

Ethics Committee of Nigeria
Federal Ministry of Health,
Federal Secretariat Complex Shehu Shagari Way,
Garki, Abuja P.M.B. 083, Garki-Abuja

July 5, 2017

Dear Chairperson,

Subject: Impact evaluation of ALL BABIES ARE EQUAL (ABAE) Initiative in Northern states of Zamfara, Katsina and Jigawa

We are pleased to submit to you our research protocol and proposal for an impact evaluation of ALL BABIES ARE EQUAL (ABAE) Initiative. ABAE provides conditional cash transfers to mothers who bring their children for routine immunization (RI) visits.

As per the submission requirements, we are including four hard copies and are sending one electronic copy of our full evaluation proposal comprised of the following items:

1. The research and data collection protocol which includes
 - a. Cover page with details of investigators
 - b. Informed consent form
 - c. Survey instruments
2. CV of the principal investigator in NIH Biosketch format
3. Co-Investigators' attestation statement
4. Local Principal Investigator's attestation statement
5. Sponsor's attestation statement from IDinsight
6. One page summary of research
7. Consent forms
8. Ethics Certificate

Please note that this study is being done in collaboration with Hanovia Ltd. As such, this submission will jointly cover research activities carried out by IDinsight and Hanovia Ltd as outlined in the research and data collection protocol.

We look forward to receiving your thoughts and reactions to this study

Kind regards,



Dr. Alison L Connor
Principal Investigator
Director of Health, IDinsight

Impact evaluation of ALL BABIES ARE EQUAL (ABAE) Initiative in Northern states of Zamfara, Katsina and Jigawa

Full Research Proposal Submission to National Health
Research Ethics Committee of Nigeria (NHREC)

Conducted by IDinsight & Hanovia Ltd.

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Study Summary Report

Impact evaluation of ALL BABIES ARE EQUAL (ABAE) Initiative in Northern states of Zamfara, Katsina and Jigawa	
Background of the study	All Babies are Equal (ABAE) provides conditional cash transfer for routine immunization to increase the immunization and decrease disease burden in Nigeria. With low coverage rates for immunization, the impact of conditional cash transfer on routine immunization in Northern Nigeria remains to be explored.
Rationale of the study	To measure the impact of a conditional cash transfer program on routine immunization in Northern states of Katsina, Zamfara and Jigawa
Research Design	<p>Evaluation will be structured as a two-arm cluster randomized control trial.</p> <ul style="list-style-type: none"> - One arm will serve as the control and continue immunization as usual. The second arm will receive ABAEs' full program. - There will be three measurement rounds: baseline, midline and endline. Baseline and endline will be based on a coverage survey conducted for the study as well as administrative data. Midline will use only administrative data. - Timeline: The baseline will occur over 7 weeks starting in August 2017. Midline will take place 12 months after baseline. Endline will take place approximately 22 months after baseline i.e. spring of 2019
Methodology	<p>Health facility catchment areas will be randomly allocated to the treatment or control arm. Data will be collected at the child level. To identify children included in each data collection round, we propose compact segment sampling for the baseline study and a full census of the study areas will be completed at endline (See the Methodology section of the protocol for additional details).</p> <p>Around 45 infants will be randomly selected from those listed for an in-depth survey.</p> <p>The in-depth survey will involve questions based</p> <ul style="list-style-type: none"> - Self-reported vaccination history - Demographics and socioeconomic status including other health behaviors - Attitudes towards vaccination - Exposure to incentives
Principal Exposure	All mothers with infants in the age-group of 12-24 months in the selected compact segment are eligible for the study. The mothers will be asked for an informed consent before the interview is conducted.
Outcome Variable	The outcome variable for the study is coverage of childhood immunizations among the study population. The study will determine percentage of infants in the community served by a clinic who complete the routine immunization schedule.

Evaluation Background

Rationale for the study

Northern Nigeria has among the highest fertility and lowest vaccination rates in the world (DHS 2013). This unfortunate combination has resulted in frequent measles outbreaks (NCDC 2016) and has made this area one of the world's last locations with wild polio virus. The vaccination rate is as low as 10% for Northern region of Nigeria (DHS 2013). All Babies are Equal (ABAE) was started to drive an increase in the coverage of routine immunization and reduce the disease burden. Funded by the renowned charity, GiveWell, ABAE is a non-profit organization that provides cash transfers for routine immunization.

The goal of this study is to measure the impact of ABAE's conditional cash transfer program on routine immunization. This information will be used by GiveWell to decide to fund scale-up of the program. To this end, IDinsight's evaluation aims to precisely estimate the impact of ABAE's program on vaccination coverage rates across a variety of clinic catchment areas in Zamfara, Katsina and Jigawa states. Additionally, IDinsight is also supporting ABAE by providing evidence in determining the optimal amount for the cash transfers for this study.

Key Stakeholders

IDinsight

IDinsight is a client-service organization that helps social sector actors generate and use evidence to inform decisions. Our team has coordinated over 60 impact evaluations in Africa and Asia using experimental and quasi-experimental methodologies, and works with a wide range of for-profit, government and not-for-profit organizations.

Relevant projects include a cluster randomized controlled trial (RCT) in Zambia evaluating whether offering newborn and maternal HIV testing at clinics improved testing rates and / or adversely affected under-five immunization rates (Wang 2015), and a clustered RCT of non-monetary incentives to encourage facility delivery also in Zambia (Wang 2016).

All Babies are Equal (ABAE)

All Babies are Equal Initiative (ABAE) is the Nigerian arm of an international NGO, New Incentives, focused on leveraging the evidence around conditional cash transfers to achieve development goals. Since 2014, New Incentives has provided over 20,000 conditional cash transfers to Nigerian mothers. New Incentives began operating in Nigeria with a program designed to limit mother-to-child transmission of HIV. After re-evaluating which clinic healthcare service would be most cost-effective to incentivize, the program shifted focus in 2016 to routine immunization with the ABAE initiative. The details of ABAE's immunization program will be discussed below.

GiveWell / Good Ventures

GiveWell is a charity research organization dedicated to finding the most cost-effective ways to improve lives globally. They are closely associated with the Good Ventures foundation which funds much of GiveWell's experimental and research work. In order to support funding, GiveWell tracks the impact of ABAE's immunization program and its cost-effectiveness.

Hanovia Ltd.

Hanovia Limited is a healthcare and management consulting firm legally registered with the Corporate Affairs Commission (CAC) in Nigeria. Hanovia offers services to conduct monitoring, evaluation, and assessment of programs including household surveys, impact evaluation (IE) surveys (baseline and follow-up), immunization coverage surveys, resource and expenditure tracking, and program management including logistical support. Hanovia will work closely with IDinsight to collect the data for the study.

Existing Research on Incentives for Immunization

There are a number of studies¹ that show incentives can have a significant impact on immunization coverage rates, especially in low baseline coverage settings. The landmark study is Banerjee and Duflo's 2010 study of in-kind incentives to increase immunization rates in Rajasthan, India. The randomized study found the percentage of fully immunized children in villages with the incentives and reliable immunization camps increased to 39% as compared to 6% for control villages. Villages where incentives were offered, but there was no intervention to increase the reliability of camps increased coverage to 18%. This intervention differed from ABAEs' model in that Banerjee and Duflo provided non-monetary incentives (lentils and thalis – dishware) rather than cash and the immunizations were provided at village camps rather than clinics.

An individually randomized RCT from Adamawa state in North East Nigeria provides evidence for the impact of monetary incentives for immunization in the Nigerian context. The study found an 800 Naira (\$5.30 USD), conditional cash transfer increased mother's tetanus vaccine take-up by 28 percentage points (Sato and Takasaki 2016, 5).

There are several ongoing evaluations examining the impact of incentives on immunization rates. A recent study (Gibson 2017) in Western Kenya found a modest increase in the percentage of children fully immunized from 82% to 90% with SMS reminders and a 200 KES incentive per pentavalent and measles vaccine received (approximately \$2.35 at the time of the study).

In the papers discussed above, the magnitude of the effect ranged from eight to thirty-three percentage points. While the literature is clear that incentives can increase immunization, the extent to which a similar program will work in Northern Nigeria with extremely low immunization coverage rates remains to be explored. Furthermore, despite efforts from both internal and external stakeholders to increase routine immunization, the progress on this front has not been significant. Further research is necessary to understand the magnitude of impact of the ABAE program in Northern Nigeria.

Description of the Intervention - ABAE Program

ABAE in the Northern Nigerian Context

In recent years, the donor community has invested substantially in improving supply side infrastructure for routine immunization (NRISP 2013), but coverage rates remain low (UNICEF 2015). ABAE is targeting this apparent shortfall in demand for immunization with the demand-side approach of offering cash incentives.

The Incentive System

ABAE provides cash incentives to caregivers who bring their children for immunizations. The incentives follow the below schedule:

Table 1: Schedule of Immunizations Incentivized by ABAE

Visit	Birth	6 weeks	10 weeks	14 weeks	9 months
Immunizations	BCG	Penta1, PCV1	Penta2, PCV2	Penta3, PCV3	Measles
Incentive Amount²	₦500	₦500	₦500	₦500	₦TBD ³

¹ In addition to the research discussed below, see Loevinsohn 1986 and Chandir 2010. There is also a broader literature base on conditional cash transfers to encourage health intervention uptake summarized by Lagarde 2007.

² At current exchange rates ₦500 is approximately \$1.40, but exchange rates are currently unstable. As recently as February, ₦500 was approximately \$1.

³ ABAE is in the process of finalizing the measles incentive amount. IDinsight is providing evidence to support that decision by advising ABAE based on phone reminders to mothers in pilot clinics or reminders and surprise bonuses in the incentive they will receive for measles.

ABAE is in the process of finalizing the measles incentive amount which would be given at the end of the 9-month period. An additional aspect of this study is data collection to support the incentive size. The evidence based evaluation will determine the amount which will be based by ABAE at the end of the 9-month period. This analysis is referred to in following sections of the proposal as ‘Evidence for determining cash transfer amount’. It forms a critical component of the overall ABAE impact evaluation.

ABAE has a team of field officers responsible for disbursing incentives to mothers. On each vaccination day, the field officers check vaccine quality and stock and then prepare to disburse incentives. These activities account for an active supply side monitoring and support conducted by ABAE. Incentives are paid in cash by a ABAEs’ staff member who also assesses the validity of the infant for vaccination. The general principle is the incentive is given with respect to the infant, not the caregiver. This means the incentive is paid to whomever brings the infant to the clinic as long as that person also has the child health card. In practice, mothers tend to bring their infants. Mothers with twins get double the incentive amount for each visit. More details on the intervention and process can be found in annexure 1.

Geographical coverage

During the study, ABAE plans to operate at well-spaced clinics in Zamfara, Katsina and Jigawa. Consequently, there will likely be many non-program clinics between each program clinic. However, at scale, ABAE plans to cluster program clinics since spillovers between treatment and control sites will no longer be a concern. This change may reduce crowding at program clinics which may result in even larger effects on catchment area coverage.

ABAEs’ Current Operations

ABAE is currently operating in 10 clinics in Northern Nigeria. These clinics are in Zango local government area (LGA) in Katsina and Bakura LGA in Zamfara. Apart from this, ABAE is operating in 9 other pilot clinics in three other states, however ABAE doesn’t operate in Jigawa. They have signed MOU’s with all the state governments in which they are operating through their state primary healthcare development agencies. The MOU for Jigawa would be signed in the coming weeks. These MOU’s contain language explicitly approving a randomized controlled trial.

Research Objectives

ABAEs’ program was structured around the evidence discussed above that incentives can improve vaccination coverage rates. Hence, the goal of this study is to quantify the impact ABAEs’ program has on routine immunization coverage rates.

The primary research question is:

1. What impact does ABAEs’ program have on the percentage of infants in the community served by a clinic who complete the routine immunization schedule?

Secondary research questions include:

1. What is the effect of ABAEs’ program for individual antigens, particularly Measles 1?
2. Does ABAEs’ program improve the timeliness of vaccinations, particularly for Measles 1?
3. Does ABAEs’ program result in health behavior changes beyond immunizations? These health behavior changes may include improved child and maternal health indicators, perception towards vaccination and medical consultation, and use of bed-nets.
4. Does ABAEs’ program result in supply side improvements?

ABAE hopes to increase coverage by encouraging more mothers to visit the clinic as well as encouraging all mothers to complete their infant's vaccination course. There are many pathways through which the ABAEs' program could improve and save lives; however, the primary focus of the evaluation will be improved coverage rates of childhood immunizations. IDinsight may also seek to collect indicative information on other changes in health behaviors such as mothers seeking other care at clinic visits or supply side improvements.

Proposed Methodology

Overall Design

The evaluation will be structured as a two-arm cluster RCT. One arm will serve as control and provide vaccinations as usual and the other arm will receive ABAEs' full program.

There will be baseline, midline and endline measurement rounds. The baseline and endline will use a coverage survey and administrative data while the midline will use only administrative data. The midline will take place 12 months after baseline and the endline will take place approximately 22 months after baseline.

Outline of Study Design Phases

The main steps involved in conducting the RCT are outlined below. Each step will be discussed in more detail later in the document.

1. Choose clinics to include in study.
 - a. Determine how far apart treatment and control clinics need to be to avoid spillover.
 - b. Use clinic maps to identify sets of well-spaced clinics for ABAE to investigate.
 - c. Confirm that clinics meet the supply side criteria and other criteria ABAE would use at scale.
2. Conduct a baseline coverage survey of the identified clinics.
 - a. Map the boundaries of the clinic's catchment area.
 - b. Use compact segment sampling to sample the catchment area.
 - c. Determine vaccination status for sampled infants.
3. Randomize clinics into treatment and control groups, stratifying on state and baseline coverage rates.
4. Use administrative data on vaccinations administered to conduct midline survey.
5. Conduct endline coverage survey.
6. Compare percentage of fully immunized infants (and other key outcomes) between treatment and control clinics.

Key Evaluation Design

Randomizing at the Clinic Level

Clinic-level randomization is proposed for this study. Randomizing at the clinic level allows the study to precisely measure the program's true impact on coverage using a feasible number of clinics. Clinic level randomization's primary disadvantage is that mothers may travel from other clinics to take advantage of the incentive. While there is a limit to how far a mother could practically travel with a newborn, many mothers may still travel to treatment clinics from surrounding clinics' catchment area. However, ABAE will be leveraging different methods to limit spillover of this kind. Apart from this, the outcome variable for the study will focus on delineating the impact on the clinic catchment areas to provide a precise measure of ABAE's program.

Spacing Between Treatment and Control Clinics

As mentioned above, treatment and control clinics must be spaced so that mothers from control clinics do not travel to treatment clinics for vaccinations. The distance will be determined by triangulating different data sources from clinics where ABAE operates. These information sources include:

- Exit interviews with mothers to understand the distance they traveled to the clinic.
- Analysis of follow-up addresses recorded in clinic child health registers.
- Analysis of trends in the number of vaccinations administered for clinics surrounding clinics with incentives.
- Information collected by ABAE field staff on cost of travel.

- Cost of public transportation in the clinic area.

Zamfara, Katsina and Jigawa states are large enough that the 150 clinics can be spaced up to approximately 20km apart. When choosing the final spacing of clinics, we will err on the side of spacing them further apart than necessary to further reduce spillover risk.

Conducting a Baseline Coverage Survey

A baseline coverage survey is proposed as a part of the evaluation design. Baseline measurement will provide benefits to the study rigor. Primarily these benefits will come from increasing the likelihood of balance between treatment and control arms. The baseline will also provide operational insights into data collection, and more accurate baseline coverage estimates.

We believe that conducting a baseline coverage survey will not only enhance the rigor of the study but will also reduce the risk of the results being biased. The baseline will also allow for an analysis of ABAEs' effect across different types of clinics. Furthermore, baseline will provide a perspective on changes in other health behaviors and attitude towards vaccination.

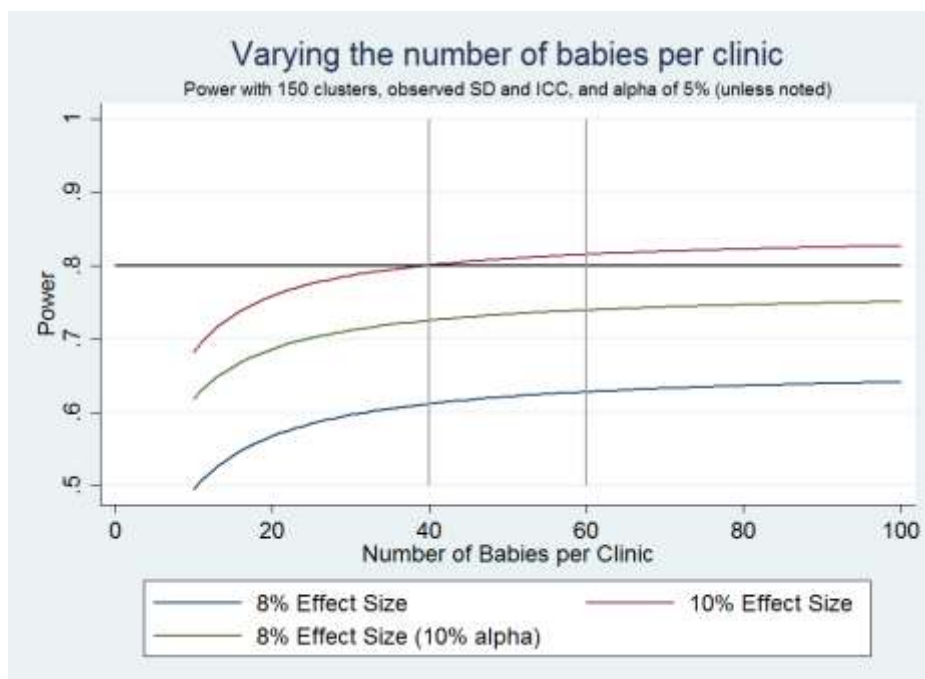
Vaccination Coverage as the Outcome

We will use vaccination coverage (as measured by surveys and clinic records) as the primary outcome rather than mortality and biological immunity. A mortality study is infeasible due to the hundreds of clinics required to detect the expected change in mortality, and a serological study with current technology does not justify the added operational complexity at baseline. We are still considering incorporating biomarkers as a robustness check at endline. In this case, we will submit a separate IRB amendment.

Sample Size Calculation

ABAE aims to achieve at least a 7-percentage point increase in coverage. Powering the study to detect a seven percentage point increase would require at least 300 clinics in the study, which would be operationally infeasible. Instead, the study will be powered to detect a 10 percentage point increase in the percentage of fully immunized children with a p-value less than 5% with a proposed sample of 150 clinics with 75 treatment and 75 control clinics. Within each clinic, only 45 infants will be surveyed since surveying additional infants does not increase power materially.

The choice of 40 infants per clinic is illustrated by the following graph based on the power calculations. Note that the number of babies per clinic matters even less for higher values of alpha. However, in order to ensure we have on an average 40 infants per clinic, we will survey 45 eligible infants as there may be cases where mothers are not available to interview or they do not provide consent.



Calculations below follow conventional study design norms. The alpha in the calculations below is the likelihood the reported effect is in truth zero. The table below demonstrates that to detect a minimum impact of 10 percentage points, 75 treatment clinics are required as part of the study.

Table 2: Treatment Clinics Required to Detect Different Effect Sizes at Different Levels of Power.

Detected Effect		Measles Vaccine		PENTA Vaccine	
		80% Power	90% Power	80% Power	90% Power
7% increase in coverage	5% alpha	151	203	145	193
	10% alpha	120	166	114	158
8% increase in coverage	5% alpha	116	156	111	148
	10% alpha	92	127	88	121
10% increase in coverage	5% alpha	75	100	72	95
	10% alpha	60	82	57	78
11% increase in coverage	5% alpha	62	83	60	79
	10% alpha	50	68	47	65

Evaluation Details

Steps 1: Selecting Clinics

Using clinic maps available online⁴ and obtained from eHealth Africa, IDinsight will identify groups of public clinics offering routine immunization services to a primary catchment area and spaced to minimize the likelihood that mothers would be willing to travel outside their catchment area to access incentives.

⁴ <https://africaopendata.org/dataset/health-facilities-in-nigeria>

Once a list of potential study clinics has been produced, ABAE will visit these clinics to ensure operational feasibility. ABAE plans to screen for basic supply side readiness, only periodic stock outs, and a sufficient number of immunization days to make the program practical. Clinics with extremely low numbers of women attending vaccination will not necessarily be screened out if they appear to have a large catchment population.

In the event two nearby clinics are both considered eligible by ABAE, IDinsight will randomly select one to be included in the study. In cases, where an identified clinic is very close to a clinic also offering large numbers of immunizations, it may make sense for the program to operate in both clinics to reduce spillover risk, but only include one clinic in the study.

The final operational screening criteria will be developed in coordination with ABAE.

Step 2: Conduct a Baseline Coverage Survey

Sampling Procedure

The study's main population of interest is the birth cohort who would be 12 to 16 months old⁵ at the time of endline living within a clinic's catchment area. This is to ensure the program will be fully operational even for the oldest sampled babies at the endline. Moreover, data quality and mother recall is likely to be best amongst younger infants⁶.

To ensure that the baseline survey can be completed on time, with reasonable budget, and with high quality supervision, we propose using compact segment sampling⁷ to sample a clinic's catchment area.

To implement compact segment sampling, we propose the procedure outlined in table 3 below. These compact segments will remain the same for the endline.

Table 3: Compact Segment Sampling Strategy

High Level Procedure	Practical Considerations
1. All settlements within a clinic's catchment are divided into segments of roughly equal size	<ul style="list-style-type: none"> • The number of segments per settlement will be determined by the catchment areas' approximate population as estimated from polio immunization campaign data. • Advance teams will confirm which settlements are in the catchment area of a clinic.
2. One segment from each settlement is randomly selected	<ul style="list-style-type: none"> • Maps illustrating these segments will be distributed in print and electronically to field teams responsible for a clinic catchment.

⁵ At baseline we will sample 12 to 24-month-old infants, to help make the study more comparable to other coverage studies and provide richer data for heterogeneous effects analysis. While sampling 12-24 month-old-infants for baseline, we would stratify only on coverage data for the 12-16 month olds in the sample as this groups coverage will be used at endline.

⁶ Based on an analysis of other sample surveys in Katsina and Zamfara we expect 10% of households to have an eligible child.

⁷ For small remote rural settlements where proportional sampling may require enumerators sample only a few household that can't be feasible mapped an alternative sampling technique where the enumerator will ask how many households are in a settlement and then count a randomly selected number between 1 and the stated number of households from a central landmark will be used.

High Level Procedure	Practical Considerations
<p>3. Field teams will census the selected segment of each settlement within a clinic's catchment.⁸</p>	<ul style="list-style-type: none"> • The census team will ask about living and deceased infants born into the cohort, but only living infants will be eligible for further interview. • Households with multiple eligible infants will be treated with the principle one observation per mother⁹ since the mothers receive the incentive and bring infants to the clinic. • Community events and holidays will be used to facilitate birth date recall if paper record not available.
<p>4. Around 45 eligible infants, living or deceased, will be randomly selected from those listed for an in-depth survey</p>	<ul style="list-style-type: none"> • If not enough eligible infants are censused within the initial segments, an additional segment to census will be selected at random until all segments are exhausted.

Coverage Survey Data Collection

The main unit of analysis for the study is infants between 12-16 months of age. Household, mother, and infant data will be collected using a household survey. Clinic data will either be geographic or derived from administrative sources.

The household survey will consist of four modules:

1. Self-reported vaccination history, Child Health card check and a BCG scar check for living infants
 - Globally standardized questions which use details such as location of the immunization to enhance accuracy.
 - Leverage community events to increase accuracy of reported dates of immunization.
2. Demographics and socioeconomic status including other health behaviors
3. Attitudes towards vaccination
4. Exposure to incentives

During each survey interview, interviewers will ask for infants' child health cards. To increase the likelihood mothers will have child health cards available, community leaders will be enlisted to announce the coverage survey team so that mothers will have time to find their cards. In cases where a card is not available, a member of the survey team will look for the infant in clinic records so that the self-reported vaccination history can be verified. Cases that cannot be further verified will be treated as missing in the main analysis and used to bound estimates in robustness checks.

⁸ The team is still considering the best solution for clinic catchments with large numbers of settlements (20-30).

⁹ For the purposes of listing we will count twins as one infant. If a twin is selected one of the twins will be randomly selected for further surveying. Infants with different mothers, but the same father will be counted as individual observations.

If there are a large number of cases where a child's vaccination status cannot be determined during baseline measurement, we will consider strategies to strengthen administrative record keeping at treatment and control sites and card retention from the period the endline cohort is born through the endline.

Coverage estimates using clinic administrative data described in the section on midline data collection will be included in a robustness analysis.

Step 3: Clinic Randomization

After the baseline coverage survey, the clinics will be randomized. The proposed randomization scheme will have two levels of stratification. First, we will stratify by state since state-level contextual factors may influence the program's impact. Next, we will stratify by baseline coverage, dividing clinics in each state into around 4 strata of similar coverage rates.¹⁰ Thus the 150-clinic sample will be divided into around 8 groups of 16 or 17. Other important variables such as catchment area size and population density will be controlled for explicitly in the analysis.

Step 4: Midline Data Collection

In early September 2018, we will use administrative data to derive preliminary estimates of the program's impact. The infants initially enrolled in November and December should be due for their Measles vaccination by the end of August, as well as infants who only got BCG and enrolled when they were slightly older. More importantly, the main sample cohort of infants born in April and May should have largely received PENTA 3 vaccinations by the end of August.

We will collect August DVD-MT data in the form of the clinic-level tally sheets, the official record of vaccinations administered, from study clinics and the clinics surrounding treatment clinics. We plan to construct coverage rates by dividing the adjusted number of doses given in July and August by the estimated size of a two-month birth cohort in a clinic's catchment area. This estimate will be based on using the partial census conducted at baseline to adjust the polio population data. After baseline data collection, we will have a better sense whether administrative data sources are sufficiently accurate to create these estimates.

Adjusting the dose statistics is necessary for treatment clinics because many of the doses given may be for children from neighboring clinics who traveled to a treatment clinic to be eligible for an incentive. The adjustment will be made by discounting the number of vaccinations in treatment clinics by the change in vaccinations in neighboring clinics¹¹ since baseline. This adjustment will only work if no new interventions began at neighboring clinics during the study. However, we will be working with the relevant authorities to target other interventions in areas away from study clinics.

The coverage results for all vaccines aside from measles combined with retention data from learning and pilot sites could form the basis for additional funding to help ABAE and its preparation to scale once the endline results are available. Other rounds of low cost administrative data collection and analysis may take place to support ABAE's funding requirement.

Step 5: Endline Data Collection

Endline data collection will proceed similarly to baseline data collection, but integrate improvements based on learning from the baseline. For instance, it may be necessary to increase the number of households censused in order to obtain the correct number of infants, or to improve the procedure for verifying vaccination status. One key planned difference is that the compact segment selection process will not be repeated as the same compact segments from baseline will be used to census at endline.

¹⁰ The exact amount of strata will be determined by looking at the distribution of coverage rates.

¹¹ The data will be collected directly from the state or LGA level in most cases.

The endline data collection will take place 12 months after ABAE clinics began operating at full volume. Based on previous experience, ABAE thinks this will take place in April 2018, but there is flexibility to push back the endline if ABAE program scales into the treatment sites slower than expected.

The 12-month interval is necessary for disaggregating the program’s impact on vaccination timeliness and overall vaccination status. Mothers in control clinics in particular may come later than nine months to receive their measles vaccinations. If the endline took place nine months exactly from birth, these infants would be considered unvaccinated. Since the endline will take place when infants are at least 12 months, we will be able to correctly classify these infants as untimely but vaccinated.

Step 8: Compare Percent Fully Immunized Between Treatment and Control Clinics

While the full range of analyses will be detailed in the study’s pre-analysis plan, the primary analysis will be a comparison of coverage rates for infants in the coverage areas of treatment and control clinics. This specification will be an analogue of the familiar ANCOVA model frequently used in impact studies, but modified to take into account the fact that this is a repeated cross-section:

$$V_{E,ij} = \beta_0 + \beta_1 * T_j + \beta_2 * C_j + \beta' * \gamma_{ij} + \alpha_p + \varepsilon_{ij}$$

- $V_{E,ij}$ is the applicable endline vaccination status for infant i in clinic j :
- T_j is the treatment status of clinic j , which contains infant i
- C_j is the baseline coverage rate¹² at clinic j , which contains infant i
- γ_{ij} is a vector of infant-level covariates
- α_p is a vector of categorical factors corresponding to the clinic, as well as stratification dummies used in the randomization
- ε_{ij} is the error term for infant i in clinic j clustered at the clinic-level
- Infant i 's outcomes are weighted inversely proportional to the probability of being selected into the sample

A full pre-analysis plan will be created after the baseline and the study will be registered. Waiting to produce the full pre-analysis plan until after baseline measurement will allow us to include any new hypothesis that emerge from the data collection exercise, and incorporate insights from ABAE operations at the learning sites.

Ethical Considerations

Data Handling and Security

All raw data will be directly uploaded from enumerator data collection devices to secure encrypted services. The research team will follow strict data management protocols to limit access to the raw data to those who require the data for survey management or initial analysis. Data will be anonymized prior to data dissemination or sharing of results. Any photos of the child immunization register or child health cards will be stored on a secure server and only viewed by the investigators. These photos will only be shared after editing to remove any identifying information.

Informed Consent

With the advice of our data collection partners, we will use locally appropriate informed consent forms which will be administered orally and in writing prior to the survey and census. The informed consent form is based on the prototype provided by NHREC highlighting the details of the research, duration, risks, benefits, costs and confidentiality clause. We plan to obtain consent orally as well using thumb prints on a printed form. Proper

¹² Will adjust standard errors to reflect that baseline coverage is measured with error.

administration of an informed consent protocol will be an important topic in enumerator training. The mothers will provide informed consent on behalf of their infants as is common practice in pediatric studies. We will obtain consent from the clinics to review the child immunization registers. Only data from consented respondents will be entered unless the enumerators make an error cross-referencing. However, in that case it is likely the information in the register is not identifying. The consent form can be found in the annexure 3.

Ethical Clearance

The survey team will obtain ethical clearance from federal and state officials in Nigeria. The team will also inform local and traditional leaders about the study and seek their approval for undertaking research. At the state-level ABAE has already informed leaders that survey research will take place alongside the roll-out of their program.

Ethical Risks

As with any randomized controlled trial, the control clinics will be the subject of research, but not receive the treatment. Limited resources necessitate that some clinics do not receive the treatment. If the program does find positive effects, control clinics will likely be some of the first clinics to receive the treatment. In general, more accurate information on vaccination coverage rates in Northern Nigeria will be useful to the government and public health community in their efforts to improve the routine immunization system and thus indirectly benefiting the control group.

The program itself also poses some ethical risks. First, financial incentives may reduce mother's intrinsic motivation to vaccinate their children by monetizing vaccination. The study will also measure attitudes towards vaccination at baseline and endline to determine whether the program seems to be reducing mother's intrinsic motivation to vaccinate. Questions to address the benefits of vaccination such as asking mothers directly if they would vaccinate if they lived in a settlement ineligible for an incentive will be added at the endline. There is also a possibility that the program will improve mother's perceptions of vaccination by reducing social taboos or overcoming fears of vaccination through experience. Recent literature suggests that this alternative hypothesis may be more likely (Charness and Gneezy 2009, Promberger and Marteau 2013, Cameron et al 2001, and De Walque 2015).

Another ethical risk imposed by the program is that giving cash to mothers could spark social conflict. We believe this risk is low since other research in northern Nigeria showed a friend receiving an incentive to vaccinate increased an individual's propensity to vaccinate rather than sparking conflict (Sato and Takasaki 2016). At a community level, we will further mitigate this risk by explaining to local leaders that there were only sufficient resources for some clinics to receive incentives and the team needed to spread out these clinics to better understand the impact of the incentives across different environments.

Timeline

IDinsight will begin baseline measurement by August in order to ensure the majority of baseline data collection is completed prior to a potential measles campaign currently slated for October/ November this year. However, the baseline may still be delayed by field events.

Baseline data collection might be phased by state for logistical simplicity and so that each state strata in the study is surveyed at the same time. Finishing any given state or area with an equal number of treatment and control clinics faster will help in reducing the risk that treatment and control clinics' 12 to 16 month olds were born at substantively different times. This will be especially important if the measles campaign begins during data collection. Baseline is expected to take approximately 12 weeks to complete. ABAE will begin operations in treatment clinics in the first state after data collection finishes for that state.

We will use August 2018 administrative data to conduct a midline.

Since the study design does not involve tracking individual babies from baseline, the timing of the endline is somewhat flexible. We will schedule the endline based on the date from which ABAE program clinics achieve normal operations which is expected by mid-2018. Based on this, the endline data collection will take place 12 months post normal operations which is most likely in late spring of 2019 with results available by summer.

Pre-testing

To finalize the overall evaluation plan, it is essential to pilot the coverage survey IDinsight intends to use during baseline measurement. For the same, IDinsight plans to conduct a pre-testing study before the baseline.

The pre-testing will be a crucial component of the baseline training scheduled for over 2 weeks before baseline. The trainings are expected to begin by third week of July. The overall goal of the pre-testing is for the IDinsight team to gather information for finalizing the RCT design and field protocol. This fieldwork will include both initial survey piloting and additional data collection to reduce uncertainty around key questions in the RCT design.

Village-level data collection will take place in the catchment areas of clinics.

- Census around 300 households in up to 8-10 settlements using compact segment sampling. This involves visiting every household in a pre-specified area of each settlement. This will be done using Android phones or tablets.
- Pilot vaccination status household survey, where main activity is verifying the vaccination status for 45 infants 12-24 months with a card check standard self-report Clinic-Level Data Collection

A separate team will be involved in cross-referencing vaccination status using records at the clinic.

IDinsight, in collaboration with Hanovia Ltd., will be conducting the pre-testing and baseline study following the data collection protocols and taking into account all ethical considerations mentioned above for the overall study.

Evidence to determine incentive amount

As a part of the overall impact evaluation, IDinsight is also supporting ABAE in determining the optimal size of the incentive that should be given to a mother for completing the first measles due at 9 months of age. A description of ABAE current operating model is available above and in Annex 1.

While the 9-months measles vaccination visit already has a higher incentive, an even higher cash amount could still be cost-effective given the low status quo completion rates and the relatively high benefit of the measles vaccine on health outcomes. That in mind, this study analyzes ABAE’s programmatic data to determine what incentive amount is most effective in retaining mothers.

This additional analysis will be conducted using ABAE data from the 9 pilot clinics currently operating in 3 states Nassarawa (in the north), Anambara (in the south), and Akwa Ibom (in the south). The objective of this analysis is to examine the impact of reminder calls and the level of cash incentives on the percentage of mothers bringing this child for measles vaccination.

Proposed Analysis Plan

ABAE is calling selected mothers due for measles in the coming months and informing some that they will receive a larger incentive than they were originally told. In order to address the issue that calling mothers in itself may have an effect on retention, some mothers receive calls reminding them they will receive the amount they were previously told they would receive.

ABAE program is piloting two models for incentives at their pilot clinics – Model 1 and Model 2. In Model 1 clinics, the mothers expect a 2,000 Naira incentive for measles while in the Model 2 clinics, the mothers expect a 3,000 Naira incentive for the same.

An illustration of the four arms of the research is provided below:

Table 4. Four arms of the research study

Research	Model 1 Clinics	Model 2 Clinics
Status Quo	2,000 Naira Incentive without a reminder call	3,000 Naira Incentive without a reminder call
Reminder Call	2,000 Naira Incentive with a reminder call	3,000 Naira Incentive with a reminder call
1,000 Naira Bonus	3,000 Naira Incentive with a reminder call	4,000 Naira Incentive with a reminder call
3,000 Naira Bonus	5,000 Naira Incentive with a reminder call	6,000 Naira Incentive with a reminder call

Sampling

The sampling frame for the evaluation consists of 1,088 eligible mothers (see above for definition) at the 9 pilot clinics. To examine the effect of different incentives, New Incentives randomly allocated eligible mothers equally into one of the four study arms, stratified by clinic. See Table 5 for the number of mothers sampled in each study arm.

Table 5. Sampling

Study	Model 1 Clinics	Model 2 Clinics	Total mothers sampled
Status Quo	2,000 Naira Incentive without a reminder call	3,000 Naira Incentive without a reminder call	273
Reminder Call	2,000 Naira Incentive with a reminder call	3,000 Naira Incentive with a reminder call	272
1,000 Naira Bonus	3,000 Naira Incentive with a reminder call n = 95	4,000 Naira Incentive with a reminder call n = 176	271
3,000 Naira Bonus	5,000 Naira Incentive with a reminder call n = 96	6,000 Naira Incentive with a reminder call n = 176	272

Types of data

- *Primary dataset to be used*
 - **ABAE electronic administrative data:** At the time of payment for each vaccination, clinic staff inputs data electronically into an ABAE database. This centralized administrative dataset contains information including: clinic, unique ID, DOB of the infant, vaccination date for each vaccination received at the clinic (inputted from the child health card), amount received for each vaccination, date provided to caretaker for the next vaccination, caretaker phone number and follow-up address, and transportation cost for the caretaker to come to the clinic.
- *Secondary dataset*
 - **Phone data:** Each caretaker who is assigned to any group except for the Status Quo groups, are called at least twice on 10 times across 5 different days at varying times of day (to account for phones being out of network or battery at particular times or days). Hotline operators fill out a call log any time that they make a call. This dataset has information about whether and when the caretaker received the call, the experimental group she is in, and the infant's immunization status on the date of the call. This dataset will be used to verify whether each caretaker in the non-Status Quo experimental groups actually received a phone call.

Primary research questions

1. Does a phone call reminder result in higher 9-Month measles vaccination rates?
2. Which incentive amount results in the highest likelihood of completing the 9-month Measles vaccination visit?

Specification

We will estimate the following LPM regression specification:

$$Y_i = \beta_0 + \beta_1 * T_{2000i} + \beta_2 * T_{3000_1i} + \beta_3 * T_{3000_2i} + \beta_4 * T_{4000i} + \beta_5 * T_{5000i} + \beta_6 * T_{6000i} + \gamma_2 * X_i + \alpha_j + \varepsilon_i$$

where:

- $Y_i = 1$ if the eligible caretaker came to the clinic for the 9-months Measles vaccination during the study period, and = 0 if not.
- $T_{amount_i} = 1$ if the caretaker is called and offered the incentive amount indicated in the subscript, = 0 if not. T_{3000_1i} refers to caretakers that came to clinics where the baseline amount of transfer was 2000, and T_{3000_2i} refers to caretakers who came to clinics where the baseline amount of transfer was 3000.
- X_i is the cost of one-way transport to the clinic for the caretaker.
- α_j is a vector of dummies corresponding to the clinic that the caretaker visited.
- ε_i is the error term for caretaker i

Estimation

Estimates of the average treatment effects will be calculated using a linear probability model (LPM). Both the effect of a phone call reminder and the effect of cash incentive amounts from 2000 Naira to 6000 Naira (in 1000 Naira increments) on the mother's likelihood (probability) of bringing her infant to the clinic to complete the 9-month measles vaccination visit will be estimated. The specification also controls for the cost of transportation to the clinic, timing of the call relative to the due date, and includes fixed effects for the clinic.

IDinsight will test whether each treatment coefficient is greater than zero, and will also test whether the estimated effects of larger transfers are greater than of smaller transfers. The cost-effectiveness analysis based on results.

Technical risks & study design constraints

- *Low power* – The study is statistically powered to test how increases in incentive amounts affect probability of completion with statistical significance, but not well-powered to test what particular incentive amounts cause higher probability of completion.
 - *Mitigation:* Some analysis on the potential magnitude of the effect (see next section).
- *Missing data* - There may be missing data on caretakers not reached.
 - *Mitigation:* There are other data sources to double-check some of the vaccination information – e.g. clinic health registers, child health cards, etc.
- *Balance in treatment arms* - There is not much data collected on the background of caretakers that may affect their probability of coming to the clinic for the Measles vaccination visit. We cannot check balance in the treatment arms.
 - *Mitigation:* We have added one covariate for transportation cost to get to the clinic into the specification. Transportation costs are a proxy for caretaker's distance from clinic.
- *Spillovers/ heterogeneous effects* - The treatment arms, which give more cash incentive for the measles visit than any other vaccination visit, may disproportionately attract caretakers who live further away from the clinic more than those who live close to the clinic.
 - *Mitigation:* A subgroup analysis can be performed by using cutoffs (established based on the variation in the data on transportation costs) for the sample that the specification is run using. This will allow us to examine heterogeneous effects of the treatment arms on caretakers that live closer and further away. However, we likely do not have enough power to get statistically significant results.
- *External validity for NI's context* - NI wants to scale the vaccination program to the Northern region of Nigeria, which is assumed to have the lowest overall and Measles vaccination rates in the country. However, none of the three pilot states are in the Northern region.
 - *Mitigation:* Anambra and Akwa Ibom are in the South, and not very representative of the Northern in terms of demographics. However, Nassarawa may have a more representative population, as it

is located in the North. We could perform subgroup analysis to see if the magnitude of the effects within this state are much larger or smaller than the overall results that we get. While we are likely not powered to get statistically significant comparisons, this can provide some inclination about how representative the pilot results are to Northern Nigeria.

- *External validity for coverage rates in Nigeria* - This study sample is not representative of Nigeria, though does provide some variation in regions as NI selected three different states, two in the south and one in the north, in which to run the pilot clinics and program.

Secondary analysis

Heterogeneous effects

Subgroup analysis will be performed to examine heterogeneous treatment effects on those caretakers who live further away (proxied by transportation cost). The cutoffs on transportation cost will be decided based on the transportation cost data in the sample, to run one regression using only those below the cutoff (those who live close to the clinic), and one regression using data from only those above the cutoff (those who live further away from the clinic).

Robustness checks

Robustness of the estimates will be checked in the LPM model by running a probit model on the same specification.

Elasticity of Vaccination to incentive amount

Model will be tested using a continuous independent variable to denote the amount of the incentive. The purpose is to provide some indications as to the elasticity of coverage to incentive amount.

Ethical Risks

This component of the study is only data analysis of ABAE's programmatic data. This does not pose ethical risks.

Annexes

Annex 1 ABAE intervention details

This annexure provides the administrative set-up and step-by-step implementation details of the ABAE initiative in Nigeria.

Administrative setup

There are three ABAE pilot clinics in each of three states in different parts of Nigeria. They each administer to a defined catchment area. The only form of advertising the vaccination program to caretakers (mothers) is a small poster immediately outside the clinic, and word of mouth.

Implementation and identification

When mothers arrive at the clinic, they are given numbers that determine the order that their babies will be vaccinated in.

Step 1: Paperwork

When a mother is called up, a nurse will complete paperwork:

1. Fill out the **clinic child health register**. This contains a child's complete vaccination history, phone number, and follow-up address.
2. Fill out the baby's **child health card**, which the mother is supposed to keep at home between visits. If this has been lost, the mother is issued a new one using the information in the child health register, or a duplicate card kept at the clinic.
3. Tally vaccine doses on a **tally sheet**, which is aggregated through the local government area and state administrative areas to determine coverage rates.

Step 2: Vaccination

Mothers are referred to nurses administering the vaccine. These nurses put a gold dot using a gold pen on the baby's child immunization card to prevent babies from going directly to the incentive table and skipping the vaccination station.

Step 3: Enrollment

To be eligible for enrollment in the incentives program, mothers must either have never vaccinated¹³ or have record of receiving BCG, the first vaccine on the schedule, at the clinic where ABAE is operating. As long as mothers have received BCG at the clinic, they can enroll in the incentive program at any stage in the vaccination schedule. When enrolled, mothers receive a **card that illustrates the incentive structure** and has their **unique ID code**, which is also placed on the mother's child health card.

9-months measles vaccination incentive eligibility: All mothers in evaluation clinics, enrolled in the ABAE program, and are 9 months or older are eligible to receive the measles vaccine and are part of the study. Mothers who have eligible children at the beginning of the study will be called immediately, and as additional children become eligible they also will be called.

Step 4. Payment

Once a baby's eligibility is confirmed, the staff member pays the mother the appropriate amount. This is recorded 4 times: electronically using a smartphone, on a paper tally sheet, by taking a photo of the mother

¹³ This can be easily verified by the absence of a BCG scar

with her cash, and a photo of the mother's child health card so that other NI staff can verify that the field staff is correctly determining eligibility. A blue dot is applied to the child health card to guard against double payment.

Annex 2: Survey tool and informed consent form

Household Listing Consent Form

Consent Statement – Household Listing Form. Household listing form will be used for censusing the households in each selected compact segment of the catchment area of the clinics. It is required to determine the eligible infants for the main baseline questionnaire.

Hello, my name isI am from Hanovia Ltd which is conducting a study on behalf of IDinsight and State Ministry of Health. They are partnering to understand the immunization coverage in the age group of 12-24 months. The outcome of this survey will help in designing and scaling up a program for routine immunization. This study is sponsored by GiveWell, a foundation based in the US.

We are currently listing all the households in this settlement for us to select those that will participate in the baseline survey. The process will entail an interview using a questionnaire about household members which doesn't pose any risk. The information provided by you will be held in strict confidence. Any information you provide would only be made available to other researchers in a fully anonymized way and only for the purpose of research.

The survey should take about 10 minutes to complete. Participation is completely voluntary. If we should come to any question you don't want to answer, just let me know and I will go on to the next question. You are also free to stop the interview at any time.

The survey has been approved by the State Authorities. Should you have any queries, feel free to contact the following contact person(s):

1. Steven Brownstone on 08025727860, email: steven.brownstone@idinsight.org
2. Kola Durojaye on 08062087855, email: kdurojaye@hanovialimited.com

At this time, do you want to ask me anything about the study?

Statement of person giving consent:

I have read or have been explained the description of the research. I have also asked any further inquiry on this research. I understand that my participation is voluntary. I know enough about the purpose, methods, risks and benefits of the research to decide that I will take part in the research. I understand that I may freely stop being part of this study at any time. I have received a copy of this consent form for myself.

Date: _____

Signature/thumb print: _____

Name: _____

Household Listing Survey tool

State:	Drop-down list
LGA:	Drop-down list
Ward Name:	Drop-down list
Clinic Name:	Drop-down list
Settlement Name:	Drop-down list
Supervisor Name:	Drop-down list
Enumerator Name:	Drop-down list
Structure ID:	Text input
HH serial number:	Text input
Date of enumeration:	Calendar entry
Start time:	Automated

1. Which visit is this?
 - a. 1
 - b. 2
 - c. 3
2. What is the status of this interview?
 - a. Return later, no one home and no informed neighbors
 - b. Come back later; interview started but could not complete
 - c. Refused, someone is home but refused to participate
 - d. Complete, collected all necessary information
3. Nearest Landmark to the household?
4. Address or description of this household?
5. Are you a household member?
 - a. Yes
 - b. No
6. Are you a neighbor? (skip if 5 -> Yes)
 - a. Yes
 - b. No
7. Are you confident you have knowledge of recent births in the household?
 - a. Yes
 - b. No

Note to enumerator: please find a knowledgeable respondent (skip if 7-> Yes)

8. Were you able to get a knowledgeable respondent? (skip to end if no)
 - a. Yes
 - b. No
9. Are you the head of this household?
 - a. Yes
 - b. No
10. Do you know the name of the household head? (skip if 9->Yes)
 - a. Yes
 - b. No
11. First name of the household head?
12. Surname of the household head?
13. Nickname of the household head?

14. What's your own name? (skip if 9->Yes)
 15. Do you have phone number of people living in that Household? (skip if 5->Yes)
 - a. Yes
 - b. No
 16. Mobile Phone number of household member (skip if 5->Yes)
 17. Do you have a mobile phone? (skip if 5->Yes)
 - a. Yes
 - b. No
 18. Mobile Phone number of neighbor (skip if 5->Yes)
 19. Do you or any member of your household have a mobile phone? (skip if 6-> Yes)
 - a. Yes
 - b. No
 20. Name of household member with the mobile phone (skip if 6-> Yes)
 21. What is the phone number? (skip if 6-> Yes)
 22. Second phone number (if any) (skip if 6-> Yes)
 23. Does a neighbor have a phone number that can be used to reach members of the household?
(skip if 19-> No)
 - a. Yes
 - b. No
 24. What is that neighbor's name? (skip if 23-> No)
 25. What is that neighbor's phone number? (skip if 23-> No)
 26. What is the total number of residents, anyone who has lived permanently in a household for at least 6 months, between five and 18 years?
 27. What is the total number of male residents, anyone who has lived permanently in a household for at least 6 months, over 18 years old?
 28. What is the total number of female residents, anyone who has lived permanently in a household for at least 6 months, over 18 years old?
 29. What is the total number of child residents, anyone who has lived permanently in a household for at least 6 months or since birth, under five years old?
 30. Was there any live birth in this household 12 - 24 months ago (August 2015 - August 2016)?
 31. How many live birth in this household occurred 12 - 24 months ago (August 2015 - August 2016)?
 32. Out of the live birth how many children aged 12 - 24 months live in the household today?
 33. What happened to the remaining child? (skip if 32==31)
 34. How old was the child when that happened? (skip if 32==31)
 35. Did that child ever receive vaccination at the clinic? (skip if 32==31)
- Eligible Child Section* (skip if 32==0)
36. Mention the names of all the children 12 - 24 months who still live in this Household
For each Child:
 - a. What is the **FIRSTNAME** of the eligible child?
 - b. What is the **SURNAME** of the eligible child?
 - c. How old is **\$\${firstname} \$\$ {surname}** in **MONTHS**?
 - d. What is gender of **\$\${firstname} \$\$ {surname}**?
 - e. What is the day of birth?
 - f. What is the month of birth?
 - g. What is the year of birth?
 - h. Enumerator: What is the data source for **\$\${firstname} \$\$ {surname}** birth date?
 - i. Islamic Calendar
 - ii. English Calendar

iii. Major Events

Form randomly selects an eligible child

37. Is the caregiver of the \${selected_firstname} \${selected_surname} available to answer a few questions about her child?
38. How long has the caregiver lived in this settlement
 - a. How many years?
 - b. How many months?
 - c. How many days?
39. Since birth, has \${selected_firstname} \${selected_surname} slept away from the home for more than one month?
 - a. Yes
 - b. No
40. How many times has this child slept away from the home for more than one month? (skip if 40->Yes)
41. Who accompanied the child? (skip if 40->Yes)
42. What was the purpose of the trip? (skip if 40->Yes)

Record GPS at 5 meter accuracy

Routine Immunization Consent Statement

This questionnaire should be administered to caregivers of selected child in the age group of 12-24 months. The child will be selected randomly from the household listing survey if he/she is in the required age group. If caregiver is not available enumerators are instructed to ask for individual with the greatest knowledge of child's healthcare.

Hello, my name isI am from Hanovia Ltd which is conducting a study on behalf of IDinsight and State Ministry of Health. They are partnering to understand the immunization coverage in the age group of 12-24 months. The outcome of this survey will help in designing and scaling up a program for routine immunization. This study is sponsored by GiveWell, based in the US.

You have been chosen to participate in this research because your child falls within the age range 12 - 16 months. The process will entail an interview using a questionnaire about you and your child's health and immunization status, which doesn't pose any risk. The information provided by you will be held in strict confidence. The information provided might be made available to other researchers for related studies to this one but only in a fully anonymized way and only for the purpose of research.

The survey should take about one hour to complete. Participation is completely voluntary. If we should come to any question you don't want to answer, just let me know and I will go on to the next question. You are also free to stop the interview at any time, should you feel uncomfortable.

The survey has been approved by the State Authorities. Should you have any queries, feel free to contact the following contact person(s):

Steven Brownstone on 08025727860 email: steven.brownstone@idinsight.org

Kola Durojaye on 08062087855 email: kdurojaye@hanovialimited.com

At this time, do you want to ask me anything about the study?

Statement of person giving consent:

I have read or have been explained the description of the research. I have also asked any further inquiry on this research. I understand that my participation is voluntary. I know enough about the purpose, methods, risks and benefits of the research to decide that I will take part in the research. I understand that I may freely stop being part of this study at any time. I have received a copy of this consent form for myself.

Date: _____

Signature: _____

Name: _____

Routine Immunization Questionnaire

This questionnaire should be administered to caregivers of selected child in the age group of 12-24 months. The child will be selected randomly from the household listing survey if he/she is in the required age group. If caregiver is not available enumerators are instructed to ask for individual with the greatest knowledge of child's healthcare.

State:	Drop-down list
LGA:	Drop-down list
Ward Name:	Drop-down list
Clinic Name:	Drop-down list
Settlement Name:	Drop-down list
Supervisor Name:	Drop-down list
Enumerator Name:	Drop-down list
Structure ID:	Text input
HH serial number:	Text input
Date of enumeration:	Calendar entry
Start time:	Automated
Name of HH Head:	Generated using HH listing
Nickname of HH Head:	Generated using HH listing
Landmark:	Generated using HH listing
Description of HH:	Generated using HH listing
HH unique code:	Generated using HH listing

1. Which visit is this?
 - a. 1
 - b. 2
 - c. 3
2. What is the status of this interview?
 - a. Return later, no one home and no informed neighbors
 - b. Come back later; interview started but could not complete
 - c. Refused, someone is home but refused to participate
 - d. Complete, collected all necessary information

Section A – Demographics and Wealth

3. Name of the respondent
4. Who is being surveyed?
 - a. Father
 - b. Mother
 - c. Brother
 - d. Sister
 - e. Uncle
 - f. Aunty
 - g. Grand mother/Grand father
 - h. Step mother/Step father
 - i. Other specify
5. Who is the main caregiver of the child? (if 4 and 5 don't match, skip the sections and end the survey)
 - a. Father
 - b. Mother
 - c. Brother

- d. Sister
 - e. Uncle
 - f. Aunty
 - g. Grand mother/Grand father
 - h. Step mother/Step father
 - i. Other specify
6. Who usually takes the child to the clinic?
- a. N/A – Child has never been to the clinic
 - b. Father
 - c. Mother
 - d. Brother
 - e. Sister
 - f. Uncle
 - g. Aunty
 - h. Grand mother/Grand father
 - i. Step mother/Step father
 - j. Other specify
7. In case child is unwell or his health requires attention, who takes decision whether the child should be seeking medical help?
- a. Father
 - b. Mother
 - c. Brother
 - d. Sister
 - e. Uncle
 - f. Aunty
 - g. Grand mother/Grand father
 - h. Step mother/Step father
 - i. Other specify
8. What is the First name of Child's father?
9. What is the Surname of Child's father?
10. What is First name of child's mother?
11. What is Surname of child's mother?
12. Phone number 1
13. Phone number 2
14. Date of birth of the primary caregiver
- a. Date
 - b. Month
 - c. Year
 - d. Don't know
15. What is your age in completed years?
16. Have you attended school?
- a. Yes
 - b. No
17. What is the highest level of school you attended:
- a. Primary
 - b. Secondary

- c. Higher, please specify
18. What is the highest (class/year) you completed at that level?
19. What is your religion?
- a. Catholic
 - b. Other Christian
 - c. Sunni Islam
 - d. Shia Islam
 - e. Traditionalist
 - f. Other, please specify
20. What is your ethnic group?
- a. Hausa
 - b. Fulani
 - c. Yoruba
 - d. Igbo
 - e. Other

The below questions are to assess a households wealth. The questions are taken from three sources. The equity tool, a country specific subset of the DHS wealth questionnaire, the USAID Nigeria poverty assessment tool, and the USAID Household Food Insecurity Access Scale

21. Does your household have (*Equity tool*)?
- a. Electricity
 - b. Radio
 - c. Television
 - d. Mobile-telephone
 - e. Refrigerator
 - f. Generator
 - g. Air Conditioner
 - h. Fan
 - i. Iron
22. Does any member of your household have a bank account? (*Equity Tool*)
- a. Yes
 - b. No

Questions 22-28 are the USAID Poverty Assessment tool for Nigeria. There is some overlap with the equity tool and DHS.

23. How many rooms does this household occupy?
24. How many household members can read a simple letter in English? (PAT tool)
- a. Yes
 - b. No
25. How many household members can do written arithmetic calculations? (PAT tool)?
- a. Yes
 - b. No
26. How many members of your household have attended school ever? (Text input)
27. Do other households share this dwelling with your household?
- a. Yes
 - b. No
28. What is the main source of drinking water for your household?

- a. Pipe Borne water Treated
 - b. Pipe Borne Untreated
 - c. Borehole/Handpump
 - d. Protected Well
 - e. Unprotected Well/Rain water
 - f. River, Lake or Pond
 - g. Vendor, Truck
 - h. Other
29. What is the main source of lighting for your dwelling?
- a. Kerosene
 - b. Gas
 - c. Mains Electricity
 - d. Electricity from Generator
 - e. Battery
 - f. Candles
 - g. Firewood
 - h. Other
30. What type of toilet is used by your household?
- a. None
 - b. Toilet on water
 - c. Flush to sewer
 - d. Flush to septic tank
 - e. Pail/bucket
 - f. Covered pit latrine
 - g. Uncovered Pit latrine
 - h. VIP Latrine
 - i. Other
31. What is the main construction material used for the floor of your dwelling?
- a. Earth or Mud
 - b. Wood or Tile
 - c. Plank
 - d. Concrete
 - e. Dirt/Straw
 - f. Other
32. What is the main construction material used for the roof of your dwelling?
- a. Mud/Mud Bricks
 - b. Thatch (Grass or straw)
 - c. Wood/Bamboo
 - d. Corrugated Iron Sheets
 - e. Cement/Concrete
 - f. Roofing Tiles
 - g. Other
33. During the past 12 months did any member of the household own and / or operate a farm or keep livestock or engage in fishing?
- a. Yes

b. No

[Display a ladder with seven steps]

34. Relative to your village, where do you see yourself on this ladder in terms of wealth?

35. Relative to your village, where do you see yourself on this ladder in terms of social status?

Food Security Questionnaire

36. In the past four weeks, did you worry that your household would not have enough food?

a. Yes

b. No

37. How often did this happen?

a. Rarely (once or twice in the past four weeks)

b. Sometimes (three to ten times in the past four weeks)

c. Often (more than ten times in the past four weeks)

38. In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?

a. Yes

b. No

39. How often did this happen?

a. Rarely (once or twice in the past four weeks)

b. Sometimes (three to ten times in the past four weeks)

c. Often (more than ten times in the past four weeks)

40. In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources?

a. Yes

b. No

41. How often did this happen?

a. Rarely (once or twice in the past four weeks)

b. Sometimes (three to ten times in the past four weeks)

c. Often (more than ten times in the past four weeks)

42. In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to get food

a. Yes

b. No

43. How often did this happen?

a. Rarely (once or twice in the past four weeks)

b. Sometimes (three to ten times in the past four weeks)

c. Often (more than ten times in the past four weeks)

44. In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?

a. Yes

b. No

45. How often did this happen?

- a. Rarely (once or twice in the past four weeks)
 - b. Sometimes (three to ten times in the past four weeks)
 - c. Often (more than ten times in the past four weeks)
46. In the past four weeks, did you or any household member have to eat fewer meals in a day because there was not enough food?
 - a. Yes
 - b. No
47. How often did this happen?
 - a. Rarely (once or twice in the past four weeks)
 - b. Sometimes (three to ten times in the past four weeks)
 - c. Often (more than ten times in the past four weeks)
48. In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?
 - a. Yes
 - b. No
49. How often did this happen?
 - a. Rarely (once or twice in the past four weeks)
 - b. Sometimes (three to ten times in the past four weeks)
 - c. Often (more than ten times in the past four weeks)
50. In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?
 - a. Yes
 - b. No
51. How often did this happen?
 - a. Rarely (once or twice in the past four weeks)
 - b. Sometimes (three to ten times in the past four weeks)
 - c. Often (more than ten times in the past four weeks)
52. In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?
 - a. Yes
 - b. No
53. How often did this happen?
 - a. Rarely (once or twice in the past four weeks)
 - b. Sometimes (three to ten times in the past four weeks)
 - c. Often (more than ten times in the past four weeks)

Section B: Immunization History

- 1.
2. What is the age of the child in Months?
3. What is the birth date of this child?
 - a. Day
 - b. Month
 - c. Year
4. What is the data source for child's birth date?
 - a. English calendar

- b. Islamic calendar
- c. Estimation using major event

Note for enumerators – if the child is not eligible (i.e. in the age group of 12-24 months), flag it out to the enumerators to check DOB and make the correction. If still not eligible post correction – end survey.

- 5. Has the child ever received any “vaccination drops in the mouth” – that is, polio?
 - a. Yes
 - b. No
 - c. Don’t know
- 6. How many times was Polio vaccine given to the child at the following locations? Usually a large number of other children under 5 years would be vaccinated in a large campaign. If vaccination took place at your house it would likely be marked.

At home	
At health facility	
In community	
Others, please specify name of the location	

- 7. Has the child ever received any other vaccinations or injectable vaccinations to prevent diseases in the past?
 - a. Yes
 - b. No

Vaccination Module (Skip if 7->0 and 8->No)

- 8. Has the child ever received vaccination card?
 - a. Yes, card seen
 - b. Yes, card not seen
 - c. No
 - d. Don’t know
- 9. What types of cards did the mother bring?
 - a. Child health card
 - b. Measles campaign card
 - c. Meningitis campaign card
 - d. Birth registration
 - e. Other home-based health record
- 10. Why do you no longer have vaccination card? (Skip if 8->d or 9->a)
 - a. Lost Card
 - b. Threw it in the trash
 - c. Child destroyed card
 - d. Card in locked room
 - e. Household member traveled with card
 - f. Clinic collected card
 - g. Other Specify

Vaccination Module: has card section (Skip if 8->b or 8->c or 8->d)

- 11. Is the card the original that you received or a replacement/copy?
 - a. Original
 - b. Replacement/Copy

- c. Don't know
- 12. May I take a photo of the card
 - a. Yes
 - b. No
- 13. DOB as per the card
 - a. Day
 - b. Month
 - c. Year
- 14. Clinic recorded on the card?
- 15. Settlement recorded on the card?
- 16. Tick all vaccines seen on the child immunization card.
 - a. BCG
 - b. Hep B
 - c. OPV0
 - d. PENTA 1
 - e. PCV 1
 - f. OPV1
 - g. Penta 2
 - h. PCV 2
 - i. OPV 2
 - j. Penta 3
 - k. PCV 3
 - l. OPV3
 - m. IPV
 - n. Vit A
 - o. Measles 1
 - p. Yellow Fever
 - q. Conjugate A
 - r. Vit A 2
 - s. Measles 2

17. Date of Vaccines

Vaccines	Day	Month	Year
a. BCG			
b. Hep B			
c. OPV0			
d. PENTA 1			
e. PCV 1			
f. OPV1			
g. Penta 2			
h. PCV 2			
i. OPV 2			
j. Penta 3			
k. PCV 3			
l. OPV3			
m. IPV			
n. Vit A			
o. Measles 1			

p. Yellow Fever			
q. Conjugate A			
r. Vit A 2			
s. Measles 2			

Vaccination Module: Mothers Self-Report Section [Note Display Baby Vaccination Site Image] Instruct surveyor to point at vaccination sites on the baby if baby present

18. If the child is present, check for evidence of a BCG scar and record [*Enumerator should check both the arms of the child just in case*]
 - a. Scar Present
 - b. No Scar
 - c. Child not available
19. Has the child ever received an injection in the left upper arm or shoulder that usually causes a scar? – that is, BCG vaccination (against tuberculosis)
 - a. Yes
 - b. No
 - c. Don't know
20. How many times has child received injection on the upper outer left thigh for penta DTP-Hep B-Hib?
21. Has the child ever received Pneumococcal Conjugate (PCV) vaccine? This would also be administered on the upper outer right thigh?
 - a. Yes
 - b. No
 - c. Don't know
22. How many times has the child receive Pneumococcal Conjugate vaccine at the upper outer right thigh?
 - a. Yes
 - b. No
 - c. Don't know
23. Has the child ever received an injection to prevent him/her from getting measles? that is an injection on the left upper arm that doesn't usually cause injection scar at the age of 9 months or older
 - a. Yes
 - b. No
 - c. Don't know
24. How many times was measles vaccine given at a health facility?
25. Has the child ever received an injection to prevent him/her from getting Yellow Fever? That is an injection on the right upper arm that doesn't usually cause injection scar at the age of 9 months or older?
 - a. Yes
 - b. No
 - c. Don't know
26. How many times did the child receive injection to prevent him/her from getting Yellow Fever in the following locations?

At home	
At clinic	
In community (during a campaign)	

Others, please specify name of the location	
---	--

27. Where has the child receive immunizations? (select multiple)
- a. Health facility
 - b. Pharmacy/ chemist
 - c. Other market/shop
 - d. Home
 - e. Mosque
 - f. School
 - g. Village/ Neighborhood leaders house
 - h. Other (specify)
28. Did your child received immunization at `Clinic Name'? (^ clinic name is the clinic whose catchment is being surveyed) (skip if 27 -> not a)
- a. Yes, **all** injections
 - b. Yes, some injections
 - c. No
29. Did your child receive vaccination at any other health facility than `Clinic Name'? (skip if 27-> not a)
- a. Yes
 - b. No
30. How many other health facilities? (skip if 29-> b)
31. List the names of the facility. (skip if 29-> b)
32. What type of facility is this? (skip if 29-> b)
- a. Clinic / PHC
 - b. Govt secondary/tertiary hospital
 - c. Govt health post
 - d. Mobile clinic
 - e. Private hospital / clinic
 - f. Faith based/Mission clinic
 - g. Others please specify
33. Have you ever received goods/cash in exchange for getting your child vaccinated?
- a. Yes
 - b. No
34. Which of the following did you receive for vaccinations?

a.	Cash	Fill amount in Naira
b.	Rice	Fill amount in kilograms
c.	Medicines	Specify name
d.	Other grains	Please specify name
e.	Other grains	Please specify amount in kilograms

Section C - Vaccination Perception

35. Do you think your child has received all the vaccines that are recommended?
- a. Yes
 - b. No
 - c. Don't know
36. Why hasn't the child had all recommended vaccines? [Record all that apply without probing] (Skip if 35-> Yes)

- a. Don't know recommended vaccines
 - b. Did not think it was needed
 - c. Did not know where to get vaccination
 - d. Did not when to get vaccination
 - e. Place of immunization too far
 - f. Time of immunization inconvenient
 - g. Did not know where to get good/reliable information
 - h. Heard or read negative media
 - i. Did not think the vaccine was effective
 - j. Someone else told me told me vaccine was not effective
 - k. Did not think the vaccine was safe/concerned about side effects
 - l. Someone else told me that the vaccine was not safe
 - m. Had a bad experience with previous vaccinator/health clinic
 - n. Had a bad experience or reaction with previous vaccination
 - o. Someone else told me they/their child had a bad reaction
 - p. Fear of needles
 - q. Not possible to leave other work (at home or other)
 - r. Religious reasons
 - s. Other beliefs/traditional medicine
 - t. Husband doesn't allow mother to go
 - u. Never goes to the facility for medical care.
 - v. Family problem, including illness of mother
 - w. Child ill
 - x. Afraid of long wait at clinic
 - y. Went to clinic but no vaccination given
 - z. Other specify
37. Which reason above is the MOST IMPORTANT reason? (Skip if 35-> Yes)
- a. Don't know recommended vaccines
 - b. Did not think it was needed
 - c. Did not know where to get vaccination
 - d. Did not when to get vaccination
 - e. Place of immunization too far
 - f. Time of immunization inconvenient
 - g. Did not know where to get good/reliable information
 - h. Heard or read negative media
 - i. Did not think the vaccine was effective
 - j. Someone else told me told me vaccine was not effective
 - k. Did not think the vaccine was safe/concerned about side effects
 - l. Someone else told me that the vaccine was not safe
 - m. Had a bad experience with previous vaccinator/health clinic
 - n. Had a bad experience or reaction with previous vaccination
 - o. Someone else told me they/their child had a bad reaction
 - p. Fear of needles
 - q. Not possible to leave other work (at home or other)
 - r. Religious reasons
 - s. Other beliefs/traditional medicine
 - t. Husband doesn't allow mother to go

- u. Never goes to the facility for medical care.
 - v. Family problem, including illness of mother
 - w. Child ill
 - x. Afraid of long wait at clinic
 - y. Went to clinic but no vaccination given
 - z. Other specify
38. Did you ever go to the clinic for vaccination, but the child was not vaccinated?
- a. Yes
 - b. No
39. Why was the child not vaccinated? (Skip if 38-> No)
- a. No vaccine
 - b. No vaccinator (not closed)
 - c. Health facility closed when I went
 - d. Child was sick
 - e. Not enough children present to open a vial of vaccine
 - f. The visit was not in the vaccination day
 - g. Wait was too long
 - h. Other specify
 - i. Don't know
40. Do you believe that vaccines can protect children from serious diseases?
- a. Yes
 - b. No
41. Do you think that most parents like you have their children vaccinated with all the recommended vaccines?
- a. Yes
 - b. No
42. Have you ever been reluctant or hesitated to get a vaccination for your child?
- a. Yes
 - b. No
43. Have you ever refused a vaccination for your child?
- a. Yes
 - b. No
44. If response is "yes" to questions 3 or 4:

Please check (✓) which one(s):

Vaccine names	Hesitated	Refused
BCG		
Hep B		
OPV0		
Penta/Hep 1		
PCV-1		
OPV1		
Penta/Hep 2		
PCV – 2		
OPV - 2		
Penta/Hep 3		

PCV 3		
OPV 3		
IPV		
Measles		
Yellow Fever		
Conjugate A CSM		

45. Have you ever received or heard negative information about vaccinations?
 - a. Yes
 - b. No
46. What have you heard? [List all mentioned without probing]
 - a. Vaccines can make children sick.
 - b. Vaccines can lead to infertility.
 - c. Vaccines are not Islamic.
 - d. Traditional medicine is superior to western medicine.
 - e. Vaccines are a Western conspiracy.
 - f. Going to the clinic is a hassle.
 - g. Getting a vaccination hurts the infant.
 - h. Some vaccinations scar the infant.
 - i. Polio drops are sufficient to protect children.
 - j. It's less risky of children only get a few vaccines.
47. Are there any reasons you can think of why children should not be fully vaccinated?
 - a. Yes
 - b. No
48. What are those reasons? [List all mentioned without probing]
 - a. Vaccines can make children sick.
 - b. Vaccines can lead to infertility.
 - c. Vaccines are not Islamic.
 - d. Traditional medicine is superior to western medicine.
 - e. Vaccines are a Western conspiracy.
 - f. Going to the clinic is a hassle.
 - g. Getting a vaccination hurts the infant.
 - h. Some vaccinations scar the infant.
 - i. Polio drops are sufficient to protect children.
 - j. It's less risky of children only get a few vaccines.
49. Do you think that it is difficult for your ethnic or religious groups to get vaccinations for their children?
 - a. Yes
 - b. No
50. What do you think are the reason(s)?
 - a. My community chooses not to vaccinate
 - b. Health services don't welcome us
 - c. Health services do not reach us
 - d. Other. Specify
51. Do leaders (religious or political leaders, teachers, health care workers) in your community support vaccines for infants and children? Please indicate below:
 - a. Traditional (Village head/ Emir)

- b. Religious
- c. Political (Ward development committee / party officials)
- d. Teachers
- e. Health care workers

52. Vaccine Hesitancy 5 point Likert scale questions:

How much do you agree with the each of the following statement on vaccinations?

SCALE:

- 1 = strongly disagree
- 2 = disagree
- 3 = neither agree nor disagree
- 4 = agree
- 5 = strongly agree

53. Childhood vaccines are important for my child's health	
54. Childhood vaccines are effective	
55. Having my child vaccinated is important for the health of others in my community	
56. All childhood vaccines offered by the government programme in my community are beneficial.	
57. New vaccines carry more risks than older vaccines	
58. The information I receive about vaccines from the vaccine program is reliable and trustworthy.	
59. Getting vaccines is a good way to protect my child/children from disease.	
60. Generally I do what my doctor or health care provider recommends about vaccines for my child/children.	
61. I am concerned about serious adverse effects of vaccines.	

Section D - Child Health

Source: DHS Child Health and Nigeria Demographics and Health Survey

`\${firstname}` refers to the eligible child in the age group of 12-24 months

62. In the last seven days, was `\${firstname}` given sprinkles with iron or any micronutrient powder like (this/any of these)?

- a. Yes
- b. No
- c. Don't know

63. In the last seven days, was `\${firstname}` given any ready to use therapeutic feeds like plumpy'nut or RUTF like (show picture of USAID RUTF)?

- a. Yes
- b. No
- c. Don't know

64. Was `\${firstname}` given any drug for intestinal worms in the last six months?

- a. Yes

- b. No
 - c. Don't know
65. Has \${{firstname}} had diarrhea in the last 2 weeks?
- a. Yes
 - b. No
 - c. Don't know
66. Was there any blood in the stools?
- a. Yes
 - b. No
 - c. Don't know
67. Now I would like to know how much \${{firstname}} was given to drink during the diarrhea (including breastmilk). Was he/she given less than usual to drink, about the same amount, or more than usual to drink? IF LESS, PROBE: Was he/she given much less than usual to drink or somewhat less?
- a. Much less
 - b. Somewhat less
 - c. About the same
 - d. More
 - e. Nothing to drink
 - f. Don't know
68. When \${{firstname}} had diarrhea, was he/she given less than usual to eat, about the same amount, more than usual, or nothing to eat? IF LESS, PROBE: Was he/she given much less than usual to eat or somewhat less?
- a. Much less
 - b. Somewhat less
 - c. About the same
 - d. More
 - e. Nothing to drink
 - f. Don't know
69. Did you seek advice or treatment for the diarrhea from any source?
- a. Yes
 - b. No
 - c. Don't know
70. Where did you seek advice or treatment? (skip if 69>No)
- a. None
 - b. Home
 - c. Govt. Facility
 - d. Govt. Hospital
 - e. Govt. Health Center
 - f. Govt. Health Post
 - g. Other Govt. facilities, please specify –
 - h. Private medical facility
 - i. Private hospital
 - j. Other private facility, please specify
 - k. Others, please specify
71. What was the reason for not consulting? (skip if 69->Yes)
- a. Illness was mild
 - b. Facilities are too far
 - c. Facilities are too costly
 - d. Staff not available at the facility

- e. Staff attitude not good at the facility
 - f. Drugs not available at the facility
 - g. No money for drugs to purchase at facility
 - h. Others, please specify
72. How many days after the diarrhea began did you first seek advice or treatment for \${{firstname}}? If the same day record '00' (skip if 69->No)

73. Was \${{firstname}} given any of the following to drink at any time since he/she started having the diarrhea?

	Yes	No	Don't Know
A fluid made from a special packet called [ORS, PEDIALYTE, OR Other Local Name For Ors]?			
A pre-packaged ORS liquid?			
A government-recommended homemade fluid?			

74. Has \${{firstname}} been ill with a fever at any time in the last 2 weeks?
- a. Yes
 - b. No
 - c. Don't know
75. At any time during the illness, did \${{firstname}} have a skin rash?
- a. Yes
 - b. No
 - c. Don't know
76. Has \${{firstname}} had an illness with a cough at any time in the last 2 weeks?
- a. Yes
 - b. No
 - c. Don't know
77. Did you seek advice or treatment for the fever from any source?
- a. Yes
 - b. No
 - c. Don't know
78. Where did you seek advice or treatment? (skip if 77->No)
- a. None
 - b. Home
 - c. Govt. Facility
 - d. Govt. Hospital
 - e. Govt. Health Center
 - f. Govt. Health Post
 - g. Other Govt. facilities, please specify –
 - h. Private medical facility
 - i. Private hospital
 - j. Other private facility, please specify
 - k. Others, please specify

79. What was the reason for not consulting? (skip if 77->Yes)

- a. Illness was mild
- b. Facilities are too far
- c. Facilities are too costly
- d. Staff not available at the facility
- e. Staff attitude not good at the facility
- f. Drugs not available at the facility
- g. No money to purchase drugs at the facility
- h. Others, please specify

80. How many days after the fever started did $\{ \text{firstname} \}$ first take medication?

Section E – Maternal Health

Source: DHS survey

81. How many live births have you had?

Total	
Sons	
Daughters	

82. Out of the live birth how many children live in the household today?

83. What happened to the remaining child? Please specify

84. How old was the child when that happened?

85. Did that child ever receive vaccination at the clinic?

86. Just to make sure that I have this right: you have had in TOTAL _____ births during your life. Is that correct?

87. Where did you give birth to the most recent child?

- a. Home
- b. Govt. Facility
- c. Govt. Hospital
- d. Govt. Health Center
- e. Govt. Health Post
- f. Other Govt. facilities, please specify –
- g. Private medical facility
- h. Private hospital
- i. Other private facility, please specify
- j. Others, please specify

88. In the first two months after delivery, did you receive a vitamin A dose (like this)? (Show Vitamin A Capsule)

- a. Yes
- b. No

89. Did you fall sick or got injured in the last 30 days?

- a. Yes
- b. No
- c. Don't know

90. What sort of illness or sickness was it?

- a. Malaria
 - b. Respiratory
 - c. Measles
 - d. Diarrhea
 - e. Pregnancy related problems
 - f. Accident
 - g. Skin infection
 - h. Others
91. Did you seek advice or treatment for the fever from any source?
- a. Yes
 - b. No
 - c. Don't know
92. Where did you go for treatment? (Skip if 90->No)
- a. None
 - b. Home
 - c. Govt. Facility
 - d. Govt. Hospital
 - e. Govt. Health Center
 - f. Govt. Health Post
 - g. Other Govt. facilities, please specify –
 - h. Private medical facility
 - i. Private hospital
 - j. Other private facility, please specify
 - k. Others, please specify
93. What was the reason for not consulting? (Skip if 90->Yes)
- a. Illness was mild
 - b. Facilities are too far
 - c. Facilities are too costly
 - d. Staff not available at the facility
 - e. Staff attitude not good at the facility
 - f. Drugs not available at the facility
 - g. No money to purchase drugs at the facility
 - h. Others, please specify

Section F – Bed nets

94. How many mosquito nets are hung in the household?
95. How many Mosquito nets did you receive in the past year?
96. How many of the nets are Permanet, Olyset, Iconlife, Duranet, Netprotect, or BASF Interceptor?
97. How many of the nets are other long lasting insecticidal nets?
98. How many of the nets are pre-treated?
99. How many of the nets are untreated?
100. How many of the nets can the type not be determined?
101. How many household members slept under the nets last night?

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