

Trip Report: PDCU Site Visit, Malawi

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Background

IDinsight is working with GiveWell on several different projects, one of which is to strengthen monitoring systems for some current top charities. Our first engagement within this work stream is with Against Malaria Foundation (AMF). We will be conducting site visits to three countries (Malawi, Ghana, and Uganda) to observe AMF's monitoring in action. Learnings from each site visit will be shared publicly, with the hope that good practices in one country can be adopted in other countries where AMF operates and that these insights can help AMF improve how they monitor their operations and impact globally.

With the goal of protecting people from malaria, AMF funds Long Lasting Insecticide Treated Nets (LLINs) and partners with organizations in country to distribute the nets as well as conduct post distribution check-ups (PDCUs) every 6 months. A post distribution check-up is a short household survey to check on the condition of AMF nets, as well as people's knowledge and usage of nets.

From 26th – 30th June 2017, an IDinsight team visited the Ntcheu district of Malawi (chosen based on activity timelines and logistical feasibility) to observe the 18-month PDCU, a PDCU conducted 18 months after a net distribution campaign. This PDCU was being conducted as a follow up to the 2015 distribution, when AMF funded 424,436 (this number was provided by the UP team. AMF's website states that it delivered 335,000 nets to the Ntcheu district in 2015. The difference comes from additional nets that were needed and supplied separately) nets for the Ntcheu district. United Purpose (UP, formerly Concern Universal), AMF's partner in Malawi, was responsible for the distribution in 2015 and is currently carrying out the post distribution check-ups as required by AMF.

The primary goals of our visit were to:

- Understand the PDCU survey process in Malawi.
- Ground-truth this process against PDCU protocols set by AMF.
- Observe decision-making in the field and understand potential methods for improving data quality.
- Understand the local malaria detection systems available in villages/rural health facilities to understand reliability of malaria incidence numbers reported by the Malawian Government in indicating the impact of bed net usage.

Summary

We observed an enumerator conduct PDCUs in two villages and a field coordinator/supervisor conduct back checks in two other villages, all in the Kasinje Health Center catchment area in Ntcheu district. We had extensive discussions with the UP team about their involvement in the other aspects of the net distribution process to understand the systems they have in place and the issues they face.

Below is a grading scale we used to assess their current status and is meant to indicate whether there is scope for improvement. 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 thought through systems with no 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, rather as a way for each country program to assess its own strengths and weaknesses.

Group	Activity ¹	Grade
Registration	Registering ALL households in the region	
	Calculating net need	
Distribution	Transparency	
	Record keeping (paper trail)	
PDCU	Enumerator training ²	
	PDCU quality	
	6% checks (back-checks)	
Data	Data entry clerk training ³	
	Back check data used	
	PDCU data used	

¹ Further details on individual line items provided in Appendix 1: Grading Table

^{2,3} We did not observe this activity on this site visit. This grade is based on discussions with the UP team.

Based on our observations, questions, and conversations, below are the main concerns and open questions and key recommendations that came up during our visit.

We would like to note that AMF and UP have been extremely open to all our probing questions about their program and operations, and have been responsive to any concerns we raised and suggestions we made. The following lists of questions, concerns and recommendations is to build off of those conversations and is intended to be used as a starting place for fine-tuning their monitoring process.

	Concern/Question	Recommendation
	For U	IP
1.	UP seems to rely on key personnel for the success of their field activities.	 UP should develop a living training module for enumerators and supervisors. Issues and scenarios should be added to this document as they come up in the field. UP should develop a similar training guide for data entry staff, focusing on ways to troubleshoot data issues that frequently come up.
2.	The data entry system is complicated and has a steep learning curve.	• UP should invest time in understanding the AMF's Data Entry System, to be able to use the data that it generates. Such data would aid in planning future activities in the regions they work in. AMF and UP should discuss ways the data can be most helpful to UP and AMF should ensure that is made available.
3.	Qualitative data that comes up during a survey is not currently captured in a useful way.	 AMF's data entry system should provide a coding system for qualitative responses and provide country teams access to this codified data. For instance, it would be useful for the UP team to know how many people in a particular district have said they do not use their nets during the dry season. Once the country team has this data, they should analyze it to understand what kind of interventions are required to increase net usage. If not leading behavior change interventions themselves, this is valuable data to provide to someone who can.
4.	Logistical and operational constraints imply that the implementing partner is not always	• Back-checks should be conducted after the PDCU is conducted, irrespective of how much later.

	able to adhere to AMF protocols, specifically on the timing of the back checks.	
5.	The 6% back-check data is entered into the data entry system but not checked/used by UP.	• To make these back-checks worthwhile, UP should compare the PDCU data with the back check data to check enumerator consistency. This can be easily done via the data entry system and be used to inform future operations. For example, if matches on net conditions are low, it could indicate that more training is required to standardize responses.
6.	During the PDCU, an enumerator often finds that households do not know how to hang the net correctly or that they have incorrect knowledge of when to use a net.	• The enumerator should be trained to provide guidance to households on net use behavior – how to hang a net, when to use the net, how many times to wash the net, ways to care for the net etc. This is an easy touch point to modify net usage behavior and could reduce the need for additional interventions.
	For AN	MF
1.	PDCU data available on the AMF website is not easily usable/accessible to country partners and donors. While detailed data is available to country partners, it is not in a format that is easy to analyze or use to compare across regions and over time. Similarly, while data is available to donors and other stakeholders, it is hard to digest and know how to interpret correctly.	 AMF should outline and define the metrics it is using to track its progress. For example, one of the metrics usually used for malaria interventions is coverage rate, and this is one metric that AMF uses to track progress. However, it is not entirely clear what coverage means and how that specific information can be obtained from the data AMF has available. AMF should develop a system of sharing information with their country partners. For example, an 'export to excel' button that would allow the country partners to download the entire dataset from the PDCU and allow for further analysis. AMF could create a dashboard for each country program that answers a few basic questions: how many people were originally registered, how many PDCU surveys were completed, what is the coverage rate in each region/district/village etc. This list of questions can be developed by AMF in consultation with their country partners and GiveWell. If not feasible, this data

		should be provided to relevant stakeholders in a different way.
2.	AMF's website currently displays the number of nets delivered to each country / specific region within a country. It is harder to find the breakdown of where, when and how many nets were actually distributed in those regions. There is also an implicit assumption that all nets delivered were distributed, which may not always be the case. Often, there are nets left over or inadequate nets for distribution and knowing this is also useful to AMF and country partners for future planning.	 Since AMF should already have information about distribution from in country partners, they should display actual net distribution information as part of the dashboard mentioned above. This information could also be added to the current table of distributions that they display which provides details of nets delivered to each region.
3.	In Malawi, enumerators often have trouble finding households they are to survey. They turn to their list of spare households, which they are to use only in case they cannot find the original households on their list. However, the list of spares can also be insufficient and they are left with an inadequate number of surveys from some areas. Sometimes entire villages are also unavailable due to a funeral or local event. Going back to these villages at a later date would increase the cost of PDCUs and delay the planned schedule.	 AMF can increase the percentage of spares per village they provide to the UP team, if feasible. AMF could also provide a list of spare villages to go to if an entire village is unavailable on the PDCU day. This should be a discussion between AMF and UP.

Open questions for AMF:

- It is difficult to cleanly measure the percentage of people covered at night by a mosquito net. How is coverage defined?
 - Example: if a household has 4 sleeping spaces and all 4 sleeping spaces are covered with 'poor' nets, is the household counted as being covered? Similarly, if there are 8 members in the household and 4 nets, does that imply the household is 100% covered?
- How is the PDCU data analyzed once received by AMF?
- Many of the concerns noted in the following subsections could be resolved through offline electronic data collection specifically, using mobile devices or tablets for data collection. Electronic data collection could ensure better data quality, build in automatic logic checks and allow real time cross referencing with existing registration & distribution data bases. We know that AMF has considered this before and has piloted electronic data collection in some

countries. Does AMF plan to roll out electronic data collection in any / all of its country programs?

IDinsight Team

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United Purpose Team

- Nelson Coelho, Malaria Control Unit Manager
- Charles Yuma, Deputy Malaria Control Unit Manager
- Chimwemwe Nyoni, Project Manager
- Innocent Mpakiza, IT/MIS Officer
- Richard Matundu, Accountant/Data Officer
- Chipiliro Kaimila, Data Entry Clerk

Itinerary

- Day 1: Travel to Ntcheu district, follow an enumerator and observe PDCUs in progress in five households in two villages. Visit Kasinje Health Center to understand malaria detection protocols.
- Day 2: Travel back to Ntcheu district, follow the field coordinator and observe back checks being conducted in 4 households in two villages.
- Day 3: Visit United Purpose's Lilongwe office to observe the data entry process and understand the data available to the implementing partner through AMF's data entry system (DES). Discuss the registration and distribution processes and the data generated/used from each of these activities.
- Day 4: Visit United Purpose's Lilongwe office to cover remaining questions from our visit. Discuss training of enumerators & data entry clerks, additional questions regarding institutional memory, and United Purpose's future plans.

The report is divided into three sections, for the three main functions that UP carries out in partnership with AMF. Each section describes, in detail, the process followed and the data generated at each step. Open questions, concerns and recommendations noted above are also further explained below.

Registration

Registration is the first step in the net distribution process. The main purpose of registration is to calculate the total number of nets that will be needed for the distribution area. In Malawi, UP distributes AMF nets in four districts – Balaka, Ntcheu, Dedza and Dowa. The nets for these four districts are funded by AMF. The remaining districts are covered by the National Malaria Control Program and funded by the Global Fund.

Process:

• AMF estimates the approximate number of nets they will need for that round of distribution based on previous years of net requirements and approximate population of the four districts. They place an order for nets based on this number, plus an additional buffer. This is

done to minimize the time between registration and net distribution, as there is, naturally, a lag between when the order is placed for the nets and when they are delivered.

- Each district is divided into health center catchment areas (HCCAs). The Health Surveillance Assistant (HAS) in each HCCA is responsible for creating a 'net census' list of all the households in all the villages in that catchment area, with the help of the village heads in each village. If an HCCA is 'vacant', i.e. if an area does not have an HSA, the HSA of the neighboring village is responsible for generating that net census list.
- This data is collected by UP and a Household Net Register is created for every village.
- Using this register, staff from UP (and temporary field staff) supported by the HSA responsible for each village, as well as the village head, will conduct a verification consisting of roll-calls of the registered villages (in groups of villages) to check missing households, duplicates, ghost names, and appropriate net allocation numbers.
- A second version of the register is created, incorporating data from the verification exercise. This version is printed in duplicate and used while distributing nets in each village.
- While conducting the verification, the UP team informs the households about the number of nets they should expect to receive.

Data generated/used:

- At each step of the process, the census data is stored by UP on Microsoft Access. This data is updated twice after the initial entry: once after the initial registration by the HSA and once after the verification process.
 - UP collects and store information on the name of the head of the household, household size, number of usable nets they own and number of nets they need for each village.
 - Number of nets needed is calculated according to the number of sleeping spaces. For instance, a household with 9 members and 5 sleeping spaces should get 5 nets.
- This data is used to plan for the upcoming distribution process.

Good practices:

- There is a multi-step verification process in place to ensure that the list of households they have is as complete as can be. We learned that this is important as household rosters and village populations tend to change frequently, with people moving to or away from the village. It is also crucial in ensuring that marginalized sections of the village do not get intentionally or unintentionally left out.
- The verification process is public, ensuring transparency and buy-in from the village residents, as they feel more involved. The public verification also allows the community to hold UP accountable for the number of nets they have been told they would get.

Concerns:

- Households can be missed if the family members were unavailable at the time of registration / HSA from neighboring HCCA conducts the census, in which case they would not receive nets. There is a lot of power given to the HSA and the village lead. Assuming they are benevolent, this may not be an issue. If they are not, they may be able to collude and misrepresent the number of nets received. This seems to be an unlikely outcome.
 - According to the UP team, these are the things their staff is supposed to check for when conducting the verification exercise. They see no reason for this situation to

arise as there is a strong culture of social obligation and interdependence. As mentioned earlier, the public verification process allows for an additional mechanism for the community to hold UP and the District officials accountable.

- If households are, for some reason, missed during registration and verification, their details are noted down and they are given nets during the mop-up distribution.
- Training for staff is done by Chimwemwe Nyoni, the Nets Distribution Project Manager at UP. There seems to be no formal documentation of this process to carry it forward in case of Chimwemwe's absence. Special cases that arise (noted in Appendix 2: Special Cases) and ways to deal with them are also based on his experience and not well recorded for future use.
 - UP is aware of the dependence on key personnel and working to reduce dependence on any one person by recording such information for institutional memory.

Distribution

Approximately 2 months after verification, UP conducts a net distribution exercise. Each household is given the number of nets as determined through the registration process. Public distribution happens at the local HCCA level.

Process:

Depending on size of the HCCA, each HCCA is divided into several clusters of villages. A panel of 3-4 people sets up a distribution table at a spot central to each cluster. This team consists of at least the local HSA, UP staff, and the village head. Local volunteers could also be present at these distributions to aid in smooth functioning.

AMF is responsible for the nets getting to Malawi and to the designated district warehouses UP uses to store the nets. From the district storage facility, the nets are sent to each HCCA the day before village distribution.

Nets get distributed very publicly, through a process of calling out household names and net allocations, to allow for transparency. If a village/particular household is unable to receive nets on the planned day of distribution, UP will conduct a mop-up distribution a few weeks later to come back and complete distribution.

Data generated/used:

- The Household Net Register is updated at each village with the number of nets the household received and their signature/fingerprint. One copy of this book is left with the village head and the second is brought back to the UP office.
- At each step of the transport process, a physical document records the number of nets at that location. This ensures that the nets that are supposed to reach a distribution site actually arrive.
 - At the warehouse, a stock card keeps tabs on all nets entering and leaving the warehouse.
 - Each truck is equipped with a delivery note with information on number of bales/nets and where they are to be dropped off.

- Once a truck drops off a shipment of nets, the recipients have to sign a goods transfer note which proves the nets reached their destination.
- The data from the Register is added to the same Microsoft Access database previously mentioned. Once the entire distribution process is completed, this is converted into an Excel sheet and sent to AMF for their records.

Good practices:

- UP seems very methodological in its approach to ensuring net delivery. There is a way to check counts of nets at each step and if something untoward happens, the team in Lilongwe would be able to trace the source of the issue and know what went wrong.
- This data is used by UP to report to AMF. After every distribution, UP sends a comprehensive table of nets received, delivered and distributed in each district to AMF.
- UP is aware that sometimes unforeseen circumstances will cause households to not receive nets. When they become aware of this situation occurring, they make a note of such households in the Register and try to reach these households in the mop-up distribution from leftover nets, if any.
- The actual distribution process is very well thought out by the UP team. Having a 3 to 4person panel is instrumental in ensuring that a household actually receives the number of nets they were supposed to. Each household is informed during the earlier registration process the number of nets they should receive at distribution. They are also able to see the number of nets they are allocated on the Household Net Register and will speak up if the numbers do not match. In this panel, one person usually calls the name and number of nets, another opens the packet (to prevent resale), writes the initials of the beneficiary receiving the nets and hands out the nets, and the third is responsible for getting the household member's signature in the Register. All of these steps ensure layers of accountability and transparency within the process.

Concerns:

- Villages / certain households may be unable to collect nets on the day scheduled for that cluster. This could lead to incomplete coverage.
 - This is possible and has happened, according to the UP team, particularly if there is a funeral. UP conducts mop-up distributions after the actual distribution process when logistically and financially possible to reach the households/villages they were unable to originally reach.
- Data from the delivery notes, goods transfer notes, stock cards, etc. is not recorded electronically either during the process or after the distribution is complete. This information could be useful while planning future distributions, especially as it provides a space to record issues and complications that came up and ways to prevent those in the future.
 - On Microsoft Access, the final number of nets that reached the district and was distributed is recorded but each individual step, including qualitative data, is not. There are, however, paper copies of all of this available with UP. This data is useful for three things: (1) for UP's operational purposes, to prove and document that the distribution was implemented as planned, (2) qualitative data from drivers and warehouse managers could be used to create a more efficient delivery system and to ensure safety of nets, and (3) for AMF to ensure that the nets they fund get to the intended beneficiaries.

• AMF display '# of LLINs' on their website, which is the number of nets sent to each country (and district), but there is no easily accessible information on nets actually *distributed* in the country. There is an implicit assumption of nets sent equal to nets distributed, which may not always be the case.

Post distribution check-up (PDCU)

For 3 years after nets have been distributed, UP conducts PDCUs every 6 months. The PDCU is a short half A4 size page survey that asks the households about their net usage, malaria incidence and examines net condition. Guidelines for conducting this PDCU have been set out by AMF. AMF is responsible for sending a list of households to be surveyed to UP. The total number of households surveyed is meant to be 5% of the total HCCA population. Using this 5% number as a target, AMF calculates the percentage of villages that would need to be surveyed in order to reach that 5% target. In each of the HCCAs for the 18 month PDCU, AMF had calculated that 35% of the villages need to be surveyed. On average, 14% of each village was to be surveyed.

Along with the list of households to be surveyed, AMF also sends a list of 'spares'. These are the households to be visited if any of the households on the initial list are not available.

Team structure, roles & responsibilities:

PDCU team members in the field

- a. Project Manager + car (1)
- b. Supervisors (2) usually government officials, the Malaria Coordinator and ITN Officer for the district.
- c. Field Coordinators / Back Checkers (2)
- d. Enumerators (20)
- e. Driver + car (2)

The 20 field enumerators are split up into 2 teams of 10. Each team is sent out in a Toyota Land Cruiser (chosen due to capacity and ability to travel on dirt roads), along with either a District ITN Officer or a District Malaria Coordinator. These district officers are not on UP's payroll and are paid a daily stipend to allow them to be away from their normal work for the duration of the PDCU survey in that district.

The District Health Surveillance Agent (HSA) guides the teams to where their sampled villages are and sometimes accompany the team to villages that are tricky to find.

The Field Coordinators are responsible for conducting the 6% checks back checks (the UP team refers to these as spot checks) on the households surveyed by the enumerators.

The Project Manager (Chimwemwe) has access to his own vehicle, which he also uses to transport back-check enumerators as needed.

Process:

Below is an overview of the PDCU process, as explained to us by the Project Manager and as observed in parts:

- The field team meets in the district in our case, in the main Ntcheu township, at the local UP office.
- Team drives out to the health center catchment area they will be surveying that day.
 - Field coordinators (data back checkers) travel to & from the health centers with the enumerators.
- They arrive at the health center and have a team briefing. At this briefing, they discuss challenges of the previous day and ways to improve going forward. This discussion is led by the Project Manager.
- Each enumerator receives assignments for the village(s) that she/he will be going to that day. Usually, each enumerator surveys one village per day and the team is able to finish one HCCA each day.
 - On the day we visited, the team was surveying Kasinje health center, which serves 181 villages. The PDCU sample sent by AMF included 713 households (plus 214 spare households) from 63 of these villages. As it is a large number of households to survey, the team will return to Kasinje health center for 2 more days of surveying before moving on to the next health center.
 - It so happened that one of the villages being surveyed only had 7 households to survey and the enumerator moved on to the neighboring village (which was supposed to be done the next day / by someone else). This was done by contacting the Project Manager via cellphone.
 - Enumerators receive a list of households, unique IDs and the village name with all the households they are to survey (5% of the village), plus the list of spares (1.5% of the number of households to be surveyed in that village). Based on past experience, UP recommends the percentage of spares should be increased to 5%.
- Project Manager speaks to district HSA who advises on village location and the best order to drop off enumerators in.
- Enumerator teams depart for their respective villages. Each enumerator is dropped off in their village and introduced to the village head by the Supervisor before the car moves to the next village.
 - Having a government employee to introduce the survey teams lends them credibility and makes the survey more official the team says this is helpful in garnering local support. The Supervisor is also responsible for conducting random spot checks while in the field. It is unclear, though, to what extent these checks happen or with what frequency.
- At the end of the day, the car starts picking up all the enumerators from the respective villages and the whole teams meets for a quick debrief & form collection at the health center.
 - At the debrief, the Supervisors collect, count & check the PDCU forms from their respective teams. They check the forms for completeness & consent signatures. Once satisfied, they hand the forms over to the Project Manager who conducts another quick check.
 - The Field Coordinators also submit their back-check forms to the Project Manager, who checks for completeness.
 - The two sets of forms are then sent to Lilongwe, to be entered into the DES.

- The team drives back to the main district town for the night.
- The process repeats the next day, at the next health center.

Field Coordinators travel with the enumerator team to the district and run their surveys either a day after or on the same day, after enumerators have finished the surveys for that village. According to AMF protocol, the back checkers should be visiting the villages 3 days after the first survey but due to logistical and cost constraints, this is usually not followed. To this point, UP noted that this protocol was not communicated to them.

Data generated/used:

To track progress on their goal of reducing malaria incidence, AMF needs to answer two key questions – (1) do people have access to nets? (2) do people use the nets they have correctly? PDCUs are crucial in answering both these questions and understanding how AMF & UP's net distribution program is working. It is intended to provide direct feedback on actual usage, net condition, and knowledge of net usage within the districts they operate in, to aid in future planning.

To that end, the PDCU survey collects data on -

- 1. Number of nets that were received through the last universal campaign.
- 2. Number of AMF funded nets.
- 3. Condition of each net in the household, AMF or not.
- 4. Knowledge of how to hang a net.
- 5. Malaria incidence within the last 30 days.

While this list gets close to answering the questions listed out above, it does not tackle them completely. For instance, when estimating number of people who know how to use a net correctly, it would be good to know whether they are actually using these nets and whether the nets they are using are in a usable condition. This information is easily attainable by combining several of the data points gathered above, but not each on their own. This is also contingent on what information would be useful to the country partner / policy making body.

Good practices:

- UP prints out a list of each of the households (as well as the spares) for each village and attaches it to precisely the number of PDCU forms they will need for that village. This provides an easy way for the Project Manager and the Supervisors to quickly tally the number of forms & household lists for each village.
- The PDCU form has a field for 'Date of Distribution' which can only be input if the enumerator asks for the village head's copy of the Net Register. Theoretically, the enumerator could use this register to cross-check the number of nets the households they are surveying had received, although they are not instructed to do that currently as it is not always available when the enumerator is in the village. This could be because the
- Recently, AMF introduced the system of Household IDs, which are unique identifiers given to each household that is registered within the system. These IDs are necessary for linking registration, distribution and PDCU data to a specific household so each household can be tracked over time.

• When checking malaria incidence for the last 30 days, enumerators are instructed to confirm the household's response by checking their 'health passport', a book that records the tests and test results of patients from that household.

Concerns:

- The sample selection process used by AMF is not easily understood by IDinsight or the UP team. We walked through it together and came up with questions that UP will clarify with AMF before the next round of surveying.
 - Our primary confusion with the selection is the percentages used within each selection. For instance, how is the proportion of villages to be surveyed in each HCCA calculated (is it set at 35%?), what percentage of spares will be added to each list (1.5% or 50%?). The process is not as transparent as it could be. For UP, this was a matter of insufficient time between receiving these lists and beginning the survey, which could have been the primary source of confusion.
- Insufficient number of spares. In one of the villages we observed, the enumerator had not been able to find several of the households on the original and on the spares list. As she ran out of names that she had to survey, she picked another person in the same village and surveyed them to get the total desired number for that village. It is now unclear what happens to that form will that data be considered or thrown away? Protocol for such situations is not well defined and thus enumerators and Project Managers might handle such cases differently, which is not what we want.
- Planning the PDCU operations is very hard as there is no way to know the exact location of each village they are meant to survey. Maps are scarce, and those available are not detailed enough.
 - This could be something UP takes on in the subsequent PDCU rounds that would make planning and execution of PDCUs much more efficient. Using a simple GPS recorder, it could be possible to map out the approximate location of each village in the district over time. This is not a foolproof method and would take time and resources to complete. Given that PDCU villages are chosen randomly, it is possible that not all villages are visited over time and the map would still be incomplete. GPS coordinates can also be taken at distribution clusters, which the UP teams says would make their future work easier and they would be less dependent on the district HSA.
 - One idea that came up was to retain enumerators after the PDCUs have been completed to map villages across the four districts. While this would require more funds, it would be a good way to retain good enumerators over the course of the PDCU process.
- The data generated through the PDCUs is not utilized as much as it could be. There are two main types of data that the PDCU is able to collect (1) the actual quantitative data that the questionnaire is built for and (2) additional qualitative information that the enumerator picks up while he is in the field. While the former is used in future distribution planning to some extent, the latter does not seem to be used, as far as we can tell. For e.g. in one of the PDCUs we observed, the household had zero nets. This was because her husband had died and it is part of the local culture to bury all of the husband's (or family's) material belongings with the husband. The nets had thus been buried and the family is not currently covered. This is useful information and should be captured into the data entry system as a crucial reason nets are not used. Currently, this qualitative information is added in as 'Comments'.

- This kind of qualitative information can be useful while devising ways to improve net usage. If either AMF/UP or a third entity wants to run a behavior change program to increase knowledge about net usage, this is the data that will help them plan the contents of that program. Since the data is being collected anyway, it makes sense to code & store in a more informative way. This change to the PDCU survey will be one of the recommendations we include to AMF in our final report.
- The DES has information on households that reported malaria incidence it is possible to create a slice of this information to understand the various issues that could have caused it. For e.g. it is possible to look at the average condition of nets for all households that claimed to have malaria in the last 30 days. Do we find that all of these households have nets in poor conditions? Or maybe they have usable nets but do not use them because it is the dry season. It could also be that they have nets, know when to use them but do not know how to hang them correctly. This is all very useful information and would be easy to extrapolate from the available information.
- Similarly, it would be useful to cross reference distribution data with PDCU data. For instance, the distribution data for a particular household says it received 4 nets. However, in the PDCU they only mention 2. This could provide more accurate information on 'missing nets', or provide a way to check that calculated missing nets is equal to reported missing nets (on the PDCU form). Cross-referencing could happen informally as the second copy of the distribution list is available in a village, although that does not seem to be the current protocol. Using the DES to conduct this process formally would be a substantive improvement.
- The data on the DES should be easily available to the country team. Is there an option for the country partner to download the data? As this was the first time the UP team was using the DES, they were also uncertain whether the data could be downloaded to excel once entered into the system. Such an option would allow the country team to download and use the data collected during the PDCUs for planning and informational purposes. For instance, the UP team could cross reference this information with the data they have through the DHIS 2 (District Health Information Software, open source version), and get a more accurate picture of malaria incidence in the country.
- The data entry system (DES) is confusing. The UP team was using AMF's DES for the first time this PDCU round and while there is a learning curve to understanding this system, there seem to be a few key limitations:
 - Using the DES system requires good internet connections, which are often hard to come by in the field. The form did load, but it took over 30 seconds to refresh every time we selected an option from the drop-down menu. This time lag has implications on the number of surveys a data entry clerk can input into the system in a day and thus on the total cost of the process. If the internet happens to shut down halfway through a form, any unsaved data could be lost. While the form seemed to have trouble loading the day we were in the office, Innocent said that it had worked well for him the previous day. DES speed seems to rely heavily on the internet connection available and the number of people using it on a given day.
 - Potential solution for this issue, if feasible: AMF could create an offline version of the system that syncs with the online version when the internet connection is strong enough. This would reduce dependence on internet connectivity for work to progress.

- The new system does not seem to have all of the data viewing tabs the old system had. For instance, we could not see separate tabs on 'Net Usage' or 'Miscellaneous data' or 'Comments' – all things the UP team had found relatively useful in the old system. This may just be because the system is still being set up, but it is something for AMF to keep an eye on as this type of data is useful to country partners.
- The labels on the tabs for data entry were confusing to the UP team. The terms used on the system are not the terms used by the UP team to refer to the various activities they perform and it took a while to pinpoint where each set of data should be entered. Definitions and labels of each activity is something AMF should try to standardize across programs, to ensure a smoother process. If not possible to do so, a user guide / intensive training session for every partner would be useful.
- There was a provision for data from 'Re-entry' to be entered. This was a surprise to the UP team as dual data entry had not been discussed previously. We agree that dual data entry is the best practice and should be followed and hope that this is implemented going forward. That said, dual data entry also has implications for budgets and logistics.
- There seems to be no way to input distribution data. There are entry systems for registration & PDCU data, but none for distribution. This data is sent in via the distribution reports instead.
- The data summaries on the DES system seem to be simple averages and tallies of the exact information entered from the PDCU forms. None of the information on the summary pages seems to be calculated. For instance, the DES provides information on the number of AMF nets that are currently in use. However, it does not account for nets that are in use but in poor condition. This is important to know, depending on how we define coverage and usage. For example, in case a household is using a poor net, would we still consider them covered?
- Learnings from using the DES are not captured by the UP team. The data entry clerks and supervisors raise issues with Nelson or Chimwemwe as required to solve the problem. This information is not stored for future enumerator or data entry clerk trainings. We raised this with the team and they responded that they would take note of this going forward.
- Qualitative data from the enumerator/back-checker is not recorded. Currently, the enumerator makes notes in pencil on the sheet given to her for why she could not reach a particular household. There is no system for this information to be recorded. This qualitative data can be very useful as feedback for enumerators on their surveying techniques. If the enumerators know that their work is being checked and they are being given feedback on how they are faring, they will be more likely to do a good job, improve over time, and produce quality data.
- Similarly, situations that come up during the PDCU are also not well recorded by the team. If a situation arises (examples that we came across are included in Appendix 2: Special Cases), the enumerators call Chimwemwe and he guides them on the best way to handle it. This is dependent on Chimwemwe's knowledge of the situation and on both having good cell phone coverage. If this information was recorded and trained on, there would be no need for such communication. The UP team responded that they plan to work on their training modules and have them be living documents that they can add to as such issues come up, to reduce reliance on any one team member.

- Back checks (6% checks) are intended to be a way to keep enumerators honest. Enumerators should be aware that these checks will be conducted, which according to AMF is the key benefit of these checks. However, there we still have a few concerns about the process:
 - 6% checks are done on the same or the following day, after the initial survey was conducted, not 3 days after as set out by AMF. The UP team plans these checks in such a way as to reduce the costs of travel to the same villages and thus try to do the back checks at the same time that the enumerators are in that HCCA.
 - There does not seem to be real time accountability/feedback for enumerators. They are told the will be back checked and abstract lessons from the previous day are shared but the data could be used more concretely during feedback sessions so the enumerators know that the back-check data is being looked at. For e.g. saying, "Through the back checks, we found that some of you have not been asking for the malaria registers during your survey. Please remember to ask for it every time you go to a new village". This could help reinforce the psychological effect of back checks as AMF intends.
 - The form used for back checks is the same as the regular PDCU form. We think it could be modified to include: "Were you visited by a colleague of mine recently?", "Is your name ...?", "Did my colleague ask to see your nets?". These kinds of questions help assess not only the quality of data collected but also the protocol followed by the enumerators and allow for more direct, useful feedback.
- Reliance on cell phone coverage for coordinating pick-ups and drop-offs for enumerators, back checkers and supervisors. Unclear whether there is a better solution for this but ensuring that everyone is on the network with the best coverage area seems to be crucial. Having an accurate map of where the villages are located could be helpful in ensuring a smoother, more efficient process of data collection. If there was a map with village coordinates, UP could plan the PDCUs such that villages close by could be grouped together for one enumerator to do so the enumerator can be independent and does not have to rely on transport to and from their allocated villages.

General comments

Measuring malaria incidence reliably

One of the ways to understand the impact of providing long lasting insecticidal nets to households would be to measure malaria incidence rates in the regions over time. However, there are doubts about the accuracy of the numbers available with the Government. Currently, health facilities use the Malaria Rapid Diagnostic Test (MRDT) to test whether or not a patient has malaria. The physician on duty refers the patient to get an MRDT if he or she thinks the patient's symptoms align with a malaria case.

Once the MRDT test has been conducted and the result noted, the physician sees the patient once again to prescribe medicine, as needed. Thus, a patient is potentially recorded in three different health registers:

- 1. Outpatient Department Register (Physician's register)
- 2. Lab register
- 3. Pharmacy Register (LA Register, LA is the medicine to be prescribed for malaria)

The number of malaria-positive cases recorded in the lab register is tallied-up every month and reported to the district hospital as the total malaria incidence in that health facility in that month. This is done for every health facility to get the district level malaria incidence rate and similarly for all districts, to get the national malaria incidence rate. This aggregation process assumes that the first level of data collection is accurate. Here are several reasons why we think the data on malaria incidence recorded at these health facilities might not be reliable:

- Inconsistent recording the lab technicians or physicians may not always enter a patient into a register. This tends to happen during busy periods, especially as the health facility is understaffed or during the weekends when the clinician is not always present.
- Since the clinician is not always present, often an untrained person is left to administer & interpret the MRDT. This leads to faulty tests and incorrect diagnoses.
- Improper reading of the MRDT while the MRDT is intended to be easy to read, there is still a high chance of error in interpreting the results correctly. For instance, the test has two parts that are to be read in conjunction to interpret the results one is the part that actually tells the technician whether the blood sample contains malaria and the second is the control line that provides information on the integrity of the dye used in the test. The lab technician is supposed to read both parts (a control-line and a test-line should appear) and record a positive result only if both lines are observed. Sometimes, however, a technician could report a positive result even if the line on the control part is not observed, which could actually imply that it is a false positive and they should do the test again. Such misreading could be due to insufficient training or an overstretched staff member conducting the tests.
- If a person has very severe malaria, they are referred from the health facility to the district hospital. Even though they were referred, this person might be counted as a new malaria case in the hospital and thus be double counted in the district wide malaria incidence count. Nelson Coelho, from UP, says he is not aware of such double counting but that it is possible.
- If the patient has symptoms of malaria but tests negative on the MRDT, they could still be written off as a malaria patient because the physicians think the test made a mistake / they don't know what else it could be.
- Similarly, the technician might be tempted to mark a case as malaria positive when it is not, in order to match malaria cases to the amount of medication disbursed.

The UP team, along with AMF, is interested in improving the data on malaria incidence. They put together a taskforce to understand what is wrong with the current measurement process, to recommend ways it can be improved. One of the key takeaways from their observations of the diagnosis and referral process was the need for a unique way to identify each patient that goes through a health facility. They believe this process will be made easier once the Malawian government issues a national identity card & number to each person. However, this will take years to implement nation-wide & integrate into the diagnosis process.

We considered the possibility of using trends in malaria incidence rates over time as a way to indicate the directionality of malaria incidence as it correlates to net usage in the same regions. The rationale behind this theory was that if malaria incidence measurement is unreliable due to random error, it could be just as unreliable at all points in time and could thus be indicative of the general trend in the region. We ruled that out, mainly because we cannot ascertain for sure whether the only error in measurement is random error. As listed out above, it is also possible that some errors are systematic and deliberate and could lead to underreporting or over-reporting of malaria.

While we do not have a solution to estimate malaria reliably yet, this is a challenge we will continue to think about as we conduct our other site visits.

UP has some interesting ideas for the future, if possible:

- Using smartphones to map village locations this could be a reasonably low-cost process that speeds up distribution & PDCU operations.
- Simplify reporting process between UP and AMF:
 - Reducing the reporting burden between UP and AMF would simplify operations and save cost. For example, UP could send one PDCU planning document each year instead of 8 per year, with additional appendices for each individual district. This is part of an ongoing discussion between AMF and UP.
- Adding questions to the PDCU survey to take advantage of field time for gathering program relevant information for other UP program. These additions could help answer questions like "what kind of roofs/floors does the household have?", "What kind of cookstove are they using?" etc. and could improve the targeting and thus impact of other UP programs with little / no added cost.

Next steps in the monitoring workstream:

- 1. Site visit to Ghana completed by the end of July 2017.
 - a. Trip report will be shared with AMF, GiveWell, and country partners by mid-late August 2017.
 - b. Focus on observing enumerator training, mobile data collection, and the use of the DES by country partners.
- 2. Site visit to Uganda completed by the end of November 2017 (exact dates TBD).
 - a. Trip report will be shared with AMF, GiveWell, and country partners by the end of December 2017.
 - b. Uganda is AMF's largest distribution till date. Focus will be to understand the effect of scale on AMF's model and ways to strengthen monitoring to best support large operations.
- 3. Report summarizing insights from the three sites to be shared with AMF, GiveWell, and country partners by the end 2017. This report will focus on:
 - a. Challenges / logistical constraints consistent across sites.
 - b. Good 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 monitoring systems.

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 criterions, the implementation of that activity would receive a 'Red' grade.

Group	Activity	Required for a 'Green' grade
	Registering ALL households	Local partner should make every attempt to
	in the region	include all households in the regions under their
Registration		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.
	Transparency	Distribution process should be as transparent to
		the recipient as possible. In an ideal scenario,
D'at il d'at		recipients should know beforehand how many
Distribution		nets they should receive and should sign off that
	Depend beening (new or trail)	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 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
PDCU		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 entry clerk training	Training should be comprehensive and data entry
		clerks should be equipped to handle situations that
		come up with handling data.
	Back-check data used	Data collected via back-checks should be
Data		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: Special Cases

There are many non-standard cases enumerators encounter while conducting PDCUs where it becomes difficult to net access and usage for the household. Below are some of the cases we were told about or we came across during our time in the field:

- Change in the composition of the household death, separation, migration, marriage and birth can lead to the household size & net needs change.
- In case of divorce all assets go with the husband or his family.
- Death all assets buried with the dead.
- Mis-registration families registered in two different villages under two different names. [In the case we came across, the husband had registered just his own sleeping space and the wife her and her kids' sleeping spaces, so they were not double counted.]
- Mixing of villages that are very close together boundaries between villages are very fluid and people tend to move between the two.
- Nets are sent with children to school if children go to boarding school, the parents send the family nets with them.
- If homes are undergoing reconstruction, the household members move and share sleeping spaces with a neighboring household.
- People get married and move. Sometimes they take the nets, sometimes they leave them. Nets can be given as gifts to the new couple in these situations.
- Enumerator was not able to find one household (dead) and any of the spares (out working in the field/moved/unavailable) she sampled a random other person in the village who had also received nets from AMF.
- New people move in from other villages. The household now has more people than during the registration & distribution period.

In these special cases, there is no set protocol on what to do and the enumerator often relies on the Project Manager to intervene and assist. What happens if the Project Manager is unavailable or there is no way to reach him / her? According to the UP team, these types of scenarios are covered at the enumerator training, led by the Project Manager. However, there seems to be no systematic capture of this information that can be shared in the absence of the Project Manager. As mentioned, UP is aware of this risk and plans to begin documenting these special cases to create formal protocol to preserve institutional memory.

Appendix 3: Forms and pictures

1. Example PDCU form

POST-DISTRIBUTION CHECK-UP					Country/Region:					District na																
AGAINST MALARIA				Date	of distrib	ution:			Sub-District na	me:																
MALARIA						Date	of this su	irvey:			Community na	me:														
Form Number: Household ID:									PLEAS	E WRITE	IN CAP	ITALS	Form Number: Household ID:								PLEAS	E WRITI	IN CAP	ITALS		
the Ho	usehol	d Head	In the pas	it, you received mo	osquito	nets f	for free	in a comm	nunity distr	ibution.	We are c	onducting	To the Ho	ousehol	ld Head	in the pa	st, you received m	osquit	o nets	for fre	e in a com	munity di	stribution	. We are	conducting	
			ted house formatio	holds to assess ne	t usage	and c	onditio	n. We wou	uld like to a	isk your p	permissio	n to enter	a survey of your home				eholds to assess ne	et usag	e and	condit	ion. We wo	ould like t	o ask you	r permiss	sion to enter	
				home, in my pre	sence												y home, in my pr	ecenr								
				of my mosquito i		,			Sign	ature of	f House	old Head					of my mosquito		<i>,</i>			Sig	nature o	f House	hold Head	
ne of t	he House	ehold He	ad First	name				Last na	me				Name of t	he Hous	sehold He	ad Firs	t name				Last	name				
irst op	mo of Ea	ther of L	lousehold	Head				Contact	No				First na	ime of F	ather of I	lousehol	d Head				Cont	ntact No.				
-3118	e vi Fa	aller of F	lo asenoio																							
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				ble for all nets four to question #3)	nd hang	ging ir	n the ho	usehold:									ble for all nets for to question #3)	und ha	nging i	in the	household					
		rand of ne	et	Net distributed in	Ne	et condi	ition	-	How many sl			Net condition	1,0 00000		Brand of ne		Net distributed	Ne	t condit	ion		tow many s	ept under		Net condition	
	Olyset	O (tick o	ne) Other	recent mass distribution?	OG Very) (ti		# Children	this net las	t night? #Preg	# Other	Very Good		Olyset	(tick o	ne) Other	in recent mass	OG	O(tic	k one) Poor	# Children	this net la	t night?	#Other	Very Good	
ample	0	Net	0	distribution?	Good	0	0	Under 5	5 to 18 yrs	w 1	adult	fewer than 2 holes of less than 2cm	Example	O	Net	O	distribution?	Good	-	0	Under 5	5 to 18 yrs	-rieg w	adult	fewer than 2 of less than 2	
Net 1	0	0	0		0	0	0	1		1		each	Example Net 1	0	0	0		0	0	0	1		1		each	
Net 2	0	0	0		0	0	0					OK fewer than 10 small	Net 2	0	0	0		0	0	0			-		OK fewer than 10	
Net 3	0	0	0		ŏ	0	0					holes	Net 3	0	0	0		0	0	0					holes	
Net 4	0	0	0	П	0	0	0					Poor more than 10 small	Net 4	0	0	0		0	0	0					Poor more than 10	
Net 5	0	0	0		0	0	0					holes or 1 big hole, larger than 10 cm	Net 5	0	0	ŏ		0	0	0					holes or 1 big larger than 1	
Net 6	0	0	0		0	0	0					If there are more	Net 6	0	0	0		0	0	0					If there are n	
Net 7	0	0	0		0	0	0					than 10 nets	Net 7	0	0	0		0	0	0					than 10 nets	
Net S	0	0	0		0	0	0					another form (and	Net S	0	0	0		0	0	0			1		continue on another form	
Net 9	0	0	0		0	0	0					mark both forms).	Net 9	0	0	0		0	0	0					mark both for	
Net 10	0	0	0		0	0	0						Net 10	0	0	0		0	0	0					1	
• Of the <u>r</u>	iets rece	ived in t	he recent	universal coverag	e camp	paign (ONLY:					-	3. Of the n	nets rece	eived in t	he recen	t universal covera	ige can	npaign	ONLY					-	
				Hung			Pr	esent		Not	t present			_			Hung	_			Present		N	ot prese	nt	
Numb	er origin	ally rece	eived	sum of 🗹 ticked	l above		but no	ot hung 🕷	W	forn out		ther *	Numb	er origin	nally rece	ived	sum of 🗹 ticke	d abov	e		not hung I	•	Worn ou		Other#	
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				is household?			_																			
			iere in th	is nousenoid:									6. How ma	any peop	ple are th	ere in th	is household?									
FRTIEN	ATION:			orm is correct	SI	urvey	yor's na	ame				5	upervisor's name													
	ale a la Contra						osition:						ind signature:													

2. Enumerator (Lola) introducing herself to the family she was about to survey. Respondents' faces are blurred to protect privacy.



3. Examining the net. One easy way to tell if it is an AMF funded, United Purpose (formerly Concern Universal) distributed net, look at the tags:

