of method use by her husband Acceptability of method use by her peers Cost of method</p> <p>Whether someone at the facility is trained and/or confident in their ability to administer the method Availability of the method on that day</p> <p>Other (specify) _____</p>
<p>READ: After counselling and discussion, she tells you that she would like to use the implant method. However, she is not sure what her husband would think of this.</p>		
10.13	What do you do?	<p>Tell her that she should go ahead and get the method Tell her to come back after she has discussed it with her husband</p> <p>Suggest she bring her husband with her to the next consult, if she is comfortable, and offer to counsel them together.</p> <p>Coach her on how she can talk with her partner about FP. End the consultation</p> <p>Other (specify) _____</p>

Provider Attitudes and Norms					
READ: Please describe how strongly you agree or disagree with the following statements: strongly agree, agree, disagree, strongly disagree					
		Strongly agree	Agree	Disagree	Strongly disagree
Malaria case management					
11.1	During the rainy season, it is important to assess the fever status of every patient that comes in.				
11.2	During the dry season, it is important to assess the fever status of every patient that comes in.				
11.3	During the rainy season, it is important to send all patients with fever or history of fever to the lab for a malaria diagnostic test.				
11.4	During the dry season, it is important to send all patients with fever or history of fever to the lab for a malaria diagnostic test.				
11.5	It is important to prescribe antimalarials only if the malaria test is positive.				
Family planning					
11.6	It is appropriate to offer contraceptives to women under 18 if requested.				
11.7	It is important to offer a range of contraceptive methods, including LARC, to women regardless of the number of children they have.				
11.8	It is important to require a partner's consent before providing contraceptives to women.				
11.9	It is not appropriate to offer contraceptives to an unmarried person.				
Antenatal care					
11.10	During ANC, it is important to discuss a plan for delivery with pregnant women.				
11.11	During ANC, it is important to discuss danger signs in pregnancy with pregnant women.				
11.12	It is important to provide a mosquito net to pregnant women during ANC.				
11.13	It is important to give an injection in the arm to prevent tetanus in pregnant women during ANC.				
11.14	It is important to recommend three or more doses of IPTp for all pregnant women during ANC.				

READ: Please describe how often you think other providers in this LGA perform the following activities: every time, most times, half of the time, rarely, or never

		Every time	Most times	Half of the time	Rarely	Never
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Malaria case management

12.1	During the rainy season, the clinicians in this LGA assess the fever status of every patient that comes in.					
12.2	During the dry season, the clinicians in this LGA assess the fever status of every patient that comes in.					
12.3	During the rainy season, the clinicians in this LGA send all patients with fever or history of fever to the lab for a malaria diagnostic test.					
12.4	During the dry season, the clinicians in this LGA send all patients with fever or history of fever to the lab for a malaria diagnostic test.					
12.5	The clinicians in this LGA prescribe antimalarials only if the malaria test is positive.					

Family planning

12.6	The clinicians in this LGA offer contraceptives to women under 18.					
12.7	The clinicians in this LGA offer a range of contraceptive methods, including LARC, to women regardless of the number of children they have.					
12.8	The clinicians in this LGA require a partner's consent before providing contraceptives to women.					
12.9	The clinicians in this LGA do not offer contraceptives to an unmarried person.					

Antenatal care

12.10	During ANC, the clinicians in this LGA discuss a plan for delivery with pregnant women.					
12.11	During ANC, the clinicians in this LGA discuss danger signs in pregnancy with pregnant women.					
12.12	The clinicians in this LGA provide a mosquito net to pregnant women during ANC.					
12.13	The clinicians in this LGA give an injection in the arm to prevent tetanus in pregnant women during ANC.					
12.14	The clinicians in this LGA recommend three or more doses of IPTp for all pregnant women during ANC.					

Gender Attitudes and Norms

READ: Please describe how strongly you agree or disagree with the following statements: strongly agree, agree, disagree, strongly disagree

Ask to all		Strongly agree	Agree	Disagree	Strongly disagree
13.1	Men should be as involved in caring for their children as women are.				
13.2	Women should remain virgins until they get married				
13.3	A woman should be able to use contraceptives, even if her husband disagrees.				
13.4	Adolescents seeking contraceptives should be advised to abstain from sex.				
13.5	A woman's most important role is to take care of her home and cook for her family.				
13.6	A man should have the final word about decisions in his home.				
13.7	It is a woman's responsibility to avoid getting pregnant.				
13.8	A woman should not use a family planning method unless her partner agrees.				
13.9	It is natural and right that men should have more power than women in the family.				
13.10	Men are better at making decisions than women are.				
13.11	There are times when a woman deserves to be beaten.				
13.12	A woman who uses contraceptives without telling her partner deserves to be beaten.				
13.13	A girl who becomes pregnant before marriage deserves to be shunned, sent away, or otherwise punished.				
13.14	A woman who has not undergone FGM/C does not deserve respect from her husband.				

Ask to all		Strongly agree	Agree	Disagree	Strongly disagree
READ: Please think about other providers in your LGA who provide similar services when you answer the following questions.					
14.1	The clinicians in this LGA believe that It is better for a health provider to decide for the client/patient than to explain everything to the client/patient.				
14.2	The clinicians in this LGA believe that how they speak to a client is not as important as what they say.				
14.3	The clinicians in this LGA think it is easier to work with women when they come to the clinic with their partners.				
14.4	The clinicians in this LGA believe that gender-based violence is a separate issue that is outside the realm of services in our health area.				
14.5	The clinicians in this LGA believe that a woman who comes to the health facility unaccompanied for service should be treated the same as any other patient.				
14.6	The clinicians in this LGA believe that talking to clients about violence is too much responsibility for providers in our field.				
14.7	The clinicians in this LGA believe that it is not always necessary to obtain consent from clients when conducting a vaginal examination or other procedures				
14.8	The clinicians in this LGA believe that they should not ask details about a client's personal life during counseling.				
14.9	The clinicians in this LGA believe that being able to tell when a client is experiencing physical or emotional abuse is an important skill for providers in our field.				

Ask to providers of FP and/or ANC services only		Strongly agree	Agree	Disagree	Strongly disagree
READ: Please think about other providers in your LGA who provide similar services when you answer the following questions.					
15.1	The clinicians in this LGA believe that when a client does not know how to discuss family planning with their partner, providers should help them practice doing so.				
15.2	The clinicians in this LGA believe that they should make sure a client is deciding for themselves when they make a choice about family planning.				
15.3	The clinicians in this LGA believe that men's only role in family planning should be to help select methods used by their female partner.				

Appendix C. Clinical Vignette Scoring Rubrics

Vignette 1. Child Health (maximum vignette score = 24 points)

Vignette action	Vignette score
<i>Vignette 1. Domain 1 (History). A mother brings her 5-year-old son to your health facility and said he woke up feeling tired, refused his breakfast, and felt hot to the touch. He started to have a mild cough this morning. What questions do you ask the child's mother?</i>	
Consistency of stools; frequency of stools; or vomiting	+ 1 point if one or more mentioned
Temperature	+ 1 point
Volume/frequency of eating and drinking	+ 1 point
Treatments given thus far	+ 1 point
Convulsion; cough characteristics	+ 1 point if one or more mentioned
Housing, water, and sanitation conditions	+ 1 point
Family composition/number of siblings; mother's marital status; caretakers' occupation; religious affiliation	+ 1 point if one or more mentioned
	V1D1 section maximum: 7 points
<i>Vignette 1. Domain 2 (Exam). From taking the patient's history you learn the boy has felt very hot and has been week and listless. He has been consuming small amounts of soft food and water, with no vomiting or diarrhea, and his mother has given him a half tablet of paracetamol. The boy lives in a mud brick house with his parents (married, father is a teacher) and two older siblings. The family gets their water from a nearby spring and uses a pit latrine they share with another family. What does your physical examination of the patient include?</i>	
Temperature	+ 1 point
Heart rate; respiratory rate	+ 1 point if one or more mentioned
Capillary refill; skin turgor; check for dehydration	+ 1 point if one or more mentioned
Weight; nutritional assessment	+ 1 point if one or more mentioned
Pallor	+ 1 point
Ear and throat examination for infection	+ 1 point
	V1D2 section maximum: 6 points
<i>Vignette 1. Domain 4 (Diagnosis). Upon examination, the boy is a well-nourished 20kg child, alert, not pale, with axillary temperature of 38.5°C; the rest of the physical examination is normal. What differential diagnoses do you suspect?</i>	
Malaria	+ 1 point
Rotavirus; upper respiratory tract infection; pneumonia	+ 1 point if one or more mentioned
	V1D4 section maximum: 2 points
<i>Vignette 1. Domain 3 (Testing). What tests, if any, do you order? Assume that the needed tests can be conducted at your facility.</i>	
mRDT; malaria test using microscopy	+ 1 point if one or more mentioned
Hemoglobin; hematocrit; chest x-ray	+ 1 point if one or more mentioned
	V1D3 section maximum: 2 points
<i>Vignette 1. Domain 5 (Treatment). Testing indicates that the boy has malaria. Based on these results, what treatment(s) do you administer, if any? Assume that everything that is needed is in-stock in the facility.</i>	
ACT	+ 1 point
Treatment for fever	+ 1 point
	V1D5 section maximum: 2 points
<i>Vignette 1. Domain 6 (Counseling). What are the key points that you tell the child's mother during counseling before treatment?</i>	
Diagnosis	+ 1 point
Importance of children under 5 and pregnant women sleeping under a bed net	+ 1 point
Malaria transmission; malaria prevention methods; environmental sanitation	+ 1 point if one or more mentioned
How to administer medicine; importance of finishing medication as prescribed	+ 1 point if one or more mentioned
How to monitor/signs of worsening; when to return for follow-up	+ 1 point if one or more mentioned
	V1D6 section maximum: 5 points

Vignette 2. Antenatal Care – Gender-Based Violence (maximum vignette score = 9 points)

Vignette action	Vignette score
GBV indications and prompts are woven throughout the ANC – Hypertension in Pregnancy vignette.	
<i>GBV 1. Preliminary screening. Providers may ask preliminary screening questions about the patient’s relationship status and safety during the history component of the exam.</i>	
Relationship with her husband/whether she feels safe at home; whether her partner knows she is here	+ 1 point if one or more mentioned
	GBV1 section maximum: 1 point
<i>GBV 2. Implementation of GBV screen. Providers are given information about the occurrence of GBV during the second part of the patient history and in physical exam results. The provider may indicate implementing GBV screening questions during the history or treatment sections of the vignette.</i>	
Ask GBV screening questions	+ 1 point
	GBV2 section maximum: 1 point
<i>GBV 3. Physical exam</i>	
Signs of GBV	+ 1 point
	GBV3 section maximum: 1 point
<i>GBV 4. Diagnosis</i>	
Potential GBV risk	+ 1 point
	GBV4 section maximum: 1 point
<i>GBV 5. Counseling/response and next steps</i>	
Express empathy/concern; ask her what would help her most now	+ 1 point if one or more mentioned
Help her to identify and consider referral and social support options; give her contact information details for any requested referrals	+ 1 point if one or more mentioned
Assess her immediate risk; if she is at immediate risk, help her make a safety plan; if she is at immediate risk, make referrals or help identify a safe place where she can go	+ 1 point if one or more mentioned
Document the violence in her records; maintain privacy of her health records	+ 1 point if one or more mentioned
Discuss what she will tell her husband about where she was; discuss what she will do with any paperwork she gets during this session	+ 1 point if one or more mentioned
	GBV6 section maximum: 5 points

Vignette 3. Antenatal Care – Malaria in Pregnancy (maximum vignette score = 17 points)

Vignette action	Vignette score
<i>Vignette 3. Domain 1 (History). A 23-year-old woman arrives for her second visit to the ANC clinic at 26 weeks after her last menstrual period. She has been married for 4 years; her husband works in a distant village and visits her occasionally. She lives with her mother, father, and sister-in-law. Her mother-in-law has accompanied her to the clinic. The patient complains of feeling tired; she has to carry buckets of water from a nearby tube well every day. What questions do you ask her?</i>	
Complaints during this pregnancy	+ 1 point
Number of pregnancies; number of deliveries (live births); number of miscarriages; number of children alive; number of children born alive who have died	+ 1 point if one or more mentioned
History of hypertension; history of diabetes; family health history; past illnesses	+ 1 point if one or more mentioned
Feeding/nutrition	+1 point
Sexual history; occupation; education level; family/support network; religious affiliation	+ 1 point if one or more mentioned
	V3D1 section maximum: 5 points
<i>Vignette 3. Domain 2 (Exam). You learn this is her second pregnancy. She has had chills and a fever for a few days and also complains of headaches. The only notable elements from her social history are that she has been married for four years and works on her family's farm. What does your physical examination of the patient include?</i>	
Temperature	+ 1 point
Height; weight; blood pressure; pulse; respiratory rate; check for anemia; nutritional assessment; dehydration	+ 1 point if one or more mentioned
Abdominal palpation; fetal heart rate; fundal height; presence of edema	+ 1 point if one or more mentioned
	V3D2 section maximum: 3 points
<i>Vignette 3. Domain 3 (Testing). On examination, she is 1.5m tall and weighs 70 kgs. Her blood pressure is normal, pulse is 65 beats per minute and no edema. But her body feels warm and temperature reading is 37.8 °C. You detect fetal movement. What tests, if any, do you order? Assume that the needed tests can be conducted at your facility.</i>	
Malaria/mRDT	+ 1 point
Hemoglobin; hematocrit	+ 1 point if one or more mentioned
	V3D3 section maximum: 2 points
<i>Vignette 3. Domain 4 (Diagnosis). The mRDT test is positive, and the patient is not anemic. Based on the history, exam, and test results, what is your assessment of the patient?</i>	
Malaria	+ 1 point
	V3D4 section maximum: 1 point
<i>Vignette 3. Domain 5 (Treatment). What is your next step? Assume that everything that is needed is in-stock in the facility. Indicate the frequency and dose if applicable.</i>	
ACT	+ 1 point
	V3D5 section maximum: 1 point
<i>Vignette 3. Domain 6 (Counseling). What are the key points that you would tell the patient during counseling?</i>	
How to take medicine	+ 1 point
Benefits of sleeping under a bed net	+ 1 point
Causes, symptoms, and risks of having malaria; methods of malaria prevention	+ 1 point if one or more mentioned
Referral to hospital; signs that emergency care is needed; when to return for follow-up	+ 1 point if one or more mentioned
Increase protein intake; increase water intake; healthy diet	+ 1 point if one or more mentioned
	V3D6 section maximum: 5 points

Vignette 4. Family Planning – Implant Side Effects (maximum vignette score = 16 points)

Vignette action	Vignette score
<i>Vignette 4. Domain 1 (History). A 30-year-old woman recently began using Implanon. She has been experiencing irregular menstrual bleeding for the past few months and is considering changing methods because the bleeding is bothersome to her and her partner. What questions do you ask her?</i>	
Current bleeding pattern; any other symptoms/complaints	+ 1 point if one or more mentioned
Menstrual history prior to using implant	+ 1 point
Gynecologic and obstetrical history; number of children; age of youngest child	+ 1 point if one or more mentioned
Drug history including contraceptive use (past and/or current); other health conditions and behaviors	+ 1 point if one or more mentioned
Pregnancy intentions	+ 1 point
V4D1 section maximum: 5 points	
<i>Vignette 4. Component 2 (Provider decision to provide FP counseling). The patient has been using the implant for five months. The bleeding began a couple of weeks after the implant was inserted and she has never experienced this type of irregular bleeding before. The implant is in her arm. She does not have any breast tenderness or other signs of pregnancy. She is not postpartum and wants to wait at least three years to have another child. She does not smoke cigarettes or have any history of DVT. Would you consider giving her the option of other methods through your counseling? Assume that there are multiple methods in-stock at your facility today.</i>	
Yes	+1 point
V4C2 section maximum: 1 point	
Points for components 3 – 5.2 are only given to those providers who indicated that they would consider giving the patient the option of other methods through counseling.	
<i>Vignette 4. Component 3 (FP counseling content). What information do you provide when counseling her about other family planning methods or options?</i>	
All contraceptive methods available from any source	+ 1 point
Duration of protection from pregnancy; effectiveness of methods in preventing pregnancy	+ 1 point if one or more mentioned
Correct use of methods	+ 1 point
Side effects including lack of periods; safety of the method; pain/discomfort during administration; when to seek further medical attention	+ 1 point if one or more mentioned
V4C3 section maximum: 4 points	
<i>Vignette 4. Component 4 (Provider action factors). What factors do you consider when determining which course of action to recommend?</i>	
Effectiveness; side effects; her preferences with regard to timing of pregnancy/childbearing; her confidence in being able to use the method correctly and consistently	+ 1 point if one or more mentioned
Her medical history; her age; breastfeeding	+ 1 point if one or more mentioned
Her preferences with regard to methods	+ 1 point
V4C4 section maximum: 3 points	
<i>Vignette 4. Component 5.1 (Method unavailable). After counselling and discussion, the patient tells you that she would like to switch to contraceptive injections. However, this method is not currently being offered in your clinic. What do you do?</i>	
Refer her to another clinic that provides this method; collect from nearby facility; source for the family planning method and reschedule appointment	+ 1 point if one or more mentioned
V4C5.1 section maximum: 1 point	
<i>Vignette 4. Component 5.2 (Patient confidentiality). She tells you her husband has asked her to discontinue FP because of the bleeding but she does not want to get pregnant. She asks you to keep her decision confidential. What do you do?</i>	
Reassure her that you will not tell anyone	+ 1 point
Encourage her to tell other people	+ 1 point
V4C5.2 section maximum: 2 points	

Vignette 5. Post-partum Family Planning (maximum vignette score = 15 points)

Vignette action	Vignette score
<i>Vignette 5. Domain 1 (History). The patient is a 21-year-old young woman who is 26 weeks pregnant and is generally healthy. This is her second pregnancy. Her first child is 18 months old and was born at her mother's home in a faraway place. No one told her about family planning at that time, and on returning to her husband's home she soon realized that she was pregnant again. She was told about your health facility by a friend, and this is her second antenatal care contact. The couple wants to wait after this pregnancy to have their third child but are too scared and shy to ask about family planning. The husband has heard of rumors that using family planning while breastfeeding is bad for the baby and that it could make it difficult to get pregnant again. The midwife mentioned post-delivery family planning during the first ANC contact, but the patient was unsure; she has come to the clinic today specifically to learn more about postpartum family planning. What questions do you ask her?</i>	
Gynecologic and obstetrical history; menstrual history	+ 1 point if one or more mentioned
Drug history including contraceptive use (past and/or current); sexual history; other health conditions and behaviors	+ 1 point if one or more mentioned
Contraceptive preferences; knowledge of family planning	+ 1 point if one or more mentioned
Length of marriage; education level; occupation – self; occupation – husband; religious affiliation	+ 1 point if one or more mentioned
V5D1 section maximum: 4 points	
<i>Vignette 5. Component 2 (Provider decision to provide FP counseling). The patient has never used any contraceptive method, aside from the occasional use of condoms. She has no allergies or other health issues. Do you counsel her in choosing a post-partum contraceptive method? Assume that your facility offers several family planning options.</i>	
Yes	+1 point
V5C2 section maximum: 1 point	
Points for components 3 and 4 are only given to those providers who indicated that they would counsel the patient in choosing a post-partum contraceptive method.	
<i>Vignette 5. Component 3 (FP counseling content). What information do you provide when counseling her about post-partum family planning methods?</i>	
Types of contraceptive methods	+ 1 point
Methods that can be used during breastfeeding	+ 1 point
Birth planning to get family planning at time of delivery	+ 1 point
Side effects, including lack of periods	+ 1 point
Duration of protection from pregnancy; effectiveness of methods in preventing pregnancy; effectiveness of methods in protecting against STDs/HIV; correct use of methods; safety of the method; pain/discomfort during administration	+ 1 point if one or more mentioned
Clear misconceptions about family planning	+ 1 point
Benefits of healthy timing and spacing of pregnancy	+ 1 point
V5C3 section maximum: 7 points	
<i>Vignette 5. Component 4 (Provider action factors). What factors do you consider when determining which course of action to recommend?</i>	
Effectiveness; side effects; her preferences with regard to timing of pregnancy/childbearing; her confidence in being able to use the method correctly and consistently	+ 1 point if one or more mentioned
Her medical history; her age	+ 1 point if one or more mentioned
Her preferences with regard to methods	+ 1 point
V5C4 section maximum: 3 points	

Male Engagement in Family Planning (MEFP) Vignette Content (maximum score = 9 points)

Vignette action	Vignette score
MEFP. Male Engagement in Family Planning (vignette maximum 7 points)	
Partner engagement indications and prompts are woven throughout the Family Planning – Side Effects and Family Planning – Postpartum FP vignettes and are scored separately.	
<i>MEFP 1. History. Providers may ask about partner involvement in family planning during the patient history components of both family planning vignettes.</i>	
FP Side-Effects Vignette: whether her partner knows she is here; whether she and partner make family planning decisions together	+ 1 point if one or more mentioned
Post-partum FP Vignette: whether her husband knows she is here today; whether she and her husband make family planning decisions together	+ 1 point if one or more mentioned
MEFP1 section maximum: 2 points	
<i>MEFP 2. Counseling. Providers may discuss male engagement in family planning during the patient counseling components of both family planning vignettes. Providers who respond 'no' to question about offering side effects and/or postpartum FP counseling do not receive points for counseling component score.</i>	
FP Side-Effects Vignette: importance of making family planning decisions together with partner; suggest she bring partner to session in future if she is comfortable	+ 1 point if one or more mentioned
Post-partum FP Vignette: suggest that she bring her husband with her to the next session if she is comfortable	+ 1 point
MEFP2 section maximum: 2 points	
<i>MEFP 3. Provider consideration factors. Providers may indicate male engagement in family planning considerations when asked about factors they consider when determining course of action in both family planning vignettes. Providers who respond 'no' to question about offering side effects and/or postpartum FP counseling do not receive points for consideration factors component score.</i>	
FP Side-Effects Vignette: acceptability of method use by her husband	+ 1 point
Post-partum FP Vignette: acceptability of method use by her husband	+ 1 point
MEFP3 section maximum: 2 points	
<i>MEFP 4. Partner counseling. Providers may indicate coaching/counseling the patient and/or their partner in the post-partum family planning vignette. Providers who respond 'no' to question about offering side effects and/or postpartum FP counseling do not receive points for partner counseling component score.</i>	
FP Side-Effects Vignette: suggest she bring her husband with her for counseling	+ 1 point
Post-partum FP Vignette: coach her on how she can talk with her partner about family planning	+ 1 point
Post-partum FP Vignette: suggest she bring her husband with her to the next consult if she is comfortable and offer to counsel them together	+ 1 point
MEFP4 section maximum: 3 point	

Appendix D. Expanded Results Tables

Appendix D1. Provider Characteristics

Table D1. Provider characteristics, by state

	Ebonyi			Kebbi			Zamfara			<i>X² test</i>
	n	N	%	n	N	%	n	N	%	<i>P-value</i>
Demographics										
State		354	33.1		371	34.7		345	32.2	
Sex										0.000
Male	29	354	8.2	158	371	42.6	229	345	66.4	
Female	325	354	91.8	213	371	57.4	116	345	33.6	
Age*	40.6 (9.1)			40.8 (9.0)			39.5 (8.6)			0.196
20-29 years	53	354	15.0	44	371	11.9	43	345	12.5	
30-39 years	104	354	29.4	120	371	32.4	131	345	38.0	
40-49 years	125	354	35.3	132	371	35.6	118	345	34.2	
50+ years	72	354	20.3	75	371	20.2	53	345	15.4	
Years of education*	15.6 (1.9)			15.2 (1.2)			15.4 (1.4)			0.000
9-14 years	80	354	22.6	102	371	27.5	80	345	23.2	
15 years	128	354	36.2	179	371	48.3	168	345	48.7	
16 years	37	354	10.5	44	371	11.9	35	345	10.1	
17-20 years	109	354	30.8	46	371	12.4	62	345	18.0	
Occupational status and category										
Current occupational category/qualification										0.000
Professional	103	354	29.1	14	371	3.8	14	345	4.1	0.000
Medical doctor	0	354	0.0	0	371	0.0	0	345	0.0	
Specialist/consultant	1	354	0.3	1	371	0.3	0	345	0.0	
Youth Corp doctor	0	354	0.0	0	371	0.0	0	345	0.0	
Registered nurse	53	354	15.0	2	371	0.5	1	345	0.3	

Registered midwife	8	354	2.3	7	371	1.9	9	345	2.6	
Registered nurse midwife	39	354	11.0	2	371	0.5	2	345	0.6	
Public health officer	2	354	0.6	0	371	0.0	2	345	0.6	
Laboratory scientists	0	354	0.0	2	371	0.5	0	345	0.0	
Nonprofessional	251	354	70.9	357	371	96.2	331	345	95.9	
Public health associate	0	354	0.0	1	371	0.3	7	345	2.0	
Laboratory technician	1	354	0.3	1	371	0.3	10	345	2.9	
Environmental health officer/associate	5	354	1.4	48	371	12.9	46	345	13.3	
Pharmacy technician	0	354	0.0	1	371	0.3	4	345	1.2	
Dental technician	0	354	0.0	0	371	0.0	4	345	1.2	
Health information/medical records technician	0	354	0.0	3	371	0.8	9	345	2.6	
Community health officer	20	354	5.7	20	371	5.4	24	345	7.0	
Community nurse	1	354	0.3	1	371	0.3	4	345	1.2	
Community midwife	0	354	0.0	0	371	0.0	19	345	5.5	
CHEW	171	354	48.3	196	371	52.8	160	345	46.4	
JCHEW	46	354	13.0	84	371	22.6	41	345	11.9	
Nurse aide/no technical qualification	7	354	2.0	2	371	0.5	3	345	0.9	
Provider status										0.000
Assigned	246	354	69.5	359	371	96.8	340	345	98.6	
Seconded	108	354	30.5	12	371	3.2	5	345	1.5	
Experience and tenure										
Years since received qualification/basic training*	11.9 (7.9)			13.9 (9.2)			13.0 (8.5)			0.007
Past 2 years	38	354	10.7	32	371	8.6	32	345	9.3	
3-5 years	51	354	14.4	58	371	15.6	43	345	12.5	
6-10 years	80	354	22.6	60	371	16.2	69	345	20.0	
11-15 years	77	354	21.8	70	371	18.9	79	345	22.9	
16-20 years	54	354	15.3	57	371	15.4	70	345	20.3	
21-40 years	54	354	15.3	94	371	25.3	52	345	15.1	
Time working at current facility*	2.9 (3.5)			7.9 (8.0)			9.9 (7.8)			0.000
0-5 months	25	354	7.1	18	371	4.9	8	345	2.3	

6-11 months	101	354	28.5	28	371	7.6	17	345	4.9	
1 year	71	354	20.1	51	371	13.8	25	345	7.3	
2 years	45	354	12.7	30	371	8.1	20	345	5.8	
3-5 years	68	354	19.2	80	371	21.6	67	345	19.4	
6-10 years	29	354	8.2	67	371	18.1	75	345	21.7	
11+ years	15	354	4.2	97	371	26.2	133	345	38.6	
Services provided										
In-charge for any clinical services	293	354	82.8	262	371	70.6	295	345	85.5	0.000
Provides service in current position at facility										
Malaria	352	354	99.4	352	371	94.9	301	345	87.3	0.000
Child health services	351	354	99.2	316	371	85.2	244	345	70.7	0.000
Family planning services	269	354	76.0	245	371	66.0	141	345	40.9	0.000
Antenatal care	347	354	98.0	230	371	62.0	112	345	32.5	0.000
Diagnostic services	343	354	96.9	229	371	61.7	179	345	51.9	0.000
Hematology testing	60	343	17.5	35	229	15.3	41	179	22.9	0.129
Malaria microscopy	3	343	0.9	14	229	6.1	11	179	6.2	0.001
mRDT	332	343	96.8	222	229	96.9	176	179	98.3	0.578
Regularly provides service										
Child health services for fever	352	354	99.4	312	371	84.1	240	345	69.6	0.000
Antenatal care	339	354	95.8	218	371	58.8	107	345	31.0	0.000
Family planning	239	354	67.5	204	371	55.0	107	345	31.0	0.000

Note: * Mean (standard deviation) presented for continuous variables.

Appendix D2. Training

Table D2. Training, by state

	Ebonyi			Kebbi			Zamfara			χ^2 test
	n	N	%	n	N	%	n	N	%	p-value
General Training										
Received training in any of the specified general topics	287	354	81.1	327	371	88.1	304	345	88.1	0.008
General training - ever received										
Standard precautions	229	354	64.7	298	371	80.3	258	345	74.8	0.000
Safe injection practices	234	354	66.1	306	371	82.5	279	345	80.9	0.000
HMIS or documentation/reporting requirements	225	354	63.6	262	371	70.6	245	345	71.0	0.056
GBV	122	354	34.5	175	371	47.2	120	345	34.8	0.000
General training - received within past 24 months										
Standard precautions	141	354	39.8	223	371	60.1	100	345	29.0	0.000
Safe injection practices	125	354	35.3	206	371	55.5	126	345	36.5	0.000
HMIS or documentation/reporting requirements	141	354	39.8	180	371	48.5	121	345	35.1	0.000
GBV	77	354	21.8	143	371	38.5	58	345	16.8	0.000
Malaria										
Providers who currently diagnose/treat malaria										
Received training in any of the specified malaria topics	276	352	78.4	315	352	89.5	285	301	94.7	0.000
Malaria - ever received training										
Diagnosing malaria in children	247	352	70.2	302	352	85.8	244	301	81.1	0.000
mRDT performance	274	352	77.8	307	352	87.2	270	301	89.7	0.000
Case management/treatment of malaria during pregnancy	243	352	69.0	290	352	82.4	232	301	77.1	0.000
IPT of malaria in pregnancy	257	352	73.0	285	352	81.0	224	301	74.4	0.032
Malaria - received training within past 24 months										
Diagnosing malaria in children	181	352	51.4	236	352	67.1	119	301	39.5	0.000
mRDT performance	208	352	59.1	248	352	70.5	136	301	45.2	0.000
Case management/treatment of malaria during pregnancy	192	352	54.6	237	352	67.3	124	301	41.2	0.000
IPT of malaria in pregnancy	200	352	56.8	222	352	63.1	114	301	37.9	0.000

	Ebonyi			Kebbi			Zamfara			<i>X² test</i>
	n	N	%	n	N	%	n	N	%	<i>p-value</i>
All providers										
Received training in any of the specified malaria topics	277	354	78.3	325	371	87.6	295	345	85.5	0.002
Malaria - ever received training										
Diagnosing malaria in children	247	354	69.8	312	371	84.1	248	345	71.9	0.000
mRDT performance	274	354	77.4	317	371	85.4	275	345	79.7	0.018
Case management/treatment of malaria during pregnancy	243	354	68.6	299	371	80.6	241	345	69.9	0.000
IPT of malaria in pregnancy	257	354	72.6	294	371	79.3	233	345	67.5	0.002
Malaria - received training within past 24 months										
Diagnosing malaria in children	181	354	51.1	244	371	65.8	122	345	35.4	0.000
mRDT performance	208	354	58.8	256	371	69.0	139	345	40.3	0.000
Case management/treatment of malaria during pregnancy	192	354	54.2	245	371	66.0	131	345	38.0	0.000
IPT of malaria in pregnancy	200	354	56.5	230	371	62.0	120	345	34.8	0.000
Child health services										
Providers who currently treat children										
Received training in any of the specified child health topics	284	351	80.9	299	316	94.6	230	244	94.3	0.000
Child health services - ever received training										
EPI or cold chain monitoring	163	351	46.4	230	316	72.8	151	244	61.9	0.000
Integrated management of childhood illness	140	351	39.9	259	316	82.0	152	244	62.3	0.000
Diagnosis of malaria in children	247	351	70.4	277	316	87.7	218	244	89.3	0.000
mRDT performance	273	351	77.8	279	316	88.3	226	244	92.6	0.000
Child health services - received training within past 24 months										
EPI or cold chain monitoring	89	351	25.4	177	316	56.0	82	244	33.6	0.000
Integrated management of childhood illness	57	351	16.2	209	316	66.1	38	244	15.6	0.000
Diagnosis of malaria in children	181	351	51.6	216	316	68.4	109	244	44.7	0.000
mRDT performance	207	351	59.0	224	316	70.9	117	244	48.0	0.000
All providers										
Received training in any of the specified child health topics	285	354	80.5	339	371	91.4	282	345	81.7	0.000
Child health services - ever received training										
EPI or cold chain monitoring	164	354	46.3	245	371	66.0	152	345	44.1	0.000

	Ebonyi			Kebbi			Zamfara			X ² test
	n	N	%	n	N	%	n	N	%	p-value
Integrated management of childhood illness	141	354	39.8	278	371	74.9	156	345	45.2	0.000
Diagnosis of malaria in children	247	354	69.8	312	371	84.1	248	345	71.9	0.000
mRDT performance	274	354	77.4	317	371	85.4	275	345	79.7	0.018
Child health services - received training within past 24 months										
EPI or cold chain monitoring	90	354	25.4	190	371	51.2	83	345	24.1	0.000
Integrated management of childhood illness	58	354	16.4	224	371	60.4	39	345	11.3	0.000
Diagnosis of malaria in children	181	354	51.1	244	371	65.8	122	345	35.4	0.000
mRDT performance	208	354	58.8	256	371	69.0	139	345	40.3	0.000
FP services										
Providers who currently provide FP services										
Received training in any of the specified family planning topics	174	269	64.7	205	245	83.7	114	141	80.9	0.000
Family planning services - ever received training										
General counseling for family planning	164	269	61.0	197	245	80.4	106	141	75.2	0.000
IUCD insertion and/or removal	137	269	50.9	161	245	65.7	46	141	32.6	0.000
Implant insertion and/or removal	162	269	60.2	196	245	80.0	104	141	73.8	0.000
Clinical management of FP methods, including managing side effects	147	269	54.7	193	245	78.8	100	141	70.9	0.000
Post-partum family planning	141	269	52.4	176	245	71.8	81	141	57.5	0.000
Partner communication for family planning	107	269	39.8	185	245	75.5	74	141	52.5	0.000
Male engagement in family planning	109	269	40.5	168	245	68.6	60	141	42.6	0.000
Other	34	269	12.6	9	245	3.7	13	141	9.2	0.001
Family planning services - received training within past 24 months										
General counseling for family planning	66	269	24.5	163	245	66.5	36	141	25.5	0.000
IUCD insertion and/or removal	62	269	23.1	142	245	58.0	11	141	7.8	0.000
Implant insertion and/or removal	71	269	26.4	161	245	65.7	36	141	25.5	0.000
Clinical management of FP methods, including managing side effects	62	269	23.1	161	245	65.7	33	141	23.4	0.000
Post-partum family planning	57	269	21.2	152	245	62.0	22	141	15.6	0.000
Partner communication for family planning	39	269	14.5	156	245	63.7	19	141	13.5	0.000
Male engagement in family planning	48	269	17.8	146	245	59.6	17	141	12.1	0.000

	Ebonyi			Kebbi			Zamfara			X ² test
	n	N	%	n	N	%	n	N	%	p-value
Other	13	269	4.8	6	245	2.5	3	141	2.1	0.003
All providers										
Received training in any of the specified family planning topics	180	354	50.9	259	371	69.8	121	345	35.1	0.000
Family planning services - ever received training										
General counseling for family planning	166	354	46.9	248	371	66.9	112	345	32.5	0.000
IUCD insertion and/or removal	140	354	39.6	204	371	55.0	48	345	13.9	0.000
Implant insertion and/or removal	165	354	46.6	244	371	65.8	111	345	32.2	0.000
Clinical management of FP methods, including managing side effects	149	354	42.1	243	371	65.5	107	345	31.0	0.000
Post-partum family planning	144	354	40.7	222	371	59.8	85	345	24.6	0.000
Partner communication for family planning	109	354	30.8	236	371	63.6	79	345	22.9	0.000
Male engagement in family planning	112	354	31.6	216	371	58.2	65	345	18.8	0.000
Other	36	354	10.2	11	371	3.0	13	345	3.8	0.000
Family planning services - received training within past 24 months										
General counseling for family planning	68	354	19.2	202	371	54.5	40	345	11.6	0.000
IUCD insertion and/or removal	65	354	18.4	177	371	47.7	13	345	3.8	0.000
Implant insertion and/or removal	74	354	20.9	199	371	53.6	38	345	11.0	0.000
Clinical management of FP methods, including managing side effects	64	354	18.1	200	371	53.9	35	345	10.1	0.000
Post-partum family planning	60	354	17.0	190	371	51.2	23	345	6.7	0.000
Partner communication for family planning	41	354	11.6	190	371	51.2	21	345	6.1	0.000
Male engagement in family planning	51	354	14.4	182	371	49.1	19	345	5.5	0.000
Other	13	354	3.7	7	371	1.9	3	345	0.9	0.000
ANC services										
Providers who currently provide ANC services										
Received training in any of the specified ANC topics	267	347	77.0	207	230	90.0	104	112	92.9	0.000
Antenatal care - ever received training										
ANC screening	152	347	43.8	176	230	76.5	75	112	67.0	0.000
Counseling for ANC	163	347	47.0	182	230	79.1	90	112	80.4	0.000
Complications of pregnancy and their management	154	347	44.4	180	230	78.3	84	112	75.0	0.000

	Ebonyi			Kebbi			Zamfara			X ² test
	n	N	%	n	N	%	n	N	%	p-value
Nutritional assessment of the pregnant woman	138	347	39.8	170	230	73.9	80	112	71.4	0.000
IPT of malaria during pregnancy	253	347	72.9	181	230	78.7	88	112	78.6	0.213
Partner communication in birth planning	111	347	32.0	165	230	71.7	55	112	49.1	0.000
Male engagement in ANC	116	347	33.4	147	230	63.9	40	112	35.7	0.000
Antenatal care - received training within past 24 months										
ANC screening	67	347	19.3	143	230	62.2	24	112	21.4	0.000
Counseling for ANC	70	347	20.2	148	230	64.4	37	112	33.0	0.000
Complications of pregnancy and their management	62	347	17.9	148	230	64.4	27	112	24.1	0.000
Nutritional assessment of the pregnant woman	69	347	19.9	142	230	61.7	25	112	22.3	0.000
IPT of malaria during pregnancy	198	347	57.1	139	230	60.4	54	112	48.2	0.008
Partner communication in birth planning	44	347	12.7	139	230	60.4	21	112	18.8	0.000
Male engagement in ANC	47	347	13.5	133	230	57.8	14	112	12.5	0.000
All providers										
Received training in any of the specified ANC topics	271	354	76.6	323	371	87.1	249	345	72.2	0.000
Antenatal care - ever received training										
ANC screening	152	354	42.9	215	371	58.0	82	345	23.8	0.000
Counseling for ANC	163	354	46.1	224	371	60.4	98	345	28.4	0.000
Complications of pregnancy and their management	154	354	43.5	221	371	59.6	90	345	26.1	0.000
Nutritional assessment of the pregnant woman	138	354	39.0	211	371	56.9	85	345	24.6	0.000
IPT of malaria during pregnancy	257	354	72.6	294	371	79.3	233	345	67.5	0.002
Partner communication in birth planning	111	354	31.4	202	371	54.5	60	345	17.4	0.000
Male engagement in ANC	116	354	32.8	185	371	49.9	46	345	13.3	0.000
Antenatal care - received training within past 24 months										
ANC screening	67	354	18.9	174	371	46.9	28	345	8.1	0.000
Counseling for ANC	70	354	19.8	184	371	49.6	42	345	12.2	0.000
Complications of pregnancy and their management	62	354	17.5	182	371	49.1	30	345	8.7	0.000
Nutritional assessment of the pregnant woman	69	354	19.5	179	371	48.3	28	345	8.1	0.000
IPT of malaria during pregnancy	200	354	56.5	230	371	62.0	120	345	34.8	0.000
Partner communication in birth planning	44	354	12.4	172	371	46.4	25	345	7.3	0.000

	Ebonyi			Kebbi			Zamfara			<i>X² test</i>
	n	N	%	n	N	%	n	N	%	<i>p-value</i>
Male engagement in ANC	47	354	13.3	167	371	45.0	18	345	5.2	0.000
Diagnostic services *										
Providers who currently conduct laboratory testing										
Received training in either of the specified diagnostic testing topics	270	343	78.7	206	229	90.0	161	179	89.9	0.000
Diagnostic services - ever received training										
Malaria microscopy	2	343	0.6	5	229	2.2	11	179	6.2	0.000
mRDT	270	343	78.7	206	229	90.0	161	179	89.9	0.000
Diagnostic services - received training within past 24 months										
Malaria microscopy	0	343	0.0	2	229	0.9	3	179	1.7	0.003
mRDT	206	343	60.1	171	229	74.7	83	179	46.4	0.000
Training providers										
Government	150	354	42.4	105	371	28.3	175	345	50.7	0.000
USAID	63	354	17.8	161	371	43.4	46	345	13.3	0.000
IHP	88	354	24.9	287	371	77.4	19	345	5.5	0.000
PMI-S	74	354	20.9	7	371	1.9	75	345	21.7	0.000
Breakthrough Action	35	354	9.9	20	371	5.4	34	345	9.9	0.041
PSM	3	354	0.9	1	371	0.3	8	345	2.3	0.028
Other*	157	354	44.4	65	371	17.5	156	345	45.2	0.000

Note: Diagnostic service training was only measured among providers who conduct laboratory testing. Common 'other' training providers include UNICEF, Marie Stopes International, WHO, Save the Children, AFENET, Saving One Million Lives initiative, MNCH2, MCSP, MAPS, Malaria Consortium, MSF, and Jhpiego.

Appendix D3. Clinical Vignettes

Table D3.1. Child health vignette provider responses, by state

Responses	Ebonyi	Kebbi	Zamfara
	N = 352	N = 312	N = 240
Percentage of health workers who asked about aspects of medical history			
Treatments given thus far *	75.3	32.1	29.2
Has this happened before?	47.2	29.8	29.6
Temperature *	37.2	91.3	74.6
Vomiting *	31.3	67.6	74.2
Volume and frequency of eating and drinking *	25.3	14.7	15.8
Housing, water, and sanitation conditions *	22.4	6.4	8.3
Anyone else in household is sick?	16.5	5.8	4.2
Frequency of stools *	8.8	26.3	28.3
Abdominal pain	8.5	29.5	30.0
Other biodata	7.7	1.0	0.0
Family composition/number of siblings *	4.8	1.6	3.3
Consistency of stools *	4.5	23.7	19.2
Progression of diarrhea (worsening or getting better)	4.5	11.5	5.0
Mother's marital status	3.4	1.6	2.9
Mucous in stools	3.1	4.8	4.2
Blood in stools	2.8	4.8	1.7
Religious affiliation *	2.6	0.0	0.4
Cough- characteristics *	2.3	0.3	1.3
Caretaker's occupation *	2.0	0.3	0.4
Convulsion *	1.4	0.3	5.0
Headache and body pains	1.1	0.0	1.7
Catarrh	0.6	0.0	0.0
No questions	0.3	0.3	1.3
Unrecoded other response	15.6	5.1	10.8
Note: 43.2 percent Ebonyi, 6.4 percent Kebbi, and 24.2 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as convulsion, cough – characteristics, headache and body pains, catarrh, other biodata, and unrecoded other response.			
Percentage of health workers indicating specific physical examination components			
Temperature *	93.5	95.5	85.8
Weight *	55.7	44.6	27.1
Respiratory rate *	51.7	43.9	32.9
Heart rate *	49.7	28.8	20.8
Capillary refill *	27.6	4.8	14.2
Skin turgor *	26.4	38.1	45.4
Abdominal palpation	25.6	22.8	24.6
Pallor *	22.4	7.4	27.1
Chest indrawing	14.2	19.2	11.3
Nutritional assessment *	9.7	0.3	0.0
Check for dehydration *	3.1	2.2	0.4
Ear and throat examination for infection *	3.1	0.3	1.3
Affect/demeanor	2.8	2.6	3.3
Auscultation	0.6	0.0	0.0
Jaundice	0.6	0.0	0.0
No examination	0.3	0.0	2.1
Unrecoded other response	12.2	2.2	4.2
Note: 45.7 percent Ebonyi, 12.2 percent Kebbi, and 32.9 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as pallor, nutritional assessment, auscultation, dehydration check, jaundice, ear and throat examination, and unrecoded other response.			

Responses	Ebonyi	Kebbi	Zamfara
	N = 352	N = 312	N = 240
Percentage of health workers indicating specific preliminary differential diagnoses			
Malaria *	96.9	99.4	96.3
Pneumonia *	21.6	6.1	3.8
Upper respiratory tract infection *	21.0	4.5	10.8
Typhoid fever	13.1	0.6	4.6
Anemia	2.3	6.4	2.5
E-Coli	2.0	2.9	1.3
TB	1.4	0.3	0.8
Food poisoning	0.9	0.0	0.0
Rotavirus *	0.6	0.0	0.0
Cryptosporidium	0.3	0.0	0.4
Dysentery	0.3	0.0	0.0
Don't know	0.0	0.0	0.8
Unrecoded other response	14.2	2.2	5.0
Note: 29.8 percent Ebonyi, 2.9 percent Kebbi, and 10.4 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as typhoid fever, dysentery, food poisoning, don't know, and unrecoded other response.			
Percentage of health workers who ordered specific laboratory tests			
mRDT *	98.6	99.0	98.8
Hemoglobin *	20.5	9.9	12.5
Widal	11.9	5.4	7.5
Hematocrit *	7.7	1.3	3.3
Stool culture	4.8	0.3	2.9
WBC	4.3	3.5	1.7
Urinalysis and culture	4.3	0.0	0.4
HIV	3.7	0.0	0.8
Direct microscopic stool examination	2.0	0.0	0.8
Malaria test using microscopy *	1.4	4.2	8.3
TB screening	1.1	0.0	0.0
Hepatitis	1.1	0.0	0.4
Chest X-ray *	0.9	0.6	0.4
No tests	0.3	0.3	0.4
Unrecoded other response	1.1	0.0	1.3
Note: 20.5% Ebonyi, 5.4% Kebbi, and 10.4% Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as Widal, HIV, urinalysis and culture, TB screening, hepatitis, and unrecoded other response.			
Percentage of health workers who mentioned specific treatment options			
ACT *	97.4	93.6	100.0
Treatment for fever *	56.3	41.7	37.9
Other medicine	16.2	8.3	14.6
Antibiotic	14.8	22.4	42.1
Fluids (oral)	3.1	1.0	2.5
Fluids (IV)	3.1	0.0	0.0
Vitamins	2.0	1.9	6.3
Artemether Injection	1.7	4.2	0.0
Cough syrup	0.9	0.0	0.8
Quinine	0.6	0.6	0.4
Artesunate/artemether oral	0.3	1.3	1.3
Anthelmintics	0.3	100.0	0.4
No treatment	0.0	0.0	0.0
Unrecoded other response	0.9	1.0	1.3
Note: 13.6 percent Ebonyi, 25.0 percent Kebbi, and 15.0 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as artesunate/artemether oral, artemether injection, anthelmintics, vitamins, cough syrup, and unrecoded other response.			

Responses	Ebonyi	Kebbi	Zamfara
	N = 352	N = 312	N = 240
Percentage of health workers who mentioned specific messages for counseling			
Importance of children aged 5 and under and pregnant women sleeping under bed nets *	75.9	78.2	72.5
How to administer medicine *	66.8	50.6	54.2
Feeding	65.3	42.9	26.7
Malaria prevention methods *	48.6	83.0	69.6
When to bring him back for follow-up *	45.2	35.9	37.5
Importance of finishing medication as prescribed *	30.7	35.3	32.9
Home remedies to manage fever	27.8	17.0	14.6
Hydration	25.0	19.9	11.3
How the infection is transmitted *	22.2	29.2	40.0
Environmental sanitation *	15.9	3.2	11.7
Personal hygiene	14.5	5.1	9.6
How to monitor/signs of worsening *	8.8	14.7	8.8
Diagnosis *	4.5	0.6	5.8
Boil drinking water/safe water	3.7	0.0	0.4
No counseling	0.0	0.0	0.4
Unrecorded other response	4.6	0.0	1.7
Note: 34.1 percent Ebonyi, 7.1 percent Kebbi, and 19.2 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as environmental sanitation, personal hygiene, safe water/boiling drinking water, and unrecorded other response.			

Note: * Indicates the response is included in the child health vignette scoring rubric.

Table D3.2. GBV vignette provider responses, by state

Responses	Ebonyi N = 339	Kebbi N = 218	Zamfara N = 107
Percentage of health workers who asked about aspects of patient history			
Relationship with her husband/feels safe at home *	11.5	6.4	7.5
Whether her partner knows she is here *	4.4	3.2	3.7
No questions	0.0	0.5	1.9
Percentage of health workers who asked about additional aspects of patient history			
Relationship with her husband/feels safe at home *	30.1	26.6	26.2
GBV screening questions *	25.7	16.5	15.0
No questions	3.5	3.2	8.4
Percentage of health workers indicating specific physical examination components			
Signs of GBV *	6.8	4.6	1.9
No examination	0.0	0.0	0.9
Percentage of health workers indicating specific differential diagnoses			
Don't know	8.6	2.3	8.4
Potential GBV risk *	4.7	4.6	0.0
Percentage of health workers who mentioned specific treatment options			
Ask GBV screening questions *	4.1	5.0	4.7
No treatment	1.5	1.4	12.1
Percentage of health workers who mentioned specific GBV response options			
Move on to other counseling	45.7	28.0	60.7
Express empathy/concern*	39.8	49.5	38.3
Help her to identify and consider referral and social support options*	26.3	17.0	11.2
Counsel the husband	18.9	11.0	5.6
Ask her what would help her most now*	15.9	40.8	21.5
Assess her immediate risk*	15.6	22.5	18.7
Counsel to defer to husband	13.6	3.2	0.0
If she is at immediate risk, help her make a safety plan *	13.0	12.8	7.5
If she is at immediate risk, make referrals (for example, shelter, safe housing) or help identify a safe place where she can go*	11.2	6.0	1.9
Discuss what she will tell her husband about where she was *	10.6	20.6	14.0
Give her contact information details for any requested referrals*	9.7	7.8	11.2
Document the violence in her records*	8.0	14.7	13.1
Find out cause of violence	7.4	0.0	0.0
Maintain privacy of her health records*	5.0	8.7	7.5
Couple counseling	2.9	0.5	0.0
Discuss what she will do with any paperwork she gets during this session*	1.2	2.8	0.9
Initiate prosecution	0.6	0.5	0.0
Self-empowerment	0.3	0.0	0.0
Nothing	0.0	0.5	4.7
Unrecorded other responses	2.9	0.0	0.0
<p>Note: 48.4 percent Ebonyi, 16.5 percent Kebbi, and 6.5 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as counsel to defer to husband, find out cause of violence, counsel the husband, couple counseling, self-empowerment, initiate prosecution, and unrecorded other response.</p>			

Note: * Indicates the response is included in the GBV scoring rubric. Additional vignette responses related to hypertension in pregnancy are presented in Appendix E.

Table D3.3. ANC malaria in pregnancy vignette provider responses, by state

Responses	Ebonyi	Kebbi	Zamfara
	N = 339	N = 218	N = 107
Percentage of health workers who asked about aspects of patient history			
Complaints during this pregnancy *	50.1	41.3	41.1
Timing of last menstrual period	37.5	38.1	18.7
Family/support network *	31.9	7.8	10.3
Relationship with her husband/feels safe at home	29.8	10.1	13.1
Family health history *	29.2	39.0	47.7
Occupation *	28.9	9.6	15.0
Past illnesses *	25.4	21.6	51.4
Number of pregnancies *	24.2	60.6	33.6
Number of miscarriages *	11.5	40.8	27.1
Number of children alive *	11.5	31.7	25.2
Number of deliveries (live births) *	11.2	28.4	29.0
Feeding/ Nutrition *	9.7	0.5	1.9
Education level *	7.4	4.1	2.8
Number of children born alive who have died *	6.5	15.6	9.3
Whether her partner knows she is here	6.5	5.0	2.8
History of hypertension *	6.2	25.7	31.8
Marital status	3.2	7.3	3.7
Sexual history *	3.2	2.3	1.9
Religious affiliation *	2.7	1.4	0.9
History of diabetes *	1.8	9.2	18.7
No questions	0.6	1.4	0.0
Unrecorded other responses	14.7	1.8	5.6
Note: 30.7 percent Ebonyi, 2.8 percent Kebbi, and 11.2 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as feeding/nutrition and unrecorded other response.			
Percentage of health workers indicating specific physical examination components			
Blood pressure *	82.9	94.5	79.4
Temperature *	82.9	76.6	75.7
Weight *	75.2	80.3	65.4
Abdominal palpation *	57.8	41.7	51.4
Pulse *	57.2	31.7	37.4
Height *	50.1	56.0	49.5
Fundal height *	44.8	18.8	16.8
Respiratory rate *	42.8	25.2	27.1
Fetal heart rate *	31.3	17.0	19.6
Presence of edema *	30.7	20.6	32.7
Check for anemia *	14.7	2.3	13.1
Breast exam	5.9	5.5	13.1
Signs of GBV	3.5	1.8	2.8
Vaginal exam	3.2	2.3	8.4
Nutritional assessment *	2.1	0.0	0.0
Dehydration *	0.6	0.0	0.0
No examination	0.0	0.5	0.9
Unrecorded other responses	8.8	2.3	2.8
Note: 26.8 percent Ebonyi, 4.6 percent Kebbi, and 15.9 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as check for anemia, nutritional assessment, dehydration, and unrecorded other response.			

Responses	Ebonyi	Kebbi	Zamfara
	N = 339	N = 218	N = 107
Percentage of health workers who ordered specific laboratory tests			
Malaria/mRDT *	96.2	99.5	94.4
Urinalysis	56.6	42.7	60.7
HIV	33.0	27.1	41.1
Hemoglobin *	26.8	30.3	33.6
Syphilis	10.6	10.6	22.4
Hematocrit *	10.6	6.4	11.2
Pregnancy test	9.1	15.1	20.6
Hepatitis	3.8	1.4	3.7
Widal Test	3.5	2.8	2.8
Ultrasound	2.4	0.0	0.9
Blood grouping	2.1	7.8	11.2
Fasting/Random blood sugar	1.2	0.0	1.9
Echography	0.3	0.5	0.9
No tests	0.0	0.0	0.9
Unrecoded other responses	0.9	0.5	0.9
Note: 12.1 percent Ebonyi, 0.5 percent Kebbi, and 8.4 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as fasting/random blood sugar, Widal test, hepatitis testing, ultrasound, and unrecoded other response.			
Percentage of health workers indicating specific preliminary differential diagnoses			
Malaria *	99.4	100.0	99.1
Healthy pregnancy	8.6	4.1	12.1
Pneumonia	2.1	0.5	1.9
Typhoid fever	2.1	3.7	0.9
Influenza	0.0	0.0	0.0
Don't know	0.0	0.0	0.0
Unrecoded other responses	2.9	0.0	0.0
Note: 3.2 percent Ebonyi, 0.0 percent Kebbi, and 0.0 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as don't know and unrecoded other response.			
Percentage of health workers who mentioned specific treatment options			
ACT *	90.6	91.3	93.5
Antipyretics/Analgesics	20.9	16.1	9.3
Routine pregnancy drugs	8.8	4.6	3.7
Quinine	3.2	0.5	1.9
Sulfadoxine/pyrimethamine	3.2	0.9	0.9
Ask GBV screening questions	2.4	2.8	3.7
Antibiotics	2.4	3.2	0.9
Transfer to hospital	2.1	2.3	1.9
Artemether	1.2	8.7	0.0
No treatment	0.0	0.0	1.9
Induction of labor	0.0	0.0	0.0
Unrecoded other responses	2.1	0.5	0.9
Note: 33. Percent Ebonyi, 22.9 percent Kebbi, and 13.1 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as antipyretics/analgesics, quinine, routine pregnancy drugs, sulfadoxine/pyrimethamine, antibiotics, artemether, and unrecoded other response.			
Percentage of health workers who mentioned specific messages for counseling			
Benefits of sleeping under a bed net *	74.3	81.7	85.0
How to take medicine *	60.8	52.8	59.8
Bed rest	59.9	38.1	40.2
Methods of malaria prevention *	54.6	69.3	66.4
Reduced physical activity	51.0	29.4	29.0
When to return for follow-up *	46.9	41.7	35.5

Responses	Ebonyi	Kebbi	Zamfara
	N = 339	N = 218	N = 107
Increase water intake *	25.7	28.4	15.9
Increase protein intake *	24.2	37.6	35.5
Causes, symptoms, and risks of having malaria *	20.4	39.9	23.4
Healthy Diet *	15.9	0.5	1.9
Encourage her to bring her husband with her to the next visit, if she is comfortable	10.0	4.1	0.9
Referral to hospital *	5.9	3.7	4.7
Signs that emergency care is needed *	5.3	6.4	7.5
Minimize salt intake	3.2	25.2	11.2
No counseling	0.3	0.0	0.9
Unrecoded other responses	10.0	2.3	5.6
Note: 36.9 percent Ebonyi, 4.6 percent Kebbi, and 16.8 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as healthy diet and unrecoded other response.			

Note: * Indicates responses are included in ANC MIP vignette score.

Table D3.4. Family planning side effects vignette provider responses, by state

Responses	Ebonyi	Kebbi	Zamfara
	N = 239	N = 204	N = 107
Percentage of health workers who asked about aspects of patient history			
Current bleeding pattern (frequency and amount) *	64.0	75.0	84.1
Menstrual history prior to using implant (e.g. first day of last menstrual period, length of bleeding (days), menstrual frequency, other patterns of uterine/vaginal bleeding) *	54.8	66.2	55.1
Drug history including contraceptive use (past and/or current) *	26.4	25.0	36.4
Gynecologic and obstetrical history (e.g. pregnancy/-ies, recent delivery, miscarriage, or termination) *	20.5	18.6	9.3
Contraceptive preferences	15.1	20.1	14.0
Other health conditions and behaviors (e.g. allergies, breastfeeding, hypertension, smoking) *	11.3	10.8	8.4
Number of children *	11.3	27.5	5.6
Pregnancy intentions (including timing and spacing if children are desired) *	10.5	6.9	1.9
Recent intercourse	8.4	3.4	4.7
Whether she and partner make FP decisions together ‡	8.4	12.3	4.7
Occupation (self)	6.7	3.9	2.8
Age of youngest child *	6.7	17.2	1.9
Sexual history (e.g. sexual activity, sexual partners, past STD history)	6.7	2.0	1.9
About her relationship with partner/whether she feels safe at home	5.9	4.4	5.6
Whether her partner knows she is here ‡	5.4	3.9	1.9
Any other symptoms/complaints *	5.0	0.5	0.9
Length of marriage	4.6	10.3	6.5
Education level	4.2	6.4	4.7
Counselling	3.3	0.0	0.0
Marital status	2.5	8.8	12.1
Occupation (husband)	2.5	2.9	0.9
No questions	1.7	1.0	0.0
Any medical intervention	1.7	0.5	0.9
Religious affiliation	0.4	0.0	0.9
Unrecoded other responses	6.7	1.0	4.7
Note: 20.1 percent Ebonyi, 2.0 percent Kebbi, and 8.4 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as counselling, any other symptoms/complaints, any medical intervention, and unrecoded other response.			

Responses	Ebonyi	Kebbi	Zamfara
	N = 239	N = 204	N = 107
Percentage of health workers who would consider giving patient the option of other methods through counseling			
Yes *	75.7	85.8	59.8
No	24.3	14.2	40.2
Percentage of health workers reporting reasons why they would not offer counseling to choose another method			
	N = 58	N = 29	N = 43
Side effects are normal	77.6	89.7	88.4
It is too soon to remove the implant	17.2	6.9	18.6
Give medication to mitigate bleeding	8.6	3.4	0.0
The Client makes their choice	5.2	0.0	0.0
Her husband is not with her at the health center	3.4	6.9	4.7
Provider not trained to remove the implant	1.7	0.0	0.0
It is difficult to remove the implant	0.0	3.4	0.0
Unrecoded other responses	5.2	0.0	0.0
Note: 8.4 percent Ebonyi, 2.5 percent Kebbi, and 1.9 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as give medication to mitigate bleeding, the client makes their choice, and unrecoded other response.			
Percentage of health workers who mention specific FP counseling topics			
	N = 181	N = 175	N = 64
Types of contraceptive methods available today (e.g., condoms, oral contraceptives, injectable contraceptives, intrauterine device (IUD), implants, etc.	70.7	74.3	39.1
Side effects including lack of periods *	51.9	42.3	48.4
Effectiveness of methods in preventing pregnancy *	36.5	42.9	32.8
All contraceptive methods available from any source *	33.7	62.3	42.2
Types of contraceptive methods available consistently (i.e. never/rarely stocked out)	29.8	25.1	6.3
Duration of protection from pregnancy *	27.1	25.7	14.1
Safety of the method *	22.7	20.0	31.3
Correct use of methods *	21.0	11.4	34.4
Effectiveness of methods in protecting against STDs, such as HIV	12.7	5.7	10.9
Cost of methods	9.9	6.9	4.7
Importance of making FP decisions together with partner ‡	9.4	16.0	7.8
Suggest she bring partner to session in future, if she is comfortable ‡	8.8	2.9	3.1
Pain/discomfort during administration *	6.6	13.7	4.7
Provider's recommendation of a specific method	3.9	3.4	4.7
When to seek further medical attention *	0.6	0.0	0.0
No counseling	0.0	0.0	0.0
Unrecoded other responses	1.1	0.0	0.0
Note: 5.9 percent Ebonyi, 0.0 percent Kebbi, and 0.0 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as when to seek further medical attention and unrecoded other response.			
Percentage of health workers who report specific factors they consider when deciding family planning course of action			
	N = 239	N = 204	N = 107
Her medical history *	62.3	61.3	54.2
Her age *	50.6	66.2	48.6
Side effects *	43.1	66.2	60.7
Her preferences with regard to methods *	28.5	30.9	18.7
Effectiveness *	28.0	40.7	38.3
Her preferences with regard to timing of pregnancy/childbearing *	23.4	21.6	15.0
Acceptability of method use by her husband ‡	16.7	19.6	9.3
Availability of the method on that day	12.6	6.4	8.4
Her confidence in being able to use the method correctly and consistently *	10.0	9.8	5.6
Cost of method	9.6	9.8	8.4
Whether someone at the facility is trained and/or confident in their ability to administer the method	3.8	1.0	1.9
Parity/number of children	2.9	0.5	0.0

Responses	Ebonyi	Kebbi	Zamfara
	N = 239	N = 204	N = 107
Menstrual cycle	1.7	0.0	0.0
Breastfeeding *	0.8	0.0	0.0
Acceptability of method use by her peers	0.4	5.4	7.5
Unrecorded other responses	8.0	2.0	0.0
Note: 21.3 percent Ebonyi, 4.4 percent Kebbi, and 0.9 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as menstrual cycle, parity/number of children, breastfeeding, and unrecorded other response.			
Percentage of health workers who report specific actions in response to patient request to switch to method not offered at your facility (injections)	N = 239	N = 204	N = 107
Refer her to another clinic that provides this method *	79.5	77.9	66.4
Tell her that she should choose another option	9.6	12.3	27.1
Collect from nearby facility *	5.4	0.0	0.0
Source for the family planning method and reschedule appointment *	4.6	2.5	0.9
End the consultation	0.0	0.5	0.9
Prescribe it for the patient to buy	0.0	5.9	4.7
Unrecorded other responses	0.8	1.0	0.0
Note: 12.1 percent Ebonyi, 9.3 percent Kebbi, and 6.5 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as collect from nearby facility, source for the family planning method and reschedule appointment, prescribe for the patient to buy, and unrecorded other response.			
Percentage of health workers who report specific actions in response to request for FP confidentiality	N = 239	N = 204	N = 107
Reassure her that you will not tell anyone *	93.3	82.8	61.7
Bring husband for counselling ‡	2.1	6.4	5.6
Advice on other family planning methods / give her family planning	2.1	1.0	6.5
Obey her husband but try to convince him on family planning	1.3	2.9	4.7
Encourage her to tell other people *	0.4	2.9	17.8
Unrecorded other responses	0.8	3.9	3.7
Note: 6.3 percent Ebonyi, 14.2 percent Kebbi, and 20.6 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as bring husband for counselling, advise on other FP methods/give her FP method, obey her husband but try to convince him on FP, and unrecorded other response.			

Note: * Response included in vignette score. ‡ Male engagement in family planning items scored separately.

Table D3.5. Postpartum family planning vignette provider responses, by state

Responses	Ebonyi	Kebbi	Zamfara
	N = 239	N = 204	N = 107
Percentage of health workers who asked about aspects of patient history			
Menstrual history (e.g. first day of last menstrual period, length of bleeding (days), menstrual frequency, other patterns of uterine/vaginal bleeding) *	41	68.6	40.2
Gynecologic and obstetrical history (e.g. pregnancy/-ies, recent delivery, miscarriage, or termination) *	30.5	29.9	25.2
Contraceptive preferences *	26.8	21.1	29
Whether she and her husband make FP decisions together ‡	23.4	23	20.6
Whether her husband knows she is here today ‡	21.3	14.2	15.9
Pregnancy intentions (including timing and spacing if children are desired)	18	13.2	19.6
Number of children	17.6	37.3	9.3
Drug history including contraceptive use (past and/or current) *	17.2	29.9	19.6
Other health conditions and behaviors (e.g. allergies, breastfeeding, hypertension, smoking) *	15.5	14.7	11.2
Occupation (self) *	13	7.8	7.5
Age of youngest child	13	19.1	20.6
Education level *	12.1	5.9	6.5
About her relationship with her husband/whether she feels safe at home/etc.	10.5	5.4	10.3
Marital status *	10	14.2	17.8
Length of marriage *	9.2	11.8	12.1
Recent intercourse	6.7	3.9	6.5
Occupation (husband) *	6.3	5.4	3.7
Knowledge of family planning *	6.3	0	0
Counselling	5.4	1	1.9
Sexual history (e.g. sexual activity, sexual partners, past STD history) *	4.2	2.5	0
Religious affiliation *	3.8	0.5	1.9
No questions	3.3	0	4.7
Unrecoded other responses	4.2	0	2.8
Note: 20.5 percent Ebonyi, 1.5 percent Kebbi, and 6.5 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as knowledge of family planning, counselling, and unrecoded other response.			
Percentage of health workers who would counsel on postpartum contraception			
Yes *	93.7	95.1	94.4
No	6.3	4.9	5.6
Percentage of health workers reporting reasons why they would not offer postpartum FP counseling			
N = 15 N = 10 N = 6			
Poor knowledge of family planning / side effects of family planning / not available in the facility	60	10	0
It is too soon/wait until after delivery	20	80	50
Client to make her own decision	13.3	0	16.7
Her husband is not with her at the health center	6.7	20	16.7
Provider's religious beliefs	6.7	0	0
She is married.	0	0	33.3
She has only one child	0	0	16.7
Condoms are sufficient	0	20	33.3
Unrecoded other responses	0	0	0
Note: 5.0% Ebonyi, 0.5% Kebbi, and 0.9% Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as poor knowledge of FP/side effects of FP/not available in the facility, client to make her own decision, and unrecoded other response.			
Percentage of health workers who reported specific earliest contraception start times	N = 224	N = 194	N = 101

Responses	Ebonyi	Kebbi	Zamfara
	N = 239	N = 204	N = 107
Immediately after delivery	73.2	70.1	46.5
Six weeks at postnatal clinic	16.5	18	32.7
Post-partum	6.3	4.6	10.9
After puerperium (between 6 weeks and 6 months)	2.2	5.2	6.9
After 6 months of exclusive breastfeeding	1.8	2.1	3
Notes: No new codes or unrecoded responses			
Percentage of health workers who mention specific postpartum FP counseling topics	N = 239	N = 204	N = 107
Types of contraceptive methods (e.g., condoms, oral contraceptives, injectable contraceptives, intrauterine device (IUD), implants, etc.) *	58.5	68	47.5
Side effects including lack of periods *	40.6	39.7	50.5
Tell her about the benefits of healthy timing and spacing of pregnancy *	40.2	38.7	29.7
Effectiveness of methods in preventing pregnancy *	39.3	35.6	36.6
Duration of protection from pregnancy *	33	27.8	24.8
Methods that can be used during breastfeeding *	29.9	58.8	50.5
Correct use of methods *	23.2	18	21.8
Birth planning to get family planning at time of delivery *	22.8	28.9	31.7
Safety of the method *	22.3	24.2	29.7
Suggest that she bring her husband with her to the next session, if she is comfortable ‡	9.8	13.4	5.9
Effectiveness of methods in protecting against STDs, such as HIV *	8.5	4.1	5.9
Cost of methods	8.5	11.9	6.9
Provider's recommendation of a specific method	6.3	0.5	2
No counseling	3.1	3.1	4
Clear misconceptions about family planning *	2.7	1.5	1
Pain/discomfort during administration *	2.7	0.5	0
Follow up visit with health provider	2.2	12.4	4
Unrecoded other responses	0.9	0	0
Note: 14.6 percent Ebonyi, 1.0 percent Kebbi, and 2.8 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as clear misconceptions about family planning, follow-up visit with health provider, and unrecoded other response.			
Percentage of health workers who report specific factors they consider when deciding postpartum FP recommendations	N = 239	N = 204	N = 107
Her medical history *	64	52.5	55.1
Her age *	53.6	67.2	50.5
Side effects *	39.3	68.6	56.1
Her preferences with regard to methods *	28.9	35.8	19.6
Effectiveness *	23.4	40.7	43
Her preferences with regard to timing of pregnancy/childbearing *	22.6	18.1	12.1
Acceptability of method use by her husband ‡	20.1	25	14
Availability of the method on that day	13.8	7.8	8.4
Cost of method	9.6	9.8	17.8
Her confidence in being able to use the method correctly and consistently *	6.7	11.3	7.5
Whether someone at the facility is trained and/or confident in their ability to administer the method	6.3	0.5	2.8
Number of children/parity	4.6	0	1.9
Acceptability of method use by her peers	3.3	4.9	11.2
Unrecoded other responses	8	0.5	0.9
Note: 20.5 percent Ebonyi, 1.5 percent Kebbi, and 2.8 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as number of children/parity and unrecoded other response.			

Responses	Ebonyi	Kebbi	Zamfara
	N = 239	N = 204	N = 107
Percentage of health workers who report specific actions in response to patient's decision to use implant method and uncertainty of method acceptability for husband	N = 239	N = 204	N = 107
Tell her to come back after she has discussed it with her husband	45.6	68.1	55.1
Tell her that she should go ahead and get the method	4.1	4.4	4.7
Suggest she bring her husband with her to the next consult, if she is comfortable, and offer to counsel them together ‡	10.9	23.5	32.7
Coach her on how she can talk with her partner about FP ‡	2.1	3.9	5.6
End the consultation	0	0	1.9
Unrecorded other responses	0.4	0	0
Note: 0.4 percent of providers in Ebonyi gave responses that were not recoded; no responses were given new codes			

Note: * Response included in vignette score. ‡ Male engagement in family planning items scored separately.

Appendix D4. Provider and Perceived LGA Clinical Practice Attitudes and Norms

Table D4.1. Provider attitudes on clinical practices, by state

	Ebonyi N = 354				Kebbi N = 371				Zamfara N = 345				<i>Chi² test p-value</i>	
	SA	A	D	SD	SA	A	D	SD	SA	A	D	SD	Cat.	Dic.
Malaria case management														
During the rainy season, it is important to assess the fever status of every patient that comes in.	70.9	17.2	7.3	4.5	69.8	19.4	8.6	2.2	53.3	42.6	3.2	0.9	0.000	0.000
During the dry season, it is important to assess the fever status of every patient that comes in.	58.2	26.8	9.0	5.9	22.9	56.9	17.8	2.4	30.4	56.8	11.3	1.5	0.000	0.020
During the rainy season, it is important to send all patients with fever or history of fever to the lab for a malaria diagnostic test.	83.1	14.1	1.7	1.1	71.2	27.8	1.1	0.0	69.6	30.1	0.3	0.0	0.000	0.014
During the dry season, it is important to send all patients with fever or history of fever to the lab for a malaria diagnostic test.	74.6	18.9	4.2	2.3	38.3	56.6	4.9	0.3	44.9	51.6	2.9	0.6	0.000	0.189
It is important to prescribe antimalarials only if the malaria test is positive.	87.6	9.3	1.4	1.7	84.1	15.1	0.8	0.0	66.4	31.3	2.3	0.0	0.000	0.085
FP														
It is appropriate to offer contraceptives to women under 18 if requested.	41.0	33.3	16.7	9.0	25.9	53.1	18.3	2.7	21.7	48.7	25.2	4.4	0.000	0.310
It is important to offer a range of contraceptive methods, including LARD, to women regardless of the number of children they have.	39.8	37.3	15.3	7.6	26.7	48.0	21.8	3.5	20.3	43.2	33.0	3.5	0.000	0.000
It is important to require a partner's consent before providing contraceptives to women.	40.7	35.0	16.4	7.9	65.8	31.5	2.4	0.3	52.5	41.7	5.5	0.3	0.000	0.000
It is not appropriate to offer contraceptives to an unmarried person.	16.1	19.2	36.2	28.5	17.0	31.0	41.8	10.2	20.0	31.3	34.8	13.9	0.000	0.000
ANC														
During ANC, it is important to discuss a plan for delivery with pregnant women.	95.5	3.7	0.6	0.3	79.8	19.4	0.8	0.0	60.3	38.8	0.6	0.3	0.000	0.996
During ANC, it is important to discuss danger signs in pregnancy with pregnant women.	94.6	4.2	0.6	0.6	87.6	12.1	0.3	0.0	64.9	34.2	0.6	0.3	0.000	0.385
It is important to provide a mosquito net to pregnant women during ANC.	94.4	5.7	0.0	0.0	83.3	16.4	0.3	0.0	71.0	28.1	0.9	0.0	0.000	0.156
It is important to give an injection in the arm to prevent tetanus in pregnant women during ANC.	96.3	3.7	0.0	0.0	91.1	8.9	0.0	0.0	71.9	27.8	0.0	0.3	0.000	0.349
It is important to recommend three or more doses of IPTp for all pregnant women during ANC.	95.2	4.5	0.3	0.0	86.5	13.2	0.3	0.0	64.9	34.8	0.3	0.0	0.000	0.999

Note: Strongly Agree (SA), Agree (A), Disagree (D), or Strongly Disagree (SD). Chi² test p-values presented for categorical (Cat.) and dichotomous (Dic.) provider attitude representations, where SA/A and D/SD are the two dichotomous categories.

Table D4.2. Provider perceived LGA clinical practice norms, by state

	Ebonyi N = 354					Kebbi N = 371					Zamfara N = 345					<i>X² test p-value</i>	
	E	M	H	R	N	E	M	H	R	N	E	M	H	R	N	Cat.	Dic.
Malaria case management																	
During the rainy season, the clinicians in this LGA assess the fever status of every patient that comes in.	64.4	25.7	4.2	3.1	2.5	70.9	20.5	2.2	2.7	3.8	72.2	22.0	3.8	1.7	0.3	0.022	0.129
During the dry season, the clinicians in this LGA assess the fever status of every patient that comes in.	61.6	26.6	5.4	3.4	3.1	38.0	42.3	9.7	6.2	3.8	54.8	36.5	6.4	1.5	0.9	0.000	0.000
During the rainy season, the clinicians in this LGA send all patients with fever or history of fever to the lab for a malaria diagnostic test.	78.0	18.1	2.3	1.1	0.6	74.7	24.5	0.5	0.3	0.0	83.5	14.2	1.7	0.6	0.0	0.005	0.020
During the dry season, the clinicians in this LGA send all patients with fever or history of fever to the lab for a malaria diagnostic test.	75.7	18.9	3.7	0.9	0.9	53.6	34.2	10.8	1.1	0.3	69.0	27.5	2.0	0.6	0.9	0.000	0.000
The clinicians in this LGA prescribe antimalarials only if the malaria test is positive.	87.0	10.5	1.1	0.9	0.6	88.7	11.1	0.3	0.0	0.0	82.6	14.5	2.0	0.9	0.0	0.046	0.018
FP																	
The clinicians in this LGA offer contraceptives to women under 18.	22.9	22.9	13.0	23.2	18.1	24.5	49.3	8.4	9.2	8.6	19.4	34.5	15.7	8.7	21.7	0.000	0.000
The clinicians in this LGA offer a range of contraceptive methods, including LARC, to women regardless of the number of children they have.	32.5	38.7	11.9	11.6	5.4	35.6	40.4	7.8	13.2	3.0	27.8	34.8	13.0	12.2	12.2	0.000	0.015
The clinicians in this LGA require a partner's consent before providing contraceptives to women.	24.6	37.3	15.0	15.0	8.2	62.8	32.1	2.7	1.6	0.8	55.4	31.6	10.1	2.3	0.6	0.000	0.000
The clinicians in this LGA do not offer contraceptives to an unmarried person.	12.7	26.6	11.3	27.1	22.3	18.9	27.2	11.9	27.2	14.8	24.6	20.9	11.0	11.9	31.6	0.000	0.126
ANC																	
During ANC, the clinicians in this LGA discuss a plan for delivery with pregnant women.	90.4	9.0	0.3	0.0	0.3	83.6	15.1	1.1	0.3	0.0	81.5	16.2	1.2	1.2	0.0	0.014	0.142
During ANC, the clinicians in this LGA discuss danger signs in pregnancy with pregnant women.	87.6	10.2	1.4	0.6	0.3	91.1	8.1	0.5	0.0	0.3	85.8	12.2	0.6	1.2	0.3	0.272	0.262
The clinicians in this LGA provide a mosquito net to pregnant women during ANC.	56.2	37.0	3.1	3.1	0.6	37.5	25.9	17.5	17.0	2.2	42.9	39.7	11.9	4.1	1.5	0.000	0.000
The clinicians in this LGA give an injection in the arm to prevent tetanus in pregnant women during ANC.	89.6	9.6	0.6	0.3	0.0	93.3	6.7	0.0	0.0	0.0	88.1	10.1	1.2	0.3	0.3	0.215	0.039
The clinicians in this LGA recommend three or more doses of IPTp for all pregnant women during ANC.	89.6	9.9	0.6	0.0	0.0	90.0	8.9	0.8	0.3	0.0	75.1	21.2	3.2	0.3	0.3	0.000	0.003

Note: Every time (E), Most times (M), Half of the time (H), Rarely, (R), or Never (N). Chi2 test p-values presented for categorical (Cat.) and dichotomous (Dic.) provider attitude representations, where E/M and H/R/N are the two dichotomous categories.

Appendix D5. Provider and Perceived LGA Gender Attitudes and Norms

Table D5. Provider and perceived LGA gender attitudes, by state

	Ebonyi				Kebbi				Zamfara				<i>X² test p-value</i>	
	SA	A	D	SD	SA	A	D	SD	SA	A	D	SD	Cat.	Dic.
Provider gender attitudes	(N = 354)				(N = 371)				(N = 345)					
* Men should be as involved in caring for their children as women are.	3	12.7	0.9	0.6	74.7	22.4	3.0	0.0	67.5	29.0	3.2	0.3	0.000	0.202
Women should remain virgins until they get married.	40.1	41.2	12.7	5.9	68.7	26.2	4.6	0.5	75.9	22.3	1.7	0.0	0.000	0.000
* ‡ A woman should be able to use contraceptives, even if her husband disagrees.	42.4	37.9	14.1	5.7	11.9	31.0	44.2	12.9	9.3	21.5	52.2	17.1	0.000	0.000
† Adolescents seeking contraceptives should be advised to abstain from sex.	41.8	29.7	18.1	10.5	48.0	40.4	9.7	1.9	46.7	37.4	13.6	2.3	0.000	0.000
A woman's most important role is to take care of her home and cook for her family.	58.5	26.3	8.8	6.5	40.7	39.4	16.4	3.5	34.5	38.6	22.6	4.4	0.000	0.001
‡ A man should have the final word about decisions in his home.	29.7	33.3	20.9	16.1	49.3	35.6	12.9	2.2	51.0	35.4	11.6	2.0	0.000	0.000
It is a woman's responsibility to avoid getting pregnant.	29.4	33.3	24.0	13.3	6.7	19.4	58.2	15.6	10.1	20.0	57.7	12.2	0.000	0.000
‡ A woman should not use a family planning method unless her partner agrees.	11.0	13.0	38.7	37.3	35.3	39.9	21.8	3.0	40.9	41.7	15.4	2.0	0.000	0.000
‡ It is natural and right that men should have more power than women in the family.	32.2	44.6	13.8	9.3	54.5	38.5	6.5	0.5	57.4	37.4	3.5	1.7	0.000	0.000
‡ Men are better at making decisions than women are.	19.8	34.5	32.5	13.3	42.3	36.7	17.0	4.0	50.4	39.7	8.1	1.7	0.000	0.000
‡ There are times when a woman deserves to be beaten.	2.8	4.5	8.8	83.9	1.9	5.1	29.4	63.6	1.5	4.1	41.2	53.3	0.000	0.583
‡ A woman who uses contraceptives without telling her partner deserves to be beaten.	0.9	2.5	20.9	75.7	1.4	6.7	44.2	47.7	1.2	3.2	61.5	34.2	0.000	0.012
‡ A girl who becomes pregnant before marriage deserves to be shunned, sent away, or otherwise punished.	3.4	5.9	33.9	56.8	0.8	4.3	47.4	47.4	1.5	5.8	63.8	29.0	0.000	0.091
‡ A woman who has not undergone FGM/C does not deserve respect from her husband.	1.4	0.6	18.1	79.9	2.2	2.7	41.5	53.6	5.5	10.4	47.0	37.1	0.000	0.000
Provider gender attitudes scores														
Unadjusted scale (Cronbach's alpha = 0.66)	2.8 (0.4)				2.5 (0.3)				2.4 (0.3)					
EFA-Adjusted scale (Cronbach's alpha = 0.74)	3.1 (0.3)				2.6 (0.4)				2.4 (0.3)					

	Ebonyi				Kebbi				Zamfara				<i>X² test p-value</i>	
	SA	A	D	SD	SA	A	D	SD	SA	A	D	SD	Cat.	Dic.
Perceived LGA provider gender norms	(N = 354)				(N = 371)				(N = 345)					
‡ The clinicians in this LGA believe that it is better for a health provider to decide for the client/patient than to explain everything to the client/patient.	5.4	8.2	38.4	48.0	10.8	12.7	51.2	25.3	11.3	26.7	46.7	15.4	0.000	0.000
‡ The clinicians in this LGA believe that how they speak to a client is not as important as what they say.	2.8	3.1	42.7	51.4	4.0	10.5	62.8	22.6	6.1	24.9	53.0	15.9	0.000	0.000
The clinicians in this LGA think it is easier to work with women when they come to the clinic with their partners.	38.7	37.0	16.4	7.9	45.8	43.1	10.2	0.8	33.6	52.8	12.5	1.2	0.000	0.000
‡ The clinicians in this LGA believe that gender-based violence is a separate issue that is outside the realm of services in our health area.	5.1	14.7	40.7	39.6	4.0	25.1	60.9	10.0	6.7	35.9	46.7	10.7	0.000	0.000
* The clinicians in this LGA believe that a woman who comes to the health facility unaccompanied for service should be treated the same as any other patient.	63.3	29.9	4.0	2.8	63.1	33.2	3.2	0.5	35.9	53.9	8.7	1.5	0.000	0.003
‡ The clinicians in this LGA believe that talking to clients about violence is too much responsibility for providers in our field.	8.2	14.1	41.8	35.9	3.2	27.5	59.8	9.4	12.2	43.2	39.7	4.9	0.000	0.000
‡ The clinicians in this LGA believe that it is not always necessary to obtain consent from clients when conducting a vaginal examination or other procedures.	4.2	2.5	15.3	78.0	10.8	6.7	27.5	55.0	5.2	14.2	46.1	34.5	0.000	0.000
‡ The clinicians in this LGA believe that they should not ask details about a client's personal life during counseling.	2.8	7.1	46.9	43.2	3.8	27.8	53.4	15.1	3.8	28.4	52.8	15.1	0.000	0.000
* The clinicians in this LGA believe that being able to tell when a client is experiencing physical or emotional abuse is an important skill for providers in our field.	59.9	31.6	4.2	4.2	33.4	55.0	11.1	0.5	31.6	55.4	12.5	0.6	0.000	0.142
LGA Provider Gender Norms Scores														
Unadjusted scale (Cronbach's alpha = 0.71)	3.2 (0.4)				2.9 (0.4)				2.7 (0.4)					
EFA-Adjusted scale (Cronbach's alpha = 0.77)	3.3 (0.5)				2.9 (0.5)				2.7 (0.5)					
Perceived LGA FP/ANC provider gender norms	(N = 342)				(N = 242)				(N = 152)					
The clinicians in this LGA believe that when a client does not know how to discuss family planning with their partner, providers should help them practice doing so.	61.7	35.7	1.8	0.9	62.4	35.1	2.1	0.4	43.4	54.6	1.3	0.7	0.004	0.908

	Ebonyi				Kebbi				Zamfara				<i>X² test p-value</i>	
	SA	A	D	SD	SA	A	D	SD	SA	A	D	SD	<i>Cat.</i>	<i>Dic.</i>
The clinicians in this LGA believe that they should make sure a client is deciding for themselves when they make a choice about family planning.	74.9	21.9	0.9	2.3	66.1	31.8	1.7	0.4	48.0	49.3	2.0	0.7	0.000	0.700
* The clinicians in this LGA believe that men's only role in family planning should be to help select methods used by their female partner.	10.5	20.2	44.2	25.2	14.5	37.2	41.3	7.0	9.9	42.1	31.6	16.5	0.000	0.000

Note: Strongly Agree (SA), Agree (A), Disagree (D), or Strongly Disagree (SD). Chi2 test p-values presented for categorical (Cat.) and dichotomous (Dic.) provider attitude representations, where SA/A and D/SD are the two dichotomous categories. * Reverse coded; † Not included in factor analysis; ‡ Item retained in adjusted score. Mean (Std. Dev.) presented for scores.

Appendix E. Antenatal Care Hypertension in Pregnancy Clinical Vignette

Physical Exam

Providers were expected to examine vital statistics, particularly blood pressure, to check for signs of edema, and to perform a fetal or abdominal examination. Eighty-five percent or more of providers in each state indicated they would check patient blood pressure, and 50 percent to 60 percent indicated they would perform an abdominal palpation.

Tests Ordered

Providers were asked what tests they would order after learning the patient's vital statistics. Urinalysis is a key test for preeclampsia in a PHC facility; the percentage of providers who indicated they would order a urinalysis was generally high, especially in Ebonyi and Kebbi. Other routine tests, such as HIV and syphilis, were ordered to varying extent across the states.

Diagnosis

Providers were told that tests were positive for pregnancy and proteinuria (protein/creatinine ratio of 60 mg/mmol), and negative for HIV and syphilis. The patient's blood pressure (142/93), heart rate (85 bpm), proteinuria concentration, and estimated 20+ weeks gestational age at her first ANC visit suggest she has hypertension in pregnancy but does not meet the diagnostic threshold for preeclampsia. However, over 80 percent of health workers in Ebonyi and Kebbi and 62 percent in Zamfara indicated a diagnosis of preeclampsia, compared to 2.4 percent in Ebonyi, 6.0 percent in Kebbi, and 3.7 percent in Zamfara diagnosing hypertension. It is not possible to discern from the collected data whether providers were actually reporting a preeclampsia diagnosis, or whether/to what extent enumerators were incorrectly entering preeclampsia during data capture due to a preeclampsia focus during enumerator training.

Treatment

Providers were then asked about treatment. The clinical indication of hypertension in pregnancy does not warrant anti-hypertensive or anti-convulsant drugs, which could potentially harm the patient and fetus if preeclampsia is not present and wastes limited resources. However, between 18 percent to 43 percent of providers mentioned giving a hypotensive drug, 8 percent to 14 percent mentioned anti-convulsive drugs, and 29 percent to 68 percent mentioned hospital transfer.

Counseling

Lastly, providers were asked which key points they would discuss with patients during counseling. Providers were expected to discuss causes and symptoms of preeclampsia, emergency signs during pregnancy and when follow-up care is warranted, and methods of malaria prevention. The percentage of providers indicating these various responses was generally 40 percent or lower.

Table E1. ANC hypertension in pregnancy provider responses, by state

Responses	Ebonyi N = 339	Kebbi N = 218	Zamfara N = 107
Percentage of health workers who asked about aspects of patient history			
Timing of last menstrual period	87.0	56.9	43.0
Complaints during this pregnancy	48.7	37.2	30.8
Number of pregnancies	41.6	58.7	47.7
Family health history	33.3	39.9	52.3
Marital status	29.5	13.8	14.0
Past illnesses	29.2	23.4	38.3
Number of miscarriages	20.9	35.3	22.4
Occupation	20.9	8.7	7.5
Number of children alive	17.1	31.2	20.6
Number of deliveries (live births)	15.9	28.9	29.0
Number of children born alive who have died	9.1	12.8	10.3
Family/support network	9.1	1.4	0.9
Education level	7.7	5.0	0.9
Other medical history	6.5	0.5	0.9
History of hypertension	4.4	19.3	28.0
History of diabetes	4.1	6.9	18.7
Sexual history	2.4	2.3	0.9
Religious affiliation	2.4	1.8	0.0
Fetal movement	1.2	0.0	0.0
Ethnicity/tribe	0.3	0.5	0.0
No questions	0.0	0.5	1.9
Unrecoded other responses	25.7	4.1	5.6
Note: 35.7 percent Ebonyi, 5.0 percent Kebbi, and 10.3 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as fetal movement, ethnicity/tribe, other medical history, and unrecoded other response.			
Percentage of health workers who asked about additional aspects of patient history			
Family health history	51.6	58.7	61.7
Past illnesses	46.9	39.4	58.9
History of hypertension	25.4	57.3	52.3
Sexual history	8.6	5.0	1.9
History of diabetes	6.5	12.4	15.0
No questions	3.5	3.2	8.4
Other family relationships	1.5	0.0	0.0
Treatment received	1.5	0.0	0.0
Religious affiliation	1.2	0.5	0.0
Sleeping pattern	1.2	0.9	1.9
Urine frequency	1.2	0.0	0.0
Unrecoded other responses	24.8	5.0	8.4
Note: 30.7 percent Ebonyi, 6.4 percent Kebbi, and 11.2 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as treatment received, sleeping pattern, urine frequency, other family relationships, and unrecoded other response.			
Percentage of health workers indicating specific physical examination components			
Blood pressure	84.4	93.1	85.0

Responses	Ebonyi N = 339	Kebbi N = 218	Zamfara N = 107
Weight	72.0	79.4	71.0
Temperature	69.0	64.7	49.5
Abdominal palpation	61.7	49.1	60.7
Pulse	52.2	28.9	29.9
Fundal height	51.6	18.8	17.8
Height	49.9	54.1	48.6
Respiratory rate	37.5	25.2	19.6
Signs of anemia	21.8	2.3	18.7
Breast exam	9.1	9.6	12.1
Vaginal exam	1.8	2.3	5.6
Fetoscope	0.6	0.0	0.0
Presence of edema	0.3	0.0	0.3
No examination	0.0	0.0	0.9
Unrecoded other responses	12.4	2.3	3.7
Note: 36.3 percent Ebonyi, 4.6 percent Kebbi, and 23.4 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as signs of anemia and unrecoded other response.			
Percentage of health workers who ordered specific laboratory tests			
Urinalysis	87.9	86.2	78.5
Malaria	45.1	66.1	63.6
HIV	41.0	40.4	45.8
Hemoglobin	37.8	48.2	43.0
Pregnancy test	21.2	25.2	25.2
Hematocrit	12.4	11.5	15.0
Syphilis	11.8	14.2	15.0
Hepatitis B/C	5.3	2.8	4.7
Ultrasound scan	5.0	2.3	0.0
Blood sugar	3.8	1.8	1.9
Blood grouping	3.5	13.8	19.6
Echography	2.9	0.9	0.9
No tests	0.9	0.0	5.6
Full blood count	0.3	0.0	0.0
Unrecoded other responses	6.5	1.4	7.5
Note: 20.6 percent Ebonyi, 13.8 percent Kebbi, and 14.0 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as ultrasound scan, blood sugar, hepatitis B/C, full blood count, and unrecoded other response.			
Percentage of health workers indicating specific differential diagnoses			
Preeclampsia	80.5	85.3	61.7
Don't know	8.6	2.3	8.4
Healthy pregnancy	3.2	3.2	25.2
Hypertension	2.4	6.0	3.7
Unrecoded other responses	10.6	5.0	6.5
Note: 13.6 percent Ebonyi, 11.0 percent Kebbi, and 10.3 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as hypertension, don't know, and unrecoded other response.			
Percentage of health workers who mentioned specific treatment options			
Transfer to hospital	68.1	48.6	29.0

Responses	Ebonyi N = 339	Kebbi N = 218	Zamfara N = 107
Hypotensive drug	18.3	43.1	37.4
Anti-convulsive drug	14.2	13.3	8.4
Antibiotics	2.9	2.8	2.8
No treatment	1.5	1.4	12.1
Intravenous line	1.5	0.0	0.0
Bed rest	1.5	0.5	0.9
Treat bruises	0.9	0.0	0.0
Induction of labor	0.3	0.0	0.0
Hematenics	0.3	4.6	4.7
Tetanus Toxoid	0.0	0.0	1.9
Unrecorded other responses	12.7	3.7	10.3
Note: 30.7 percent Ebonyi, 37.2 percent Kebbi, and 24.3 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as tetanus toxoid, hematenics, intravenous line, bed rest, antibiotics, treat bruises, and unrecorded other response.			
Percentage of health workers who mentioned specific messages for additional counseling			
Bed rest	54.3	50.5	50.5
Reduced physical activity	46.6	40.8	51.4
When to return for follow-up	35.4	29.4	29.9
How to take medicine	32.7	44.0	48.6
Referral to hospital	26.0	24.8	15.0
Benefits of sleeping under a bed net	23.3	32.6	39.3
General nutrition counseling	14.7	0.5	1.9
Increase protein intake	14.5	36.7	51.4
Increase water intake	14.2	24.8	15.0
Causes, symptoms, and risks of having preeclampsia	13.9	28.9	19.6
Methods of malaria prevention	11.5	26.6	23.4
Minimize salt intake	10.9	54.1	21.5
Signs that emergency care is needed	9.4	8.7	10.3
Exercise	2.1	0.0	0.0
Elevate feet	1.5	0.5	0.0
No counseling	1.2	0.0	1.9
Unrecorded other responses	20.9	2.8	6.5
Note: 41.3 percent Ebonyi, 4.6 percent Kebbi, and 11.2 percent Zamfara providers gave one or more 'other' responses. 'Other (specify)' responses recoded as general nutrition counseling, exercise, elevate feet, and unrecorded other response.			

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