

Trip Report: PDCU Site Visit, Ghana

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Background

GiveWell has partnered with IDinsight to help identify and develop additional top charities as well as to increase GiveWell’s understanding of current top charities’ impact. One avenue for IDinsight’s support is to strengthen monitoring systems for current top charities. Our first engagement within this work stream is with the Against Malaria Foundation (AMF), a non-profit organization that aims to protect people from malaria by funding Long Lasting Insecticidal Nets (LLINs)¹. IDinsight will generate learnings from site visits to three AMF countries – Malawi, Ghana, and Uganda² – to observe AMF’s monitoring firsthand. Learnings from each site visit will be published on GiveWell’s website to facilitate sharing of effective monitoring practices across AMF countries with the goal of helping AMF improve their monitoring and, in turn, their global impact.

¹ AMF partners with in-country organizations to distribute AMF-funded LLINs, as well as to conduct post distribution check-ups (PDCUs) every six months. A PDCU is a short household survey to check on the presence and condition of AMF LLINs, as well as people’s knowledge and usage of LLINs.

² IDinsight conducted a site visit in Malawi in June 2017. That trip report is available in a separate document. This was followed by a visit in Ghana in July 2017, the focus of this report. IDinsight will visit Uganda in late 2017.

From July 7th to July 13th, 2017, an IDinsight team visited Ghana to observe the 12-month post distribution check-up (PDCU) in the Greater Accra Region. This PDCU was a follow up to the LLIN distribution in 2016, when AMF funded 1,158,200 LLINs in the Greater Accra region. AMF has two main partners in Ghana: (1) the National Malaria Control Program (NMCP) of the Ghana Health Service (GHS), which is responsible for registration and distribution of LLINs and (2) Episcopal Relief and Development, which is responsible for conducting the PDCU surveys, as well as supporting registration and distribution conducted by the NMCP. Episcopal Relief & Development, in turn, works with Anglican Diocesan Development and Relief Organization (ADDRO) to conduct the PDCUs. Additional details about the breakdown of these activities are included in the following sections.

Our objectives from this visit were to:

- Observe enumerator training for paper and tablet based data collection
- Observe administration of the PDCUs
- Observe tablet-based data collection in the field
- Understand the data entry process and AMF's online Data Entry System

Summary

A high-quality monitoring system should fulfill three primary functions, keeping in mind the organization's mission:

1. **Measure program implementation:** Has the program been implemented as the organization intended? If the goals of the program are to ensure everyone has access to an LLIN, it is important to know if *everyone* is actually getting access to LLINs through this program. For example, how can AMF be sure that the LLINs are reaching all intended beneficiaries?
2. **Measure progress on key outcomes:** Has the organization's program influenced the metrics that it sought to influence? For example, do more people now have access to LLINs, and are more people using LLINs correctly over time?
3. **Provide actionable feedback to the organization on ways to improve:** can the organization implement the program in a different way to increase influence on outcomes that could ultimately increase the impact of the program? For example, a good monitoring system would keep AMF and its country partners apprised of LLIN coverage rates over time. AMF and its partners could then target limited resources towards areas with consistently low usage thus improving their overall social impact.

Keeping these functions in mind, we considered the entire process (LLIN registration, distribution, PDCUs, and data entry), to understand the strengths and weaknesses of AMF's monitoring system in Ghana. While in Ghana, we observed: 1) Two sets of enumerator trainings (one for the paper-based survey and one for the tablet-based survey), 2) four enumerators collecting data using paper forms, three enumerators using tablets to collect data (all in the Greater Accra region), and 3) several clerks entering PDCU survey data into the DES at the data entry center in Bolgatanga. Additionally, we spent time discussing the registration and distribution process with Episcopal Relief & Development and ADDRO staff. Highlighted below are the main concerns that came up over the course of these discussions and observations in the field.

We used a grading scale to assess the status of PDCUs in Ghana to indicate whether there is scope for improvement (Table 1). We used a three-point qualitative scale, as follows:

1. **Red** – Significant room for improving upon existing systems.
2. **Yellow** – Satisfactory systems with some room for improvement.
3. **Green** – Quality, well designed and executed systems with little need for improvement.

This scale will be applied independently to each of the site visits we conduct. It is not meant to be interpreted as a comparison between sites, but rather as a way for each country program to assess its own strengths and weaknesses.

Table 1: Grades by Activity

Group	Activity ^a	Grade
Registration ^{b,c}	Registering ALL households in the region	Yellow
	Calculating net need	Green
Distribution ^{b,c}	Transparency	Yellow
	Record keeping (paper trail)	Yellow
PDCU	Enumerator training	Yellow
	PDCU quality (Yellow
	5% checks (back-checks)	Red
Data	Data entry clerk training ^c	Yellow
	Quality assurance for data entry	Red
	Back check data used	Red
	PDCU data used	Red

^a Further details on individual line items are provided in Appendix 1: Grading Table.

^b Episcopal Relief & Development and ADDRO are not primarily responsible for these activities.

^c This grade is based on discussions with Episcopal Relief & Development and ADDRO, as we did not observe this activity.

Table 2 highlights the main concerns and recommendations related to AMF's monitoring in Ghana. The concerns, questions, and recommendations are building off conversations we had with Episcopal Relief & Development, ADDRO and AMF and are intended to be a starting point for fine-tuning each organization's monitoring processes.

Table 2: Concerns and Recommendations by Activity

For Episcopal Relief & Development / ADDRO		
Concerns		Recommendations
Registration	<ul style="list-style-type: none"> • Households may be missed during registration. This affects the coverage rate estimate. 	<ul style="list-style-type: none"> • Cross reference population data with registration data – NMCP reportedly does this. • Mop-up registration days.

PDCU	<ul style="list-style-type: none"> • Enumerator trainings were insufficient and not standardized. This implies data collected through the PDCU may not be accurate. 	<ul style="list-style-type: none"> • Training materials should be continuously updated and terms well defined to ensure enumerators all understand and interpret each question the correct way. • PDCU responses to unusual situations should be standardized as far as possible.
	<ul style="list-style-type: none"> • Supervisors do not receive additional training on how to supervise effectively. Unsupported enumerators are more prone to making mistakes. 	<ul style="list-style-type: none"> • Supervisors should receive additional targeted training, ideally before the main enumerator training.
	<ul style="list-style-type: none"> • Back-checks may not be as independent. This implies there is no quality check in place for the PDCUs. 	<ul style="list-style-type: none"> • Backcheckers should receive their lists after the main PDCU survey has been completed to maintain independence. <p>This recommendation has been incorporated by Episcopal Relief & Development and ADDRO in the Upper West PDCU in September 2017.</p>
Data	<ul style="list-style-type: none"> • Inconsistent PDCU forms are discarded with no record of why or how many. This may affect the randomness of the PDCU. 	<ul style="list-style-type: none"> • Records should be kept to indicate the number of PDCU forms actually collected, as well as the number of forms thrown out and why.
	<ul style="list-style-type: none"> • Data collected by ADDRO and Episcopal Relief & Development is not used. This defeats the purpose of collecting monitoring data. 	<p>Data collected during the PDCU should be used to understand where, if at all, the program could be falling short of achieving its target and allow the organization to take targeted action in a timely manner.</p>
	<ul style="list-style-type: none"> • PDCU data are entered only once in the DES system. This implies data entry errors may not get caught. 	<ul style="list-style-type: none"> • Data should always be double entered. A random selection should be double entered or cross checked, if not the whole dataset.

FOR AMF	
Concern	Recommendation
<ul style="list-style-type: none"> • The Data Entry System (DES) is hard to use for the in-country partner organizations. This may reduce the impact the program can have. 	<ul style="list-style-type: none"> • AMF should add an 'Export to Excel' option that will allow country partners to download data and analyze it as they find most relevant.

Data		<ul style="list-style-type: none"> • More suggestions for ways to improve the usability of the DES can be found in Appendix 2.
	<ul style="list-style-type: none"> • 5% back-check data are not actively compared with the PDCU data. This implies there is no quality assurance on the PDCU data, making the data hard to trust. 	<ul style="list-style-type: none"> • AMF / in-country partners should be responsible for comparing PDCU and back-check data in real time, to be able to course correct and provide feedback as needed.

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- Prince Adu-Appiah, Chief Operating Officer
- Emile Mawutor Tsekpo, Programmer and Data Analyst
- Israel Fugah, Programmer and Data specialist

Itinerary

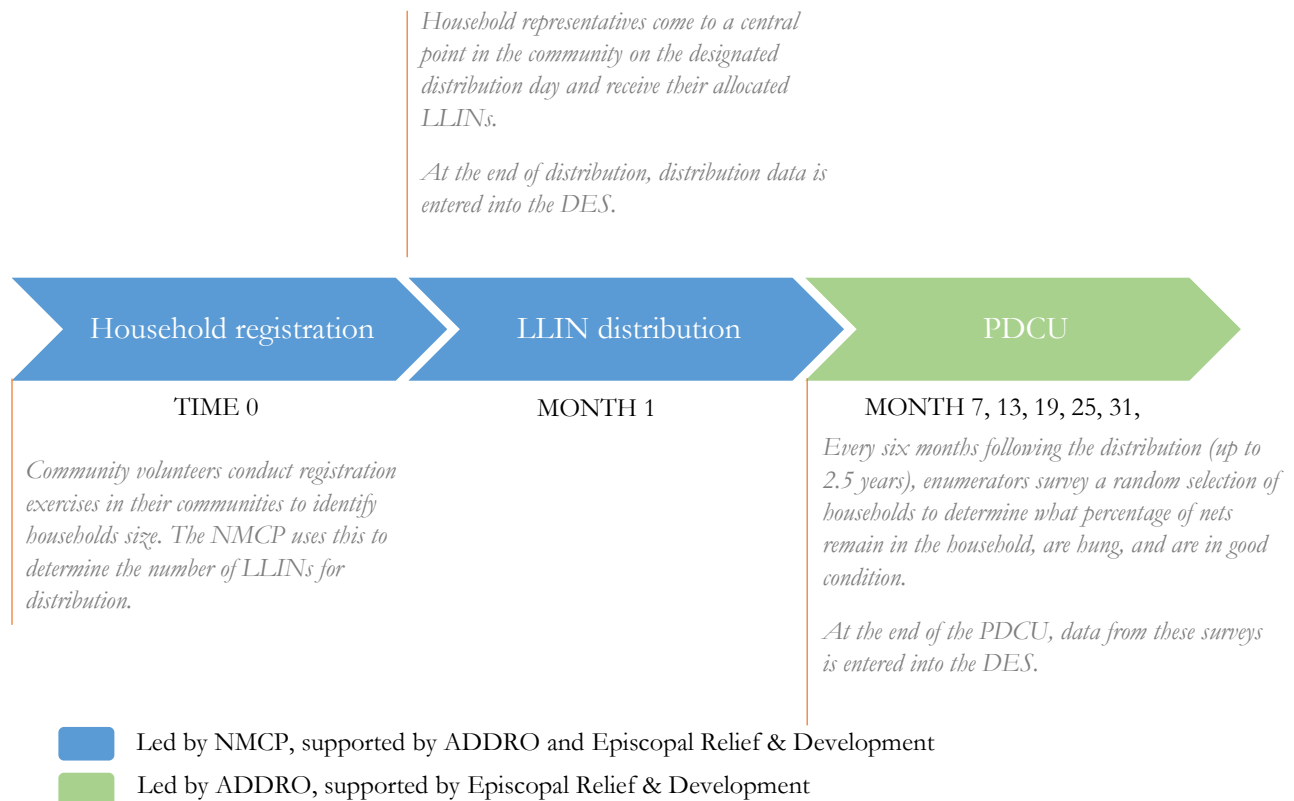
- **Day 1:** Observed full-day training for enumerators using the paper-based form.
- **Day 2:** Traveled to two sub-districts (Dawa and Old Ningo) in Ningo-Prampram District and observed two enumerators conduct paper-based PDCU surveys.

- **Day 3:** Traveled to Ga East District in the morning to observe one enumerator team conduct paper-based PDCUs in Dome Kwabenya Sub-district. Traveled to Shai Osudoku District to observe enumerator training for electronic data collection.
- **Day 4:** Traveled back to Shai Osudoku district to observe electronic data collection by two enumerators in two sub-districts (Dodowa and Osudoku).
- **Day 5:** Traveled to ADDRO headquarters in Bolgatanga (Upper East Region of Ghana) to meet with ADDRO team and discuss Episcopal Relief & Development and ADDRO's roles in the PDCU process and challenges they have faced. Observed data entry at the ADDRO data entry center.
- **Day 6:** Debriefed with Episcopal Relief & Development and ADDRO teams, discussed our recommendations and next steps. Traveled back to Accra.

The report covers two phases of the general distribution process: 1) Registration and Distribution and 2) PDCU. Each section details the process followed and the data generated at each step. Open questions, concerns, and recommendations noted above are also further explained in the following sections.

Figure 1 depicts the flow of activities with respect to LLIN delivery and the PDCUs, as well as the expected timeline for the same.

Figure 1. Ghana LLIN distribution activities and timeline



Registration and Distribution

AMF currently has an agreement in place with the National Malaria Control Program (NMCP) of the Ghana Health Service (GHS) to register households and distribute AMF-donated LLINs to three regions in Ghana: Greater Accra, Northern and Upper West. Episcopal Relief & Development and ADDRO are involved from a process monitoring perspective; they observe the process and provide feedback and recommendations as needed.

Process

- **Community volunteers are enlisted by the NMCP to conduct registration exercises in their communities.** The registration exercise is a short survey that collects basic household level data (name of the household head, location of household, phone numbers, and household size) on which LLIN allocation is based. The whole process takes one week to complete. During registration, a volunteer gives each household a coupon that they are supposed to use to redeem LLINs on distribution day. An identical counterfoil of the coupon is retained in the registration booklet used by the volunteer for the registration exercise.
- **Coupon counterfoils are sent to the sub-district office of the Ghana Health Service, where LLIN allocations are made.** NMCP staff allocates LLINs based on household size information available on the counterfoils, using the ‘two people per LLIN’ rule. Once allocation has been determined, the number of nets needed in each district, sub-district, and community are tallied and a net-need summary is created for AMF, based on which LLINs are procured.
- **LLINs are sent to the respective communities as per the allocated numbers.** Once the LLINs are in country, the NMCP and GHS are responsible for getting the LLINs to the intended communities.
- **LLINs are distributed according to the number allocated to that household on the counterfoil.** LLIN distribution takes place at a central location in the community. Community members are reminded of the day and place via loudspeaker messages and radio ads. On distribution day, community members are expected to assemble at the distribution site and present their coupons. The GHS staff or a volunteer writes down the number of LLINs given out on the coupon that the household retains. If households have registered but lost their coupons, they may be able to collect LLINs when the crowd thins. Losing coupons is a common problem, and the distribution team seems to be flexible on the coupon requirement. However, if households were not registered but show up at distribution, they will not be able to receive LLINs in this round. They can either receive LLINs through school distributions or wait for the next universal campaign.
- **Episcopal Relief & Development and ADDRO play a supporting role in the household registration and LLIN distribution processes.** For registration, they monitor the household registration process and address issues as they come up. If issues arise, they report them to the NMCP, and the NMCP is responsible for disseminating information and feedback to all volunteers. ADDRO and Episcopal Relief & Development provide oversight during distribution

as they know the number of LLINs allocated to each community, and can hold the NMCP accountable to LLINs allocated, distributed, and leftover at the end of distribution. ADDRO staff / community volunteers are instructed to cross-check these numbers to make sure they add up. Once distribution has concluded, the coupon counterfoils are sent up to ADDRO's data entry center in Bolgatanga in the Upper East region where it is entered into AMF's data entry system. These data on distribution are not currently reported by AMF.

Effective practices

- During allocation, GHS/NMCP staff write down the numbers allocated as: 'three (3)'; this makes it hard for volunteers on the ground to modify allocation numbers to misappropriate nets, and reduces the chance of fraud.
- Episcopal Relief & Development and ADDRO are a check on the functioning of the NMCP and the GHS to keep them accountable for distribution of LLINs in the field. While this is a great first step, Episcopal Relief & Development and ADDRO can play a more active role in holding NMCP accountable for their role in the LLIN distribution process. As the NMCP seems to be open about sharing data, Episcopal Relief & Development /ADDRO should be more proactive about asking for data and using it to improve their operations.

Concerns

- **All households may not get registered.** There is a seven-day period for registration, but from our understanding, a volunteer usually spends only one day in each community. This implies that some households may not get registered. There may also be a systematic reason why some households don't get registered, which is information that should be captured. Incomplete registration is important to note, as this number of households registered is what gets used to calculate LLIN coverage rates in the area. The current formula only considers how many people out of those registered are covered. If the registration number is incomplete, the coverage rate estimate will not be accurate.

Episcopal Relief & Development / ADDRO are confident that there is enough time for the volunteers to cover the whole community and are not worried about missing households in the registration process.

- **The distribution process is not transparent.** Households do not know how many LLINs they are entitled to receive and cannot hold the distribution staff accountable. While, this is deliberately done to avoid fraud on the part of the beneficiaries, it could provide an opportunity for misappropriation of LLINs by the distributing team. The solution to the transparency issue thus depends on which source of fraud Episcopal Relief & Development and ADDRO think is a higher risk. Episcopal Relief & Development and ADDRO believe that revealing the formula *after* the registration is complete rules out the possibility of fraud but this may not be true. As the distributions take place every 3 years, it is reasonable to think that households may remember the formula from the last distribution.

- **All households may not be able to collect nets on the allotted day or they may misunderstand the delivery mechanism.** Several household heads we met complained that no one came to give them the net, signaling a lack of clear communication by the NMCP or lack of understanding on the part of the households.

Recommendations

- **Allow mop-up registration after the registration week.** Volunteers should have the chance to return to the community for a mop-up, i.e. to register all the households that could have been missed the first time around.
- **Develop a system where beneficiaries sign off on the number of LLINs they receive to ensure that they have received the number allocated to them.** For example, if a household is allocated 3 nets, they should be able to see this number on the counterfoil at the time of distribution, and they should sign the counterfoil only once they have received all 3 nets. This counterfoil can then be used as a way to ensure accountability, and some level of transparency.
- **Compare registration numbers with expected population data** to develop a rough estimate of how many households were not met. This helps paint a more accurate picture of the LLIN distribution process.

The NMCP reportedly crosschecks the LLIN registration numbers against community population numbers and further investigates if the numbers differ significantly. It is unclear how they would respond if the numbers did differ significantly.

Data generated

- Number of nets sent to each region. This is available on the DES.
- Number of nets distributed to each household, community, district, region. These are not easily accessible through the DES.

PDCU

Episcopal Relief & Development and ADDRO conduct PDCUs in the three regions to which AMF supplies LLINs every six months following the distribution. We visited the 12-month PDCU in the Greater Accra region, which has 12 districts. Of these 12 districts, 11 were surveyed using paper-based PDCU forms while one (Shai-Osudoku) was earmarked for the electronic data collection pilot. The electronic data collection pilot is currently in its second round – the first round was during the 6-month PDCU in January 2017, also in Shai-Osudoku District. AMF will be the final decision-maker on the results of the pilot (i.e. whether to discontinue electronic data collection or to roll it out to the entire country).

PDCU Team

- Enumerators (typically 2-3 per sub-district but could be more or less depending on population in that sub-district)

- Supervisor (1 per sub-district)
- ADDRO trainers (3, provide an additional level of oversight on the field)

Process

i. Pre-surveying

- **AMF sends a list of households to be surveyed to Episcopal Relief & Development.** The sampled list contains 5.5%³ of the total households in each sub-district.
- **ADDRO plans the logistics for the PDCU.** Episcopal Relief & Development receives the list of households to be surveyed from AMF and forwards it to ADDRO. ADDRO draws up the logistics for conducting the PDCU, based on the expected location of households selected in each sub-district.
- **ADDRO hires the requisite number of enumerators and supervisors.** Some of the enumerators and supervisors have worked with ADDRO before, either on the PDCU surveys or in other capacities, while some are new.
- **ADDRO trains the enumerators and supervisors.** The Health Coordinator at ADDRO trains the trainers who will in turn train the enumerators. The enumerator training happens in a few days before the PDCU is set to begin. Depending on the spread of sub-districts to be surveyed, several sub-districts are clustered together for the enumerator trainings.

Concerns

- **Episcopal Relief & Development and ADDRO focus on meeting a threshold of surveys instead of on matching the sampling strategy.** Several PDCU forms are discarded at the data entry stage because of inaccurate/inconsistent data. Rather than focus on improving PDCU quality, Episcopal Relief & Development and ADDRO requested an increase in the number of sampled households provided by AMF. This is concerning, as there might be a systematic reason behind why forms of certain kinds of households are being discarded, which could bias the estimate.

Recommendations

- **Focus on improving data quality.** Instead of increasing sample size, Episcopal Relief & Development and ADDRO should focus efforts on improving PDCU quality through consistent, intensive training, maybe even incentives for producing high quality data. Another

³ For most of their other country programs, AMF provides a list of only 5% of the sub-districts. In Ghana, this number is higher as per the request of Episcopal Relief & Development and ADDRO, based on the number of forms they tend to throw out based on poor quality. For example, in the past, they have had to discard PDCU forms that were incomplete or incorrectly filled out as there is no cost-efficient way of going back to correct this information. To account for this waste, they asked AMF for a list of 0.5% extra households. This 0.5% is in addition to the 30% list of spares that AMF provides in case of unreachable households.

solution to prevent invalid and inaccurate forms is to use electronic methods of data collection, where logic checks and quality assurance checks can be built in, and incomplete forms cannot be saved. This is being done to some extent in the electronic data collection pilot in Shai-Osudoku, but can also be improved upon.

ii. Training

Training is done in one full day. All enumerators and supervisors for one cluster gather in one location central to that cluster of sub-districts. Each training is led by one ADDRO trainer, who follows a training manual for the day's agenda.

- **Trainer walks through the paper PDCU.** The trainer spends a bulk of time walking through the paper PDCU form to make sure the enumerators understand each question and the reason for asking each one. During this read through, the trainer displays the types of nets the enumerators will be asked to evaluate, and walks through how they can recognize each type of net. The trainer is also meant to show the enumerators how to evaluate the net, based on the number and size of holes in the net, and how a net should be hung. This training should empower the enumerators to make quick judgements in the field based on what they have seen in the classroom.
- **Trainer runs practice scenario.** Following the read through, the trainer runs through sample scenario while enumerators fill out the forms based on the scenarios. These forms are collected and graded by the trainer, or Episcopal Relief & Development staff present at the training. Feedback is given based on the issues that come up in these forms.
- **Enumerators practice interviewing actual respondents.** The enumerators then field test the forms, i.e. go out into the nearby community in groups and conduct a PDCU survey with LLIN beneficiaries in the area. This is good practice as it grounds training in reality.
- **Electronic Data Training.** The training for electronic data collection was similar to the training for the other enumerators in terms of the broad agenda followed. The main differences were that the electronic data collection team spent a bulk of time testing out the tablets they will be using in the field to understand the skip patterns and logic checks built into the form, and that they did not venture into the field to test out the surveys during training.
 - The enumerators we observed at the electronic data collection training were all more experienced and more comfortable with the PDCU form than the surveyors in the paper-based form training. This level of experience and confidence led to many important questions and challenges being raised in the electronic data collection training that should have also been raised and answered at the paper-based form training.
- **Trainer distributes assignments.** At the end of training, the trainer distributes the PDCU forms and household lists for each sub-district to the supervisor for that sub-district. The supervisors are responsible for distributing these forms among their team. Usually, they assign

one person on the team to be the ‘checks’ person and the checks person is given his/her list at the same time as the primary enumerators receive theirs.

- Each enumerator surveys one community, usually the community they are from. This provides an additional advantage as these enumerators are familiar with the area and are likely to know where respondents live. Respondents are also more likely to invite people they know into their homes, as opposed to strangers.

Concerns

- **Confusion about ways to interpret a question affects data accuracy.** When important questions came up during the training, the trainers asked enumerators for their opinion on how that situation should be handled but did not provide a conclusive answer. This leads to one question capturing a variety of responses, and leads to a poor estimate of the actual information we are trying to gather.
- **The content of the training session is too much work for one trainer to manage well.** The trainer has to keep the content moving forward, grade sample forms, and provide feedback, while managing administrative and logistical tasks like food and snacks provision, distribution and collection of material, etc.
- **Enumerators are aware back-checks occur but may be unaware why they occur.** During training, the trainer does not elaborate on the different surveys taking place i.e., the main PDCU surveys and the 5% back-checks. The enumerators were aware that there was a ‘checks’ person on their team but at the two trainings we observed, no additional information on this process was provided. This defeats the purpose of AMF adding the back-checks to the PDCU protocol, as these checks are meant to have a psychological effect on the enumerators, as an additional way to keep them honest.
- **Little separation between primary and back-check household lists.** As all PDCU forms are distributed to the enumerators at the same time, primary and back-checks enumerators are able to compare forms and see which households are to be back-checked. If an enumerator is aware which households are to be back-checked, they are likely to spend more time interviewing that household correctly, rendering the back-check process ineffective at assessing enumerator quality.
- **Supervisors receive the same level of training as the enumerators.** They may or may not have previous PDCU experience, they could be hired on as supervisors if they fit the slightly higher criteria. They need to be trained on what to look out for in the field, how to supervise efficiently, what their duties and responsibilities are, what they should do when a crisis comes up etc. Supervisors should be trained before the enumerators, so they can also participate in the training as trainers. This empowers supervisors and gets enumerators accustomed to receiving feedback from them.

Recommendations

- **Focus on improving content of trainings.** Training manual should be frequently updated and refined based on challenges and situations that arise in the field. Terms should be further defined and frequently asked questions (FAQs) should be recorded. For e.g. it seems important to define what a ‘visitor’ means in terms of time per year spent with the family. This definition affects the household size and thus net allocation and sufficiency. Training should emphasize that back-checks are taking place, and the purpose of these checks.
- **Provide additional training and support to the trainers.** Trainers should be instructed to provide definitive answers to questions that arise in a session, and not let questions hang. There should be two trainers at each session or the trainer should have assistant to handle logistics, allowing the trainer to focus on content.
- **Supervisors should receive additional training.** To be able to manage their team well and to ensure quality data collection in their sub-districts, supervisors need additional support. They could be trained for 1-2 hours before the larger enumerator training in their clusters or for an entire day, for all supervisors across the region. This is important as it allows the supervisors to provide some useful insights and comments during the larger training, which could also assist in establishing their authority. Training supervisors is crucial as they are the main point of support and feedback for enumerators on the ground, and can help ensure data quality.

iii. Surveying

The enumerators are supposed to start surveying the day after training and they are given one week to complete their allocated lists.

- Supervisors conduct spot checks on each of the enumerators in their team through the week of surveying. Surprise spotchecks are often not possible in the field, due to vast survey areas. While this is not an ideal scenario from a quality assurance perspective, it is still a useful touch point for a well-trained supervisor to provide real time feedback and ensure data accuracy.
- For the PDCU, enumerators are trained to survey only the household head as they were listed on the registration process and nobody else.
- Enumerators are meant to enter the house and observe the LLINs, either hanging or in the household, and note their condition.
- At the end of each day, the enumerator hands the completed forms over to the supervisor who checks the forms for completeness, certifies, and stores them until all the surveying is done.
 - For electronic surveys, the supervisor does not need to collect the forms at the end of the day or check for incompleteness as the tablet automatically does that. In this case, the supervisor’s role is more for spot checks and as a resource in case of issues coming up.
 - However, while the electronic survey is a good start, there are many quality checks that could be built into the survey coding that are not currently used. These checks can

ensure further checks on data quality at the time of collection, and could significantly reduce the number of forms that are discarded due to inconsistent data.

Concerns

- **Enumerators do not always stick to protocol.** We observed some enumerators noting down the condition of LLINs before physically observing them, as well as noting down that a person had malaria based on their symptoms, instead of checking their health cards or medicines to be sure. This can overestimate the usability of LLINs over time, and thus affect estimates of LLIN life-span, as well as overstate malaria incidences in that region.
- **Enumerators have limited field support during surveying.** During the week that the PDCU is being conducted, the enumerators are on their own. There is no setup for enumerators to meet and debrief at the end of the day or receive feedback before the next day of surveying. These meetings are important to sustain data quality over time as well as to catch issues early on and allow enumerators to fix them while still in the field.
- **Back-checks could occur before the survey.** The back-check team is given the list of households to survey at the same time as the enumerators. While they are supposed to start working 3 days after the main PDCU team, it is possible that they start work at the same time. If this happens, it is possible that the back-checks actually happen before the actual PDCU. This is an issue as it would reveal the random selection of back-checks to the primary enumerator who is likely to be more cautious on those interviews than on the others, giving us an inaccurate sense of enumerator quality.
- **Survey and back-check data are not compared.** AMF, as well as Episcopal Relief & Development and ADDRO rely on enumerators' knowledge of back-checks occurrence as the main tool to ensure data quality. The PDCU data are not actually compared to the back-check data, which is the standard for data quality assurance. The data should be compared, and the percentage of matches (and mismatches) reported, to provide an accurate estimate of data quality.
- **Back-check list is easily accessible by the primary enumerators.** The list of households to be back-checked is provided to the team along with the main respondent list. This is an easy way for the back-check list to be seen/copied by the enumerators. The best practice is to keep the list of main surveys and back-check households entirely separate.
- **Enumerators are trained very specifically to interview household heads only.** This makes it hard for enumerators to survey households during the day as the household heads are usually at work. Enumerators have to survey early in the morning or late evening to be able to get the household heads.

Recommendations

- **Hold team meetings during field survey days.** There should be regular meetings between enumerator teams and their supervisors, to discuss challenges and provide feedback.
- **Coach enumerators to have respondents demonstrate net knowledge.** Enumerators should be constantly reminded to observe the nets, and not rely on the household head's word of mouth for condition of nets. This also applies to the question that asks if the household head knows how to hang a net correctly – enumerators should ask them to demonstrate or illustrate all the steps they follow instead of accepting a yes or no answer.
- **The back-check list could be provided at the end of data collection, instead of at the beginning.** Trainers could provide the back-checks list to the enumerator only after all the main forms for that sub-district have been submitted, or 4-5 days into the PDCU timeline, and give the checks enumerator more time to complete the list.
- **Allow other household members (mothers / net recipients) to be interviewed.** Given that the PDCU form is a household level survey and not an individual survey, it is not clear how important it is to interview the household head. If there is a way to verify that it is the same household, it might make sense to remove this requirement as it would allow for surveys to be conducted in a more efficient manner, and reduce the need for replying on spares.

iv. Data entry

- Once surveying is complete, each sub-district supervisor collects all the remaining forms from the enumerators and passes them along to the ADDRO staff.
- Once the forms are collected by the ADDRO field staff, they are bundled up and sent via mail service to the data entry center in Bolgatanga.
- Data are entered by data entry clerks at the ADDRO headquarters in Bolgatanga. All forms are entered once.

Concerns

- **Imperfect forms are discarded.** A number of paper forms are usually discarded due to incompleteness, inaccuracy, or conflicting information. There are also some households that refuse to take part in the survey. This information on reasons behind why some forms are missing is not currently captured by the DES or by Episcopal Relief & Development /ADDRO. These data would identify survey challenges and be an indicator of data quality. The data will also be helpful in future training of enumerators.
- **Data are entered onto the DES only once.** There is also no other process in place for data entry supervisors to check the quality of data being entered. While the DES flags inconsistencies in the form (while it is being filled out) and mismatched names (based on registration data), there is no way for the supervisor to ensure that the PDCU form is being entered correctly.

- **Data are not encrypted at any stage of the process.** Data encryption is usually standard practice for personally identifiable data on beneficiaries.

Recommendations

- **Improve tracking of all forms.** Episcopal Relief & Development and ADDRO should record: (1) number of forms discarded due to incompleteness; (2) number of forms discarded due to invalid/inaccurate data (3) number of households who refused to participate, and this should be entered into the DES.
- **Practice dual data entry⁴.** Double data entry should be followed when entering any data into the DES, including registration and distribution data and data from PDCUs.
 - It is not necessary for all the forms to be entered twice; it would be sufficient to double enter a random selection of forms to check for accuracy.
 - If entering data twice is problematic, an easier alternative would be to simply compare the data entered online with the paper form in hand. This can be done by first selecting a random sample of household IDs to be checked.
- **Data should be encrypted** as it is shared between organizations, and when it is uploaded to AMF's DES.

Effective practices

- **Trainers encourage productive group discussion.** During training, asking for everyone's opinion on ways that they would deal with every situation that arises is an effective way to keep the room engaged and ensure one is getting contextual information. This often led to a productive discussion within the group.
- **Training followed many best practices.** The entire training process is well thought through and planned by ADDRO and Episcopal Relief & Development. Many best practices for training are followed, such as laying out some definitions in the beginning, carrying out practice runs through scenarios and through field testing etc. However, while the training is at a decent level at the moment, there is potential for it to be better, be more standardized and have improved content.

Data generated / used

- The PDCU surveys generate data on net usage, knowledge of net usage, and malaria incidence in each sub-district.⁵ The data are available on the DES, but are not easy to use.

⁴ It is unclear whether double data entry is a requirement by AMF. AMF has mentioned in the past that 6% of the forms will be re-entered into the system but this does not seem to be the understanding they have with country partners

⁵ Malaria incidence is measured through a self-reported question in the PDCU survey, by asking the respondents if anyone in their household had blood-tested malaria in the last 30 days. Enumerators are trained to cross-check this by checking the medicines they were prescribed.

Concluding thoughts

Based on our site visit, we concluded that Episcopal Relief & Development and ADDRO have put a lot of thoughtful effort into monitoring the LLIN distribution and conducting the PDCU process. However, many changes need to be made, especially to training and the back-checks analysis process, before we can be certain that the data coming out of Ghana is accurately estimating LLIN coverage and usage.

Estimating coverage rates in urban areas

From our conversations about challenges Episcopal Relief & Development and ADDRO face in the field, it seems like urban areas pose more of a challenge to the PDCU process. It is harder to conduct PDCUs in urban areas for two main reasons – (a) people are often not at home during the day and (b) people claim to not have received LLINs during distribution. This is worrying, as it can imply that the PDCUs are not accurately estimating the coverage rates for urban areas in Ghana.

Measuring malaria incidence

Episcopal Relief & Development and ADDRO seem to trust the reported numbers of malaria incidence in Ghana. They usually track malaria incidence based on positive cases tested at hospitals, clinics and pharmacies. In their opinion, these numbers can be trusted because misdiagnosis of malaria would lead to court cases against the care providers.

While Episcopal Relief & Development and ADDRO trust these numbers, we see several reasons why the malaria incidence numbers coming out of district facilities should not be trusted in their current state. We foresee the incidence numbers not being reliable as there could be systematic reasons behind the trend. For example, malaria incidence could be higher in AMF regions because the PDCUs are a frequent reminder about “blood tested malaria”, which could make people go to the hospital more than they used to, if they suspect they have malaria. If we are able to isolate such systematic reasons (unlikely), then we would be more likely to trust the incidence numbers.

Episcopal Relief & Development and ADDRO’s work beyond AMF

ADDRO and Episcopal Relief & Development conduct monthly and quarterly surveys in the randomly selected areas within the three regions in which they work. These surveys are done independently of AMF’s program and are conducted to increase health awareness, including knowledge of how to use a net correctly. AMF should leverage Episcopal Relief & Development & ADDRO’s work in the community and use data from the PDCU to inform the communication around LLIN usage.

For example, if PDCU data shows that LLIN usage is low in certain sub-districts because people believe nets should only be used in the wet season, ADDRO can recruit community volunteers to spread proper net usage information within these communities.

Next Steps

1. Interim report summarizing findings from Malawi and Ghana to be shared with GiveWell by November 17th 2017.
2. Site visits to Togo, Zambia, and Uganda completed by the end of 2018 (dates TBD).
 - a. Trip reports for each will be shared with AMF, GiveWell, and country partners soon after each PDCU visit.
 - b. Use insights from PDCU visits to focus on best practices for AMF to follow at-scale.
3. Report summarizing key takeaways and learnings from all site visits to be shared with AMF, GiveWell and country partners by the end of 2018. Timeline is contingent on final site visit dates.
 - a. Challenges / logistical constraints consistent across sites and ways AMF can address them to increase potential for impact.
 - b. Effective practices coming out of each country program that can be adopted globally.
 - c. Specific recommendations for AMF and country partners on ways to strengthen their systems in line with the primary functions of monitoring systems outlined in the Summary section of this report (Page 3).

Appendix 1: Grading Table

Below is a description of how grades were assigned to the implementation of each individual activity. If the implementation met all the criteria listed, the activity would be listed as ‘Green’; if one criterion was missing, a ‘Yellow’ grade would be given. If an activity was lacking on more than one of the criteria, the implementation of that activity would receive a ‘Red’ grade.

Group	Activity	Required for a ‘Green’ grade
Registration	Registering <i>all</i> households in the region	Local partner should make every attempt to include all households in the regions under their jurisdiction and verify this list once they have it.
	Calculating net need	Net need numbers allocated per household should be verified and cross checked by designated individual / team, to ensure allocations align with the formula to be used.
Distribution	Transparency	Distribution process should be as transparent to the recipient as possible. In an ideal scenario, recipients should know beforehand how many nets they should receive and should sign off that they actually received that number.
	Record keeping (paper trail)	Movement of nets once they enter the country to the time they are distributed should be traceable and verifiable.
	Enumerator training	Training should be comprehensive on the PDCU forms, scenarios to expect in the field, field testing and feedback sessions for the enumerators.

PDCU	PDCU quality	PDCU should be conducted according to AMF protocol. Enumerators should observe nets well before answering questions on net conditions, probe on unclear answers and ensure that data collected is accurate. Enumerators should be receiving feedback on their progress through the process. <u>Note:</u> this is a subjective metric and the grading is determined based solely on our observations in the field and on our understanding of how surveys should be conducted in an ideal setting.
	6% checks (back-checks)	Back-checks should be conducted by an independent team/individual, after the initial PDCU surveys have been conducted.
Data	Data entry clerk training	Training should be comprehensive and data entry clerks should be equipped to handle situations that come up with handling data.
	Quality assurance	Data should be double-entered and compared, to ensure that the data are being entered correctly.
	Back-check data used	Data collected via back-checks should be compared to PDCU data to understand where (if any) gaps lie.
	PDCU data used	PDCU data should be used by implementing partners to inform future programmatic / operational decisions.

Appendix 2: Recommendations for the Data Entry System (DES)

Based on our discussions with ADDRO and Episcopal Relief & Development, here are a few features that the country team thinks would be useful to have:

- A country profile / dashboard with key metrics clearly calculated and displayed. For e.g. displaying coverage rate, with a clear explanation of how it is calculated.
- Easy access to entire dataset, to enable country partners to examine net usage data over time across all the districts and regions they work in. Right now, it is only possible to view PDCU data from one survey round for one region at a time. This is not particularly useful as the partners are interested in knowing the trend over time.
- Codifying qualitative data on reasons why people do not have or use nets. For e.g. people often say ‘nobody gave us a net’ – if the country partners could understand how many people say this in a particular region, they can direct their messaging to address this particular issue through their community volunteers.
- It would be helpful to see how many households did not receive nets, and why. This information is available on an individual household level but it is not feasible to manually

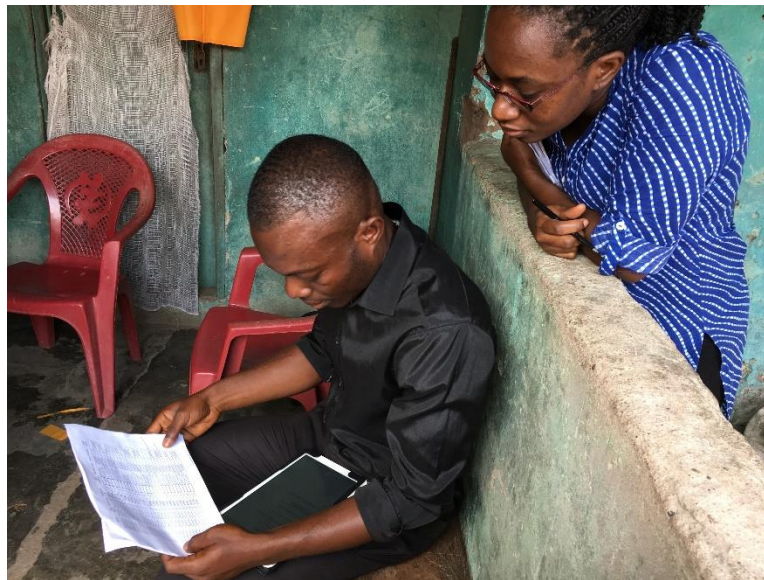
count the number of households this would apply to. Similarly, number of households that received nets in each district / region would be an interesting metric to add to the dashboard / country profile page.

Appendix 3: Forms and Pictures

1. Showing Enumerators how an LLIN should be hung.



2. Observing an electronic PDCU in process. The enumerator is cross checking information on the tablet with information on the sampled household list.



3. An enumerator conducting a paper based PDCU.



4. A data entry clerk entering data into the DES from a paper based PDCU at the data entry center in Bolgatanga.

