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Assessment of a Diagnostic Tool for Household Poverty and Food Security in Balaka District, Malawi

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EXECUTIVE SUMMARY

The Livelihoods and Food Security Technical Assistance II (LIFT II) project is a PEPFAR funded technical assistance program which seeks to extend the continuum of HIV care from health facilities to the home. To that end, LIFT II hopes to support service providers in the northern area of Balaka District with a diagnostic tool that will collect essential poverty and food security data, as well as be useful in helping local stakeholder staff provide referrals to other service providers. The goals of the present study were to understand how LIFT II could help service providers make ***efficient***, ***effective***, and ***appropriate referrals*** to services within the district, and also to learn how LIFT II could ***classify clients*** into the three categories of household (HH) poverty/vulnerability: *Provide*, *Protect*, and *Promote*.

The first step in LIFT II's investigation was to collect data using a series of tools. In August 2013, LIFT II hired and trained a team of six local data collectors to conduct 312 clients interviews at three health facilities in Balaka District: Balaka District Hospital, DREAM (Andiamo Health Centre), and Kalembo Health Centre—three sites where nutrition and HIV care services are meant to be integrated through Malawi's Nutrition Care, Support, and Treatment (NCST) program. Household poverty and vulnerability data were collected using two tools: 1) Grameen Foundation's Progress out of Poverty Index (PPI) and 2) a custom designed tool (the LIFT score) based on a series of the most frequent questions to appear on the Progress out of Poverty Indices and USAID's Poverty Assessment Tool (PAT) across all of sub-Saharan Africa. Household food security data were collected using three tools, all developed by the Food and Nutrition Technical Assistance (FANTA) project: 1) the Household Hunger Score (HHS), 2) the Household Dietary Diversity Score (HDDS), and 3) the Months of Adequate Household Provisioning (MAHFP). LIFT II collected data on a final series of questions to gauge community interest in, understanding of, and perceived barriers to referrals.

The second step in the investigation was to conduct a thorough debrief with data collectors to assess their perceptions of the diagnostic tool's utility and suitability as an aid in making efficient, effective and appropriate referrals, as well as any perceived benefits they would expect to find by classifying clients into the *Provide-Protect-Promote* framework.

Efficient referrals do not take a long time to complete. The six data collectors had little trouble finding new clients, reporting that an average of 4 minutes was required to find and recruit a new client, 20 minutes to complete the survey on a tablet (not including the final questions), and that an additional 10 minutes would be required were they to use a paper-based version. They estimated they would need from 15 to 60 minutes to counsel a client (after completion of the referral tool) to ensure they were making a useful and actionable referral.

Effective referrals are those that, for the LIFT II project and our partner network, allow us to collect data about clients to improve referral programming. Data collected during this exercise serve two purposes: 1) a cross-sectional snapshot of poverty and food security status in Balaka in August (including nuances to food security such as proportion of households receiving food aid), and 2) a basis for contextualizing data for future work. It should be noted that a referral system operates on a rolling basis, always admitting and referring clients, rather than some cohort studies which have clearly defined start and end dates. Data collectors interviewed 122 clients at Balaka District Hospital, 84 clients at DREAM (Andiamo Health Centre), and 106 at Kalembo Health Centre. Household poverty data showed a minimal trend for decreased wealth from Balaka District Hospital to DREAM to Kalembo Health Centre (mean PPI scores decreased from 47.3, to 45.3 at DREAM, and to 43.8 at Kalembo; mean LIFT score decreased from 5.2 to 5.1 at DREAM, and to 4.7 at Kalembo), but there was no statistically significant difference.

Appropriate referrals provide a client with information about a service that is right for them and their household, meaning that the service is one they are eligible for, can reasonably travel to, and that they have interest in. Of the clients interviewed for this study (n=300), 96.8% expressed an interest in referrals—a very strong starting point. However, clients expressed a number of concerns over referrals: 54.2% were concerned a service would be too far or inconvenient, 49.0% expressed concerns over trusting the service provider, and 47.4% noted that they did not know where to go. Additional client concerns are presented in the main body of this report, but these serve to illustrate that while some concerns can be easily addressed (i.e., where to go), LIFT II and service providers must be careful to maximize convenience of service delivery and ensure that public trust is maintained. Data collectors noted that they would need more information about services available in Balaka to provide more substantive comments on the appropriateness of a referral based on diagnostic tool scores.

PPI and other data can be used to classify clients. In order to be used for classification, all tools must have pre-determined cutoff values that identify the conditions of 'food secure' versus 'food insecure' or other category. For this study, the following cutoffs were used to determine food insecurity: HHS ≤ 2, HDDS < 6, and MAHFP > 5. The PPI score (which ranges from 0 for poorest to 100 for wealthiest) is based on national level data and includes estimates that a certain PPI score is below a poverty line. LIFT II wanted to assign our own cutoff values to the PPI tool for Malawi in order to have 10% of respondents fall into the *Provide* category, 80% in the *Protect* category, and the final 10% in the *Promote* category to match the targeting and variety of economic strengthening programs in the field. LIFT II was able to identify the following cutoffs to distinguish the three groups: PPI ≤ 29 is Provide (9.3% of respondents in Balaka), PPI from 30-64 is Protect (78.8% of respondents), and PPI ≥ 65 is Promote (11.9% of respondents).

Data collectors were uniformly pleased with the use of tablets (as opposed to paper) to collect data in the field and were positive overall about LIFT II's goal of facilitating the creation of a referral system. De-identified data collector (Identified only as Data Collector A-F) quotes are included throughout the report, for example, Data Collector B had this to say about LIFT II's work in Balaka:

> *I think making referrals is a good thing, and it will help people in the community get the services according to the needs that they have…We are giving them direction where they can get services they need. I feel optimistic about this.*

LIFT II will use both the quantitative data collected from the diagnostic tool and the data collected from the data collectors to develop a final diagnostic tool that combines one poverty/vulnerability assessment tool with one food security tool to create a complete diagnostic. This final diagnostic will also be accompanied by counseling guidance and training materials for service providers as well as for staff administering the tool in the field.

Overall, ***four recommendations emerged for future development of a diagnostic tool in Malawi***, or for design and testing of a diagnostic tool in another country:

1. **Data collectors were uniformly happy with the use of tablets for collecting data**. Data collectors appreciated the ease of use, the knowledge that each survey had complete data, the helpful reminders on the tablet screen, and the fact that they did not have to prepare or carry paper forms.
2. **Data collectors need a clearer understanding of the development of the PPI score**. Data collectors routinely struggled with two issues for the PPI and LIFT scores: 1) the categorical answer choices were too limited, and 2) the final score is meant to be interpreted rather than individual questions.

3. **There are some practical tips that can improve the flow of the questions and ease the burden on the health facility client.** For example, the PPI questions can be grouped into questions about education, land ownership, etc., in a way that naturally leads to the food security questions, and 2) the HDDS questions could be ordered in the sequence that people eat them in (i.e., animal proteins can come second in the list rather than fifth) in order to help interviewees anticipate answers.
4. **More information about referrals is helpful to elicit clear responses**. For this test, data collectors were simply asking about hypothetical referrals—a concept which was not easily grasped by many clients, who expected immediate referrals or wanted to know the names of specific service providers. Learning aids, diagrams, or other realia that could be used during either a test of a diagnostic tool or during an actual referral process would be helpful.

INTRODUCTION

LIFT II's test of a diagnostic tool is an essential step in the design of a referral system to link clinical HIV/nutrition clients to community-based economic strengthening, livelihoods, and food security (ES/L/FS) services. LIFT II is a PEPFAR-funded technical assistance program which seeks to (among other objectives) extend the continuum of HIV care from health facilities to the home. To that end, LIFT II hopes to support service providers in the northern area of Balaka District (Traditional Authority [TA] Kalembo) with a diagnostic tool that will collect essential poverty and food security data, as well as be useful in helping local stakeholder staff provide referrals to other service providers. In addition, it is expected to provide data about a) the interval with which the tool should be used with clients to assess changes in household food security, and b) which referrals may be most appropriate for a client's household.

Balaka District, Malawi is the selected setting to apply and test LIFT II's diagnostic tool. Balaka has one district hospital, 11 health centres, and three health posts[1]--a total of 15 facilities, four of which serve as NCST sites. LIFT II established relationships with three of these NCST sites from January-February 2013: Balaka District Hospital, DREAM (Andiamo Health Centre), and Kalembo Health Centre. In order to create a viable referral network between these NCST sites and other service providers, LIFT II strategically focused on those services operating in northern Balaka District. This area approximates the geopolitical TA Kalembo and purposely excludes services in TA Msamala (Southern Balaka) to ensure clients can easily travel to service provision sites.

One of LIFT II's goals is to ensure that clients from PEPFAR-funded NCST facilities access local ES/L/FS services. To achieve this goal the LIFT II model aims to ensure that clients receive appropriate referrals from the facilities to these locally available services. It will require cooperation between donors, implementing partners, and organizations as the integration of services is often a complex task. Even amidst related health services it is common for no one provider, health facility, or organization to meet these needs alone. This task is considerably more complex when the integration spans different service areas such as the case here between a health facility and community-based organizations (CBOs) that provide ES/L/FS services. Organizations must communicate, coordinate, and collaborate with other organizations engaged in similar efforts in order to effectively meet the comprehensive health needs of their clients. In many cases, an unconnected or fragmented collection of individual organizations must learn to act as a cohesive network.

STUDY GOALS

The goal of this study was to test a tool which can be used to make ***efficient***, ***effective***, and ***appropriate*** referrals to community-based service providers, as well as to assess the utility of the tool for ***classifying*** interviewees into LIFT II's poverty framework categories. Efficient, effective, and appropriate referrals are defined as follows:

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[1] Health posts are the smallest, most basic health facility usually with no permanent doctor or nurse on staff. The health post may have a full or part-time primary healthcare provider generally referred to as Health Surveillance Assistants (HSA). http://aamiq.com/2012/09/etandweni-health-post-malawi/

- ***Efficient referrals*** do not take a long time to complete. They are client-centered and, to the extent possible, allow a LIFT II-mentored service provider to quickly diagnose a client's household poverty and food security status with the expectation that this information will help speed the referral process.
- ***Effective referrals*** are those that, for the LIFT II project and our partner network, allow us to collect data about clients to improve referral programming.
- ***Appropriate referrals*** provide a client with information about a service that is right for them and their household. That means the service is one they are eligible for, can reasonably travel to, and that they have interest in.
- In addition, the tools must be useful for ***classification*** into the three categories of LIFT II's conceptual framework: *Provide*, *Protect*, and *Promote*. The utility for classification will be determined through a qualitative debrief with the data collectors who will pilot test the tools in Balaka District.

Study questions were summarized in **Table 1** as follows:

Table 1. Study Questions

Referral Criteria	Research Questions	Method to Collect Data
Efficient	1. How long does the diagnostic tool take to administer?	Time the administration of two different versions of diagnostic tool.
	2. Are there any items which can be eliminated—either because they are superfluous or because clients do not or are hesitant to answer them—to streamline the tool?	Review 1) quality of collected data, and 2) interviewer perceptions of client stress or aversion during the diagnostic process.
Effective	3. Is LIFT II able to capture HH poverty and FS data?	Review quality of data collected by comparing two poverty measures and three food security measures. Debrief data collectors to capture their perceptions of tool utility.
	4. How will these tools vary when administered over different points in time? Also, how do client's perceptions change over time?	Solicit feedback from data collectors on how they might answer differently throughout the year so LIFT II is aware of seasonality issues in food security using the MAHFP indicator.
Appropriate	5. Do clients appreciate the menu of referral services, or are their needs still unmet?	Provide clients with referral options and ask them to describe any perceived barriers to access.
	6. Are there barriers that exist which prevent clients from acting on a referral LIFT II provided?	Ask clients about their user experience and any reasons they may not be able to act on a referral.
Classification	7. Does the data collected through the diagnostic tool—in particular HH poverty status—help streamline the referral process? To what extent are we collecting the right information to move forward the referral process to improve access?	Ask data collectors (interviewers) their thoughts on the utility of the diagnostic tool for referrals.

TARGET POPULATION

Adult clients (age 18 and above) receiving health services at one of three health facilities in Balaka District, Malawi. One facility is Balaka District Hospital, the second is Kalembo Health Centre (managed by the Ministry of Health [MOH]), and the third is DREAM (or Andiamo Health Centre, which is supported through Italian funding). No health-related or identifiable data from these clients was collected, and all interviewees were read an informed consent statement and allowed to ask questions before any interviews began.

DATA COLLECTION FROM HEALTH FACILITY CLIENTS (TOOL A)

Data were collected in two waves: The first wave (using Tool A, summarized in **Table 2** below) of data were collected from health facility clients and using a tool comprised of the five indices. Data collectors worked with health facility management to decide the best place to stand on health facility grounds, and also where interviews would take place. These interviews were conducted in Chichewa with a Chichewa survey tool. The second wave (Tool B) of data collection was in the form of a one-on-one debriefs with the data collectors and LIFT II team to help understand the data collector's perceived ease of use and value of the tools for referrals. These interviews will be conducted in English with an English interview guide.

Table 2. Components of the Diagnostic Tool

	Component Tool	Score Range
Tool A	PPI – The Progress out of Poverty Index	0 – 100
	LIFT Score	0 – 10
	HHS – The Household Hunger Score	0 – 9
	HDDS – The Household Dietary Diversity Score	0 – 12
	MAHFP – The Months of Adequate Household Food Provisioning	0 – 12
	Final Questions (mainly demographic)	N/A
Tool B	Data Collector Debrief	N/A

PROGRESS OUT OF POVERTY INDEX (PPI)

The PPI tool[2] can be used to answer two key questions—1) "*What percentage of clients are poor?"* and 2) "*How does that percentage change over time?"* —by producing an estimation of a group's poverty rate at a point in time and an estimation of changes in a group's poverty rate between two points in time. It is important to note that while the PPI has been used to track individual clients, its primary purpose is to look at clients in aggregate. LIFT II agrees that this is the best use of the tool for targeting clients to determine eligibility into a particular program or the volume of programmatic services needed in an area. LIFT II will use the PPI data to track client poverty movement over time in an entire referral area—this is consistent with the design of the PPI. LIFT II will also determine the degree to which the PPI outcomes can be used in facilitating a referral for a single client in real time as part of future referral system operations.

[2] More information about the construction and use of the PPI tools can be found here: http://www.progressoutofpoverty.org/faq-page#n493

LIFT SCORE

The PAT answers the same two questions as the PPI, but produces a different outcome: an estimation of the poverty outreach of an organization, as a percentage of its client population that is below one or more poverty lines. While a PAT exists for Malawi (both PPI and PAT are country specific) LIFT II has decided not to test it due to the difficulty in use at a field site. While the PPI contains scores that can be added in real time, the PAT requires data be entered into an Excel sheet to complete calculations. LIFT II sees value in examining all the tools created for the sub-Saharan Africa region, however, to see which questions are the most common across tools. Altogether there are 24 tools (10 PAT and 14 PPI), and it is easy to rank the most common predictors of household poverty that appear on all 24 tools. The purpose for LIFT II's inclusion of this list of most common questions is to see how they may be repurposed for use in a country with neither a PPI nor a PAT and limited budget to collect the kind of nationally representative household economic data set from which a PPI or PAT could be derived.

HOUSEHOLD HUNGER SCALE (HHS)

The Office of HIV and AIDS (OHA) within USAID, provided strategic direction in the creation of a set of Harmonized Indicators for Nutrition and HIV, meant for use in global NCST programs. They fall into three programmatic areas: nutrition care and support, prevention of mother-to-child transmission of HIV (PMTCT), and food security—LIFT II is specifically interested in those indicators which comprise the food security set. The impact indicator for that set is defined as follows: the number and proportion of PLHIV receiving care and treatment services whose households have poor access to food based on the HHS. Similar to the PPI, HHS is intended to be reported on in aggregate/at the group level. The inclusion of the HHS in this protocol is expected to help LIFT II gather data about the usefulness, usability, and relevance of the HHS for routine monitoring of household food security in Balaka District.

HOUSEHOLD DIETARY DIVERSITY SCORE (HDDS)

Data for the HDSS indicator is collected by asking the respondent a series of 'yes' or 'no' questions. These questions should be asked of the person who is responsible for food preparation, or if that person is unavailable, another adult who was present and ate in the household the previous day. The questions refer to the household as a whole, not any single member of the household. The output for HDDS is a variable with value of 0-12, where a higher number indicates a more diverse diet. The HDDS indicator is based on household variables and is the simply the sum of all HDDS variables divided by the total number of households in the sample population. LIFT II will consider the utility of these metrics when examining HDDS data collected in Balaka, as the HDDS is used as a proxy measure of the socio-economic level of the household.

MONTHS OF ADEQUATE HOUSEHOLD FOOD PROVISIONING (MAHFP)

Data for the MAHFP indicator are collected by first screening out those households that were able to provide for their household food needs throughout the entire year. Those households that were unable to adequately provide for the household (question 1) then go on to question 2, where they are asked to identify in which months (during the past 12 months) they did not have access to sufficient food to meet their household needs. The purpose of these questions is to identify the months in which there is limited access to food regardless of the source of the food (i.e., production, purchase, barter, or food aid). Over time the MAHFP indicator can capture changes in the household's ability to address vulnerability in such a way as to ensure that food is available above a minimum level the year-round. Measuring the MAHFP

has the advantage of capturing the combined effects of a range of interventions and strategies, such as improved agricultural production, storage, and interventions that increase the household's purchasing power.

FINAL DEMOGRAPHIC QUESTIONS

The health facility client tool ends with a series of demographic questions that assess client access to mobile phones, and also access to and viability of referrals. This final set of questions explores the criteria which make a referral desirable for a client.

DATA COLLECTION FROM THE DATA COLLECTORS AFTER USING THE DIAGNOSTIC TOOL (TOOL B)

DATA COLLECTOR DEBRIEF

Once the data collection is complete, LIFT II team staff will conduct a thorough debrief with the data collectors to better understand their perceptions of the tools' use, efficiency, effectiveness, and appropriateness. This represents a second wave of data collection, which is operations research that is primarily qualitative in nature. Data collectors will be asked a series of detailed questions about the aggregate tools (PPI + HHS + other questions) timing, ease of use, and perceived value for making referrals to services available in Balaka District. No referrals will be made during this study—LIFT II staff will simply determine whether or not the data collectors felt that the diagnostic tool results (PPI score and HHS category—little to no food insecurity, moderate food insecurity, and severe food insecurity—would be useful in expediting the process of matching a client with a service).

LIMITATIONS

This study has several limitations:

- The quantitative data collected may lack validity due to the use of a convenience sample. This will not affect the qualitative data captured from data collectors about their experience using the tools.
- The data are not expected to be generalizable beyond the Balaka context. They are being collected to help guide programming in the area, recommendations for tools to be used, and ultimately to provide guidance that is useful for referral systems in Malawi.
- Little research has been conducted on the optimum set of tools for a rapid diagnosis of household poverty and food security status that can be used in a referral system, so this study was unable to incorporate past lessons learned. In a similar vein, the data collectors hired to test the tools and share their experience through a debrief are not likely to have expertise in referral systems and may be challenged to provide optimum feedback.

RESULTS

This study used a team of six trained interviewers to test a diagnostic tool (See Appendix 1) for household poverty and food security status in Balaka District, Malawi. The diagnostic tool was tested on a convenience sample of n=312 clients at Balaka District Hospital, Kalembo Health Centre, and DREAM (Andiamo Health Centre). Data collectors were instructed to try to interview an equal number of men and women at each site. **Table 3** presents the final sample size by site and sex.

Table 3. Study Sample

Health Facility	Women	Men	Total
BDH (Balaka District Hospital	73 (59.8%)	49 (40.2%)	122
DRM (DREAM, or Andiamo Health Centre)	51 (60.7%)	33 (39.3%)	84
KHC (Kalembo Health Centre)	66 (62.3%)	40 (37.7%)	106
TOTAL	190 (60.9%)	122 (39.1%)	312

Data collectors used Samsung Galaxy tablets running Open Data Kit (ODK) survey software to collect the data, and rated the overall experience very highly when asked about the tool during their debrief. All data collectors had field survey experience but were new to data collection with digital devices. Data Collector B encapsulated most of the points in favor of digital devices, saying:

> *It was faster using the tablet compared to the hard copy questionnaire. It was portable compared to using a questionnaire because I didn't have to carry lots of papers with me. I could easily find blank forms in the tablet. Also, I was able to get the scores right there after every section, so I didn't have to calculate...I could just move on.*

Other data collectors agreed with this assessment, noting that they appreciated the notes and reminders (a function of ODK is that researchers can put reminders for the data collectors below each question). Data Collector D appreciated how the tablets helped capture a complete data set:

> *It was very easy because there were some questions where if you put a wrong code you couldn't proceed. It was also easy to write something because of the autocomplete feature on the tablet.*

TIMING

As noted in **Table 1**, the first research question for this study considered the timing of the tool, and asked "*How long does the diagnostic tool take to administer?"* Data collectors were asked four questions about the timing of the survey: 1) the length of time required to find/recruit a new client, 2) the time to complete the survey on using a tablet (which has the benefit of automatically calculating scores), 3) their estimate of the time they would need to counsel a client satisfactorily to match them with an appropriate service (based on their limited knowledge of services in the district), and finally 4) their estimate of the time it would take to complete a paper-based survey (where they would manually calculate the scores).

The six data collectors had little trouble finding new clients, reporting an average of 4 minutes required to find and recruit a new client. They estimated that it took approximately 20 minutes to complete the survey on a tablet (not including the final questions), and that an additional 10 minutes would be required were they to use a paper-based version. Finally, they estimated they would need an average of 35.8 minutes (with a minimum of 15 minutes and maximum of 60 minutes; the only item to exhibit a wide range in variation) to counsel a client and ensure they were making a useful and actionable referral. **Figure 1** below summarizes these results; no significant differences were found between the three sites.

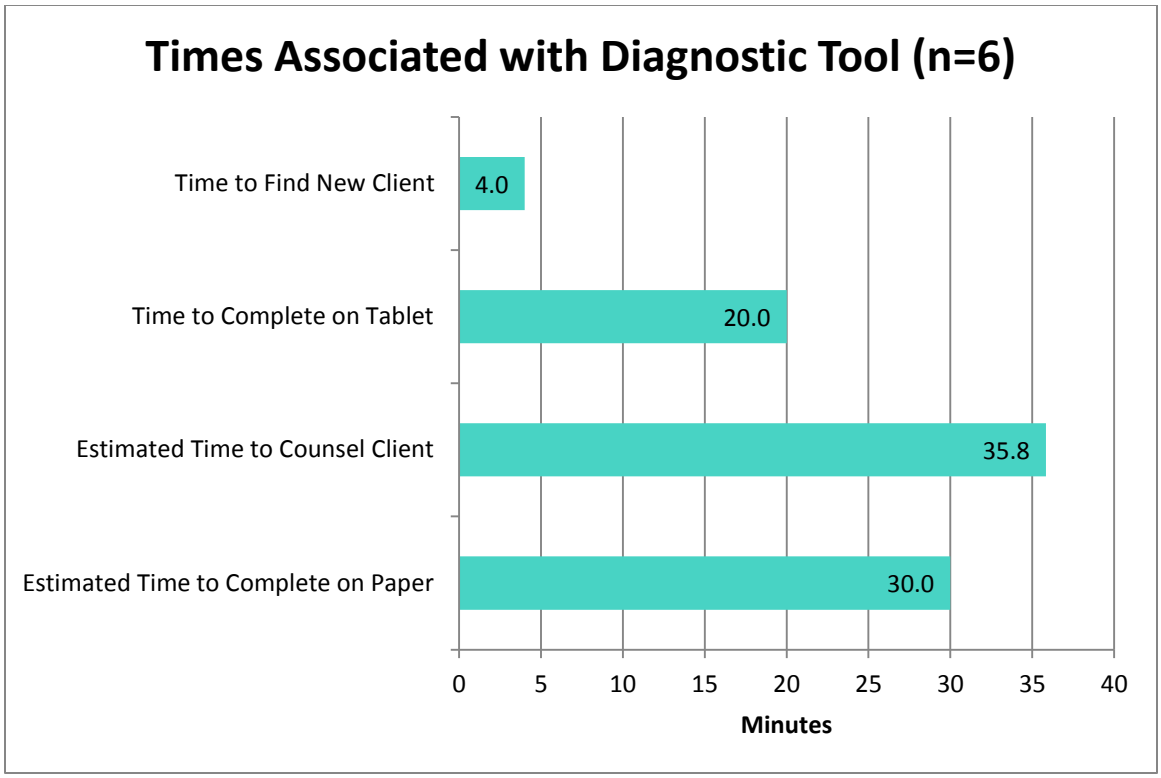

Figure 1. *Data collectors were asked to estimate times associated with the diagnostic tool. This includes recruiting new clients, completing the survey on a tablet, and projected times they would need if counseling a client for a referral, or completing the survey on paper*.

Data Collector A[3] expressed the need to spend at least an hour counseling clients, because:

> *I have to convince them I have their best interest at heart, and also I need to ensure they are really eligible for a service. If I were to make a referral right at that spot, it could be hard because we weren't doing household surveys. I would like to do a household survey because then you can verify that what they are saying is true. I would say that would be a problem also.*

Data Collector E expressed only 30 minutes of counseling would be needed, but that the 30 minutes had to focus on a repetitive process where client understanding is a primary outcome:

> *When you are referring a client that client has to know exactly what they are going to get from the service point they are being sent to. So we need to assess and reassess the people to make sure we get the most suitable service*.

Data Collector B noted that the tool was long and might pose challenges for health facility clients who without a lot of time to give:

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[3] The six data collectors are quoted frequently in this report and have been de-identified and are referred to as "Data Collector A-F" in the text.

It was long. Maybe a person who was willing to give you them there time it would be ok. For someone who is in a hurry, it wouldn't work. We were approaching people who have finished everything at the hospital and are ready to go--these are the people I was approaching. It would be difficult to keep someone for 20-30 minutes if they had something else to do.

UNNECESSARY OR DIFFICULT QUESTIONS

The second research question sought to identify any questions which could or should be eliminated—either because they were superfluous or because clients did not or were hesitant to answer them—to streamline the tool). Data collectors were asked to rate the diagnostic tool in a number of categories during their debrief and rank them 1 (difficult) to 5 (easy), as presented in **Figure 2** below. Only three of the items relate to the necessity or difficulty of the questions—explaining the purpose of the survey (4.0), the ease of understanding of the terminology (3.7), and the overall efficiency of the survey (3.4; measured by ability to ask a question and have a respondent readily answer without undue clarification)—and while these are among the lowest rated, they are still overall positive scores. The highest rated items all related to the design of the survey and the use of tablets to record data, and were very highly (all >4.0) ranked.

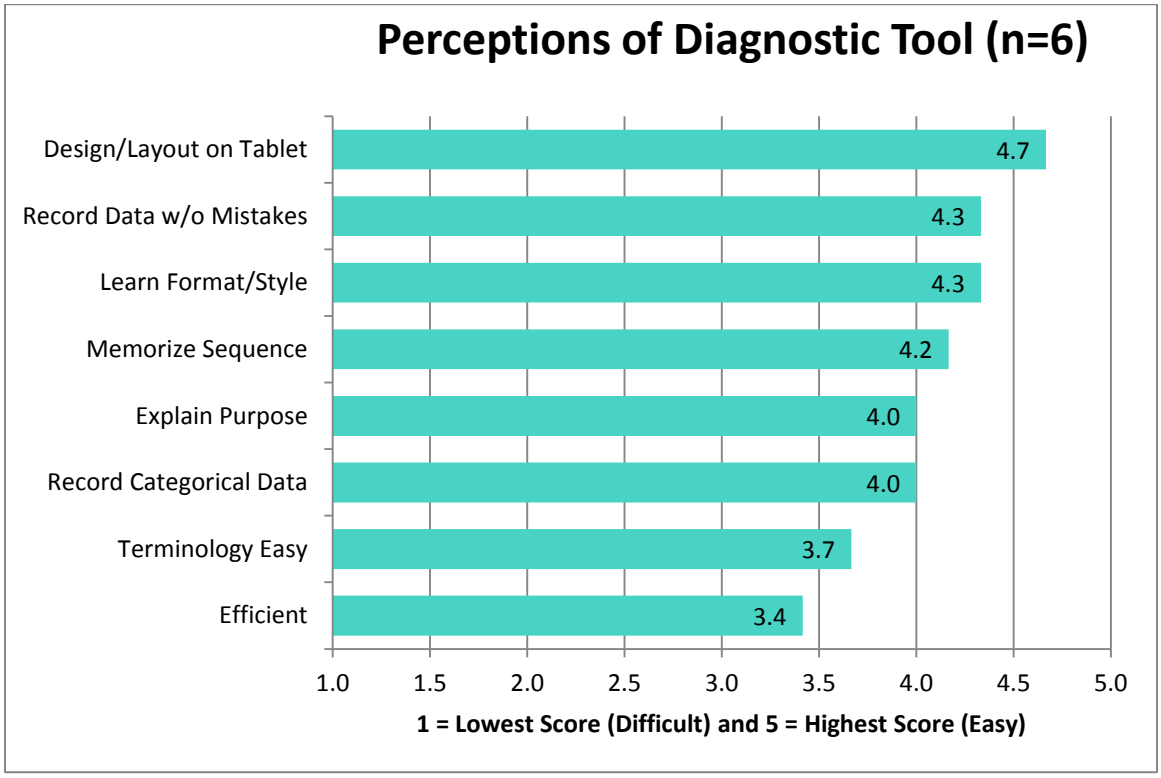

***Figure 2**. Data collectors underwent a thorough debrief interview after the completion of field data collection. A portion of the interview asked them to rate the ease of use of the diagnostic tool in eight different areas. While all ranked well, data collectors gave the highest scores to the design of the survey and use of tablets, while the lowest scores went to efficiency and the terminology used. Qualitative data revealed that the data collectors primarily struggled with questions about perceived barriers to referrals, items which will not be included on a final diagnostic tool.*

Qualitative data from the data collector debrief provides some necessary detail about why the terminology and efficiency received lower scores. All of the data collectors expressed a difficulty with the final questions, particularly the question "*Are you interested in referrals to different services in Balaka District?"*

as the clients were unfamiliar with both the concept of referrals outside the health facility, as explained by Data Collector C:

> *The way it is presented in Chichewa makes the respondents think the services are only for health services—they didn't think about a broad non-health context. It was hard because it was not about a specific service.*

After asking about interest in referrals to different services, the interviewees were presented with a list of concerns they might have about the services. However, two of the six data collectors struggled with this, as Data Collector A explains:

> *…The last question about referrals was hard to explain…If they say yes, then they were interested, so they were read a list of concerns. But some people didn't have any concerns so it seemed awkward to read them the list of concerns.*

The only other item to elicit concern from the data collectors (with two of six reporting this) was the HDDS, given that many respondents felt embarrassed at having consumed a small number of food groups in the past 24 hours. Data Collector E noted:

> *The other question that was hard was the HDDS, because it asked about food eaten yesterday. Many people scored very low because they ate nsima and beans only, so when you asked them if they are meat or something they felt bad.*

ABILITY TO CAPTURE HOUSEHOLD POVERTY AND FOOD SECURITY DATA

The third research question examined the ability to capture two kinds of household level data—poverty and food security—using different sets of tools, and then to see if those tools classified households in the same way. LIFT II's purpose in collection these data was to collect a cross-sectional snapshot of poverty/food security in the area, to ensure these tools classified clients in the same way, and to collect qualitative data from the data collectors about their ease of use.

LIFT II collected poverty data at the three health facilities using the PPI and LIFT score, as summarized in **Table 4** below. There was no significant difference in mean PPI or LIFT score between to the sites based on t-test. No significant differences were found when data were disaggregated by sex.

Table 4. Comparison of Poverty Assessment Tool (PPI and LIFT Score) Scores

	PPI			LIFT Score		
	mean	std. dev.	min.-max.	mean	std. dev.	min.-max.
Balaka District Hospital (n=122)	47.25	12.81	16 – 77	5.18	1.45	2.07 – 8.70
DREAM (Andiamo Health Center) (n=84)	45.27	12.48	18 – 77	5.13	1.50	2.60 – 8.90
Kalembo Health Center (n=106)	43.75	14.76	14 – 77	4.76	1.44	1.91 – 8.85

Data collectors consistently expressed a dislike for the categorical answer choices on the PPI, given that some answer choices do not reflect the on-the-ground reality. For example, PPI question 4 asks "*The roof of the main dwelling is predominantly made of what material?"* and allows for only two answer choices: "*grass"* or "*anything besides grass*". Data Collector B explained:

It was rigid…there was no room for us to change the format because that's how it was prepared and designed.

While data collectors understood that the tool could not be altered, the implication is that more time devoted to the rationale behind PPI answer choices would be beneficial during training.

Food security data were collected at the same health facilities using the following cutoff values to determine food insecurity: HHS ≤ 2, HDDS < 6, and MAHFP > 5. **Table 5** summarizes these data below. There was no significant difference in expected frequency between the sites, or by sex, based on chi-square tests.

Table 5. Comparison of Food Security Assessment Tool (HHS, HDDS, and MAHFP) Scores

	HHS		HDDS		MAHFP	
	FS n (%)	FI n (%)	FS n (%)	FI n (%)	FS n (%)	FI n (%)
Balaka District Hospital (n=122)	76 (62.3%)	46 (37.7%)	67 (54.9%)	55 (45.1%)	98 (86.7%)	15 (13.3%)
DREAM (Andiamo Health Center) (n=84)	53 (63.1%)	31 (36.9%)	51 (60.7%)	33 (39.3%)	65 (83.3%)	13 (16.7%)
Kalembo Health Center (n=106)	68 (64.2%)	38 (35.8%)	70 (66.0%)	36 (34.0%)	77 (77.0%)	23 (23.0%)

Table 6 presents agreement data for the three food security tools where FI indicates classification as 'food insecure' and FS indicates classification as 'food secure'. Ideally, these tools would be calibrated so that they classify the same way (i.e., both indicate a client is food secure or food insecure) and minimize false positives and false negatives. However a recent review of data utilizing seven food security measures in Ethiopia noted several differences in how they classified food insecurity[4] . While a sensitivity/specificity analysis was beyond the scope of this research, it is worthwhile to review some key agreement data:

1) HHS and HDDS agree well (60% of the time the two tools will classify a client the same way), however the high proportion (30.5%) of people that are classified as food secure based on HHS but food insecure based on HDDS is cause for concern;
2) Out of all of these, we see the best agreement between HHS and MAHFP, but still a relatively high proportion (24.4%) are classified as food insecure based on the HHS but food secure based on MAHFP; and
3) The agreement between HDDS and MAHFP is poor—the tests agree 54.7% of the time and disagree 45.3% of the time, which is close to what we would expect from chance alone.

Careful consideration (and likely recalibration) of cutoff values used to determine food insecurity is recommended if using two or more of these tools simultaneously, provided there is agreement on the degree to which these food security measures are reporting the same household food security situation.

Table 6. Agreement Between the Food Security Assessment Tools (HHS, HDDS, and MAHFP)

	HDDS		
HHS	FI	FS	Total
FI	93 (29.8%)	22 (7.1%)	115 (36.9%)
FS	95 (30.5%)	102 (32.7%)	197 (63.1%)

[4] How do different measures of Household Food Insecurity Compare?

Total	188 (60.3%)	124 (39.7%)	n=312
	MAHFP		
HHS	FI	FS	Total
FI	34 (11.9%)	71 (24.4%)	105 (36.1%)
FS	17 (5.8%)	169 (58.1%)	186 (63.9%)
Total	51 (17.5%)	240 (82.5%)	n=291
	MAHFP		
HDDS	FI	FS	Total
FI	45 (15.5%)	126 (43.3%)	171 (58.8%)
FS	6 (2.1%)	114 (39.2%)	120 (41.2%)
Total	51 (17.5%)	240 (82.5%)	n=291

TOOLS' VARIATION OVER TIME

The fourth research question sought to explore how the tools might vary when administered over different points in time, or how the client's perceptions might change over time. Because this was a cross-sectional study, the data collected may be used as baseline as LIFT II develops a referral system and moreover as a benchmark of levels of household poverty and food security during an average August in Balaka District. Nonetheless, some important considerations came to light from field testing the tools. Data Collector D explained that the food security tools may not always be accurate for those who have been at a health facility for several days:

> *Some people have been in the hospital for several days, so they've been eating hospital food so it's not clear how they've been eating--especially because we assume the hospital has a more balanced diet that the household. This was less of an issue at DREAM or Kalembo.*

Data Collector D also explained that the tools fail to grasp some more complex family situations, such as this:

> *I had a…case where a respondent said on HHS they hadn't eaten in the past week because their family was away for a month but had only given them food money for three weeks, so they've been hungry.*

Another important consideration is that while household poverty and food security levels in Balaka may remain static, there is a constantly fluctuating market that provides new goods and assets that households acquire. This is an important consideration because it can make particular questions on tools like the PPI sound dated, as Data Collector D notes:

> *The question about CD player or radio [was odd]…with technology people are using USB drives with mp3s, so in that case we couldn't record [the use of those technologies]. Also, the paraffin lamp is no longer in style…there are cheaper lights made in China that run on two batteries for a month.*

A further issue with relates to the specificity of a question in relation to time. In this example, the PPI question 2 asks "*How many household members worked in their main activity in the past seven days as a farmer (mlimi)?*" Data collectors felt that interviewees answered in general, not limiting their response to the past seven days as instructed in the question. Data Collector A explained:

The issue [is] people who are reporting on the PPI the hours they work on a farm but haven't worked on the farm in the past week.

CLIENT UNDERSTANDING OF REFERRAL SERVICES

The fifth research question explored health facility clients' understanding of services in the community, and the idea of referrals to those services. This proved difficult to do in most cases, as health facility clients were not sure what the data collectors meant, even in a general way. Data Collector F noted:

> *I had several stages of explaining that I had to do. Sometimes if they didn't get it, I would go into the questions and give examples*.

Similarly, Data Collector C found a limited knowledge of service providers outside of the health system, and even then the interviewees were naming service provider organizations rather than specific programs they could access:

> *I asked my interviewees what organizations they know in Balaka and most didn't know any…a few were able to mention PCI and World Vision, but those were very few.*

Interviewee interest in referrals was high, and data collectors routinely received requests for referrals (despite the informed consent specifically noting no referrals would be made). Data Collector B explained:

> *I feel that it will work when the clients are fully informed and they know what the program is all about. I think it's a welcome idea for them and some people just don't know where to go when they have problems.*

Data Collector B then suggested learning aids or educational tools to help the clients visualize and understand the services LIFT II and partners with to connect through a referral system:

> *Maybe for the clients it would be helpful to give them pictures of the organizations, or pictures of what the service is. Or it could be pictures of people using the services. It could help the clients understand and give them the motivation to use a service if they understand what the organizations do*.

Data Collector D echoed the need for materials to be used during referral counseling to the need for materials that will sensitize the whole community:

> *People in the community (service provider clients) need to be sensitized. When they think of referrals, it should not only be to the hospital. When we talk about services, people really focused on food security programs…but there are probably some other equally important services that could help the community. You could do some kind of plays in the community, and also, just for their knowledge, people should know the NGOs in their community and what they do.*

CLIENT PERCEIVED BARRIERS TO REFERRALS

The sixth research question sought to explore barriers that exist which prevent clients from acting on a referral that LIFT II might provide. The question posed to health facility clients which asked if they were interested in receiving referrals to services (beyond health services), where 96.8% (n=300) indicated interest in referrals to additional social services in the district. Interviewees were then presented with 12 possible barriers (and the option to add other barriers) that might prevent them from using a referral to a

service and asked if they felt a particular barrier would prevent them from using a service, summarized in **Figure 3**.

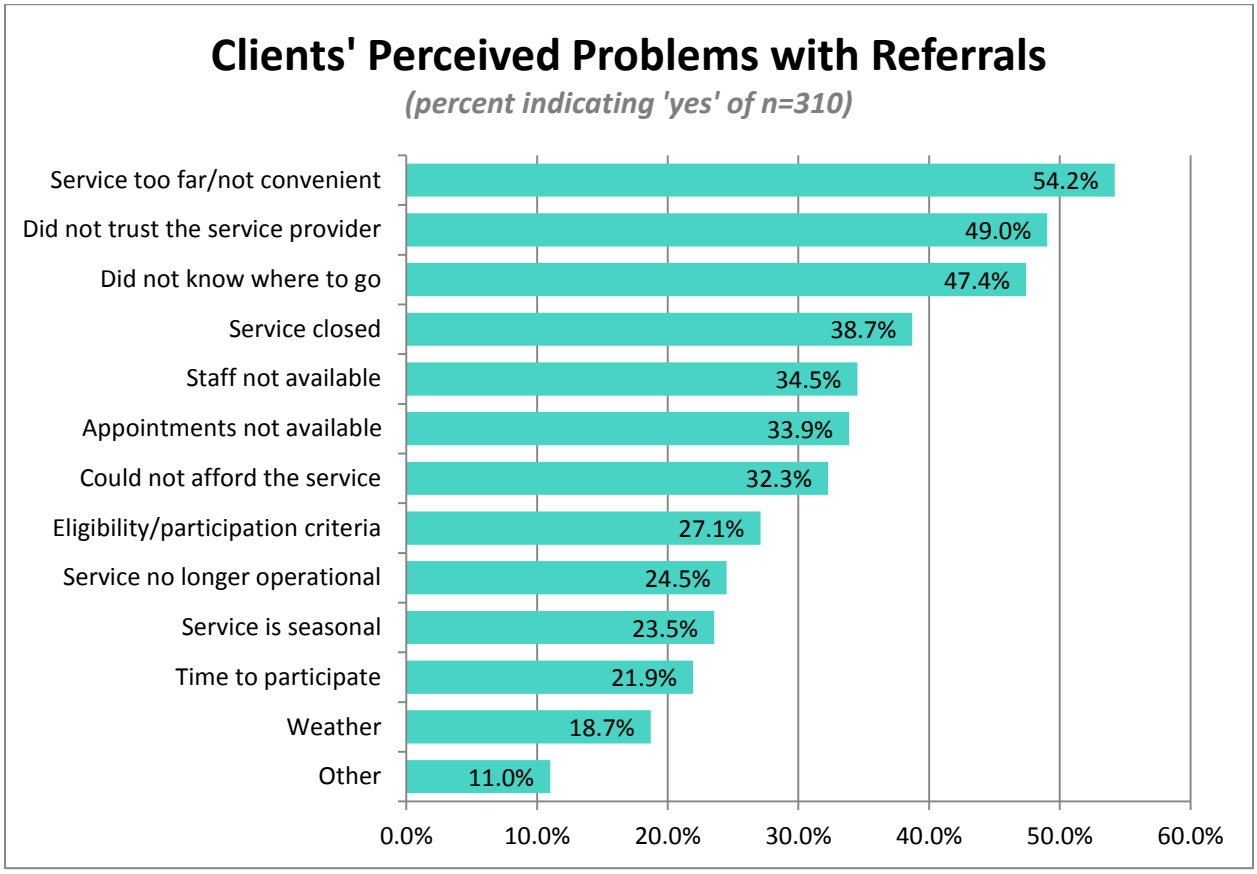

***Figure 3**. Almost all interviewees (96.8%, or n=300) expressed interest in referrals; however, these clients listed numerous concerns that LIFT II and local service providers need to address in the design and rollout of any kind of referral system.*

Eleven percent of clients (n=34) indicated there were 'other' barriers to accessing a referral, which tended to aggregate into three main concerns: Nine clients expressed transportation problems getting to/from a service, eight were concerned with corruption and/or nepotism (7 of the 8 were concerned with corruption of local authority figures, and 1 of the 8 was concerned with corruption within the NGO service provider), and finally six were concerned that programming offered was organized enough to deliver consistent services. The final 11 responses were either unintelligible or included single response items such as "[service providers] don't consider my family because they consider us wealthy people," and "some people sometimes discriminate against people living with HIV like me when giving out aid."

DATA COLLECTORS' PERCEPTIONS OF TOOL'S UTILITY FOR REFERRALS

The final research question queried the data collectors to understand their perception of the diagnostic tool, particularly if knowing household poverty status would help streamline the referral process. In addition, data collectors were asked if they felt we were collecting the right information to move forward the referral process—a difficult task given that the referrals in question were only hypothetical.

All of the data collectors agreed the tools were moderately to very useful for referral purposes. Data collectors did profess some hesitation about making hypothetical referrals because they did not know the clients' true home situations. Data Collector A said that:

> *To some extent, we are just meeting the person at a hospital and we don't know what their environment is like at home. We can't really trust the information they are giving us.*

The data collectors especially liked the food security tools and felt they were useful in the context of connecting a client to a service, ***particularly because they believed that the interviewees were providing them with true answers***. Data Collector B explained it this way:

> *Yes, it would help me to refer the client to the correct service that they need. For example, most of the clients that I met had a problem with food…The scores give you a picture of how food secure the family is. And I believe the scores were correct information, because most of the people that I met really showed that they had a problem of food security in their homes. People were usually honest enough to tell me about food availability in their household, so I feel like the information I got was accurate and that they gave me the true situation in their homes.*

Data collectors were hired for this research only, and did not have a deep knowledge of the array of services available in Balaka. They were provided with a gap analysis (which highlights a list of service providers and the services they provide) of Balaka District to help increase their knowledge of services and their availability in the district, but they were keenly aware of the need for more knowledge to make referrals. Data Collector E said:

> *For me to refer people, I have to know the list of services that I can provide a referral to. Just the PPI and HHS will provide information about the needs of the participant, but I need more information. It is worth it to do these [referral tools] in the context that they will be supplemented.*

In a comment above, Data Collector A had noted that people didn't always answer how many days out of the past seven days household members had worked on a farm, and Data Collector B had noted some of the PPI categorical answer choices were too "rigid." This concern over the validity of survey question answers was raised again by Data Collector D in a slightly different way—notably that individual questions on the PPI and LIFT scores lacked sufficient answer choices to reflect the household situation for many families. Data Collector D said:

> *There are some loopholes. I think they are full of assumptions. I don't think you can judge based on the number of children below 14 whether or not a household is poor, or the number of sickles.*

These comments from Data Collectors A, B, and D underscore the need for additional training on tools such as the PPI and the context in which they should be interpreted.

DISCUSSION

Overall, the diagnostic tools tested will be able to help LIFT II or partners making efficient, effective, and appropriate referrals, provided some minor editing and improved guidance are provided to those using the tools in the field. The test of the diagnostic tool represents LIFT II's first foray into collecting data specifically meant to facilitate referrals from clinics to the community and moreover to track household poverty and food security in aggregate, over time, in a program area. Though this research study was cross-sectional in nature, data used can provide a baseline for future work.

The tool proved to be easy to administer, on average taking approximately 20 minutes and allowing LIFT II to collect key household poverty and food security data. Ultimately LIFT II will recommend only one poverty tool and one food security tool to ease burdens (both time and data management) associated with the tool. The PPI is an easy choice for poverty tool given that it is a standard tool, developed with oversight from the Grameen Foundation, and available in many countries. It was also favored by the data collectors in this study. The LIFT score is an alternate which can be used in countries that do not have a PPI; however, the tool has an associated cost as data collected with the tool cannot be matched to large scale, nationally representative data sets (such as those used to build the PPI).

For the food security component, the HHS outperforms the HDDS both in terms of time (it has fewer questions) and comprehensibility (the questions were more easily understood—unlike HDDS which data collectors reported sometimes required a lengthy explanation). The HHS is also more directly related to LIFT II's goals of monitoring household food security than the MAHFP, which relies on recollection over a long period of time and may be more likely to recall bias.

All of the five tools that comprised the diagnostic tool were highly rated by the data collectors for ease of use and comprehensibility. While the data collectors uniformly reported difficulty explaining the final set of questions related to interest in referrals and obstacles that might prevent clients from using a referral, these questions were included for exploratory value and will not be included in a final referral tool.

One challenge with this cross-sectional study is addressing how the data collected by these tools will change over time, or how client perceptions may change. The testing of the tools provides a useful snapshot of household-level data in Balaka at one point in time, and also highlights several questions (related to technology a household may or may not own) that should be revisited in the future.

A second challenge for this study was understanding client knowledge of services in their community. Although expressly told that the interview was for learning purposes, many clients wanted to receive a referral at the end of their interview. More problematic was that few could articulate services in their community, and deferred to naming organizations rather than particular programs—perhaps a structural reflection of the manner in which programs are implemented in Balaka, where each organization is assigned an impact area leading local people to associate services with organizations rather than programs. There is also a need to sensitize people on what a clinic-to-community referral is, both during the diagnostic phase when staff assess household poverty/food security, but also at community level so that people are aware of this new kind of linkage.

Barriers to accessing services through referrals do exist, and it important to consider them when working with local stakeholders who will manage a referral network. The primary concern (54.2%) was that service was too far or not convenient so referral providers must keep this in mind. This is further supported by the number of people who said transportation would be an issue. The secondary concern clients expressed was lack of trust of service providers (49.0%) which underscores the need for program advocacy and transparency to build rapport with a large client base. Several other frequent problems,

including not knowing where to go and appointments and staff not being available can easily be remedied through a comprehensive and well-maintained service directory that clarifies these concerns. It is promising that relatively few people (less than 25%) were concerned about weather, time to participate, seasonality of service, or permanent service closures.

Data collectors were pleased with the tools, with all six reporting the tools were moderately to very useful for making referrals. While data collectors preferred the food security tools (both because they are a shorter series of questions and focused on only one topic while the poverty tools included a variety of questions about education, household assets, farming, etc.) they agreed that the poverty data would be useful for making referrals. A key finding to emerge from discussions with the data collectors was the need to have a careful explanation of what a referral constitutes, clear examples or services, and learning aids to help clients understand the services being offered.

RECOMMENDATIONS

Overall, four recommendations emerged for future development of a diagnostic tool in Malawi, or for design and testing of a diagnostic tool in another country:

1. **Data collectors were uniformly happy with the use of tablets for collecting data**. Despite the learning curve involved with tablet use and occasional frustration (i.e., the age field only allowed integer responses in years, so an infant 6 months old had to be entered as 0 or 1, rather than 0.5), overall satisfaction was high. Data collectors appreciated the ease of use, the knowledge that each survey had complete data, the helpful reminders on the tablet screen and the fact that they did not have to prepare or carry paper forms.
2. **Data collectors need a clearer understanding of the development of the PPI score**. It is a complex tool, because unlike many survey tools they have worked with, it was developed from national level data and cannot be modified. The data collectors routinely struggled with two issues for the PPI and LIFT scores: 1) that the categorical answer choices were too limited, and 2) that the final score is meant to be interpreted rather than individual questions.
3. **There are some practical tips that can improve the flow of the questions and ease the burden on the health facility client**: 1) the PPI questions can, to the extent possible, be grouped into questions about education, land ownership, etc., in a way that they naturally lead to the food security questions, and 2) the HDDS questions can be ordered in the sequence that people eat them in (i.e., animal proteins can come second in the list rather than fifth).
4. **More information about referrals is helpful to elicit clear responses**. For this test, data collectors were simply asking about hypothetical referrals—a concept which was not easily grasped by many clients, who expected immediate referrals or wanted to know the names of specific service providers. Learning aids, diagrams, or other realia that could be used during either a test of a diagnostic tool or during an actual referral process would be helpful.

ASSIGNING CUTOFF VALUES FOR LIFT FRAMEWORK

For the purposes of this first analysis, the following cutoff values were used to determine food insecurity:

- HHS ≤ 2
- HDDS < 6
- MAHFP > 5

This analysis did not assign pre-determined cutoff values to the poverty assessment tools that would distinguish the Provide, Protect, and Promote household poverty/vulnerability categories. Rather, PPI cutoff values were found by applying known frequency distribution data to the PPI data collected in Balaka. We estimated that 10% of the sample should fall into the Provide and Promote categories, with the remaining 80% of the sample should be classified as Protect. **Table 7** summarizes these PPI cutoff values to provide that approximate distribution and also provides data included with the official PPI Malawi documentation (both the '*likelihood that a household with a certain score is below the national poverty line'* and *'likelihood a household with a certain score is living on $2.50/day based on 2005 data'*).

Table 7. Cutoff Values for the PPI

			Data provided with PPI Scorecard	
	Cutoff Value on PPI	Distribution from Study Data	Likelihood Below National Poverty Line	2005 PPP $2.50/day (%)
Provide	≤ 29	29 (9.3%)	70%	99.4%
Protect	30 – 64	246 (78.9%)	59.3% - 3.9%	99.3% - 68.6%
Promote	≥ 65	37 (11.9%)	0.9%	50.0%
TOTAL		312 (100.0%)		

APPENDIX ONE – DATA COLLECTION TOOLS

The following are the tools used to collect data for this study. Tool A is the tool data collected used to collect data (in Chichewa) from health facility clients, and Tool B is the tool LIFT II staff used to collect data (in English) from the data collectors after the completion of their fieldwork. The Chichewa version of Tool A is available upon request.

TOOL A – CLIENT INTERVIEWS

PROGRESS OUT OF POVERTY INDEX (PPI) QUESTIONS

Question	Answer	Score
1. How many household members are 14-years-old or younger?	Five or more Four Three Two One None	0 4 6 12 19 30
2. How many household members worked in their main activity in the past seven days as a farmer (*mlimi*)?	Four or more Three Two One None	0 2 7 8 10
3. Can the female head/spouse read a one-page letter (in any language)?	No Yes No female head/spouse	0 5 9
4. The roof of the main dwelling is predominantly made of what material?	Grass Anything besides grass	0 4
5. What is your main source of cooking fuel?	Collected firewood from forest reserve, crop residue, sawdust, animal waste, or other Collected firewood from unfarmed areas of community Collected firewood from own woodlot, community woodlot, or other places Purchased firewood Paraffin, charcoal, gas, or electricity	0 1 5 7 9
6. What is your main source of lighting fuel?	Collected firewood, grass, or other Paraffin Purchased firewood, electricity, gas, battery/dry cell (torch), or candles	0 4 13
7. Does the household own any lanterns (paraffin)?	No Yes	0 5
8. Does the household own any	No	0

bicycles, motorcycles/scooters, cars, mini-buses, or lorries?	Yes	5
9. Does the household own any irons (for pressing clothes)?	No Yes	0 8
10. How many sickles does the household own?	None One Two or more	0 3 7
	TOTAL	

LIFT SCORE QUESTIONS

A	B	C	D	E	F	CODES
1.						A. Household Member B. Sex 0. Female 1. Male C. What is [NAME]'s relation to the head of household? 1. Head 2. Spouse 3. Child 4. Parent 5. Grandchild 6. Grandparent 7. Other D. Age 1. In years only (not months) E. What is the highest educational qualification [NAME] has acquired? 0. Under age 5 1. Never attended / None 2. PSLC 3. JCE 4. MSCE 5. Non-univ. diploma 6. Univ. degree 7. Post-grad degree 8. Adult Literacy Program F. For school age children, did [NAME] attend school at any point during the 2012 school year? 0. No 1. Yes
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						

15.						

Complete AFTER Interview

12. Number of people living in household (record number of members from column A in the roster)	
13. Is the head of household female?	

Interviewee's home

Question	Answer	
14. How many separate rooms do the members of your household occupy, not including bathrooms, toilets, storerooms, and garages?	Write in number of rooms →	
15. The floor of the main dwelling is predominantly made of what material?	Sand Smoothed mud Smooth cement Wood Tile Other	1 2 3 4 5 6
16. What kind of toilet facility does your household use?	Flush toilet Ventilated, improved latrine Traditional latrine with roof Traditional latrine without roof None Other	1 2 3 4 5 6
17. Does your household own a tape player, CD player, radio or HiFi?	No Yes	0 1
18. Has any member of your household raised or owned livestock or poultry during the past 12 months?	No (write 0 for Q19 and Q20; END) Yes	0 1

HOUSEHOLD HUNGER SCALE QUESTIONS

No.	Question	Response
19a.	Q1 In the past [4 weeks/30 days], was there ever no food to eat of any kind in your house because of lack of resources to get food?	No……0 (Skip to Q32a) Yes……..1
19b.	How often did this happen in the past [4 weeks/30 days]?	Rarely (1-2 times)……..1 Sometimes (3-10 times)……..…….2 Often (more than 10 times)……..…..3
20a.	In the past [4 weeks/30 days], did you or any household member go to sleep at night hungry because there was not enough food?	No……0 (Skip to Q33a) Yes……..1

20b.	How often did this happen in the past [4 weeks/30 days]?	Rarely (1-2 times)……..1 Sometimes (3-10 times)……..…….2 Often (more than 10 times)……..3
21a.	In the past [4 weeks/30 days], did you or any household member go a whole day and night without eating at all because there was not enough food?	No……0 (Skip to Q34) Yes……..1
21b.	How often did this happen in the past [4 weeks/30 days]?	Rarely (1-2 times)……..1 Sometimes (3-10 times)……..…….2 Often (more than 10 times)……..3
22.	Have you received any kind of food aid in the past [4 weeks/30 days]?	No……0 (Skip to next section) Yes……..1

HOUSEHOLD DIETARY DIVERSITY SCORE (HDDS) QUESTIONS

No.	Question	Response
23.	Any [INSERT ANY LOCAL FOODS, E.G. UGALI, NSHIMA], bread, rice noodles, biscuits, or any other foods made from millet, sorghum, maize, rice, wheat, or [INSERT ANY OTHER LOCALLY AVAILABLE GRAIN]?	No……0 Yes……..1
24.	Any potatoes, yams, manioc, cassava or any other foods made from roots or tubers?	No……0 Yes……..1
25.	Any vegetables?	No……0 Yes……..1
26.	Any fruits?	No……0 Yes……..1
27.	Any beef, pork, lamb, goat, rabbit, wild game, chicken, duck, or other birds, liver, kidney, heart or other organ meats?	No……0 Yes……..1
28.	Any eggs?	No……0 Yes……..1
29.	Any fresh or dried fish or shellfish?	No……0 Yes……..1
30.	Any foods made from beans, peas, lentils, or nuts?	No……0 Yes……..1
31.	Any cheese, yogurt, milk or other milk products?	No……0 Yes……..1
32.	Any foods made with oil, fat or butter?	No……0 Yes……..1
33.	Any sugar or honey?	No……0 Yes……..1
34.	Any other foods, such as condiments, coffee or tea?	No……0 Yes……..1

MONTHS OF ADEQUATE HOUSEHOLD FOOD PROVISIONING (MAHFP) QUESTIONS

READ: Now I would like to ask you about your household's food supply during different months of the year. When responding to these questions, please think back over the last 12 months, from now to the same time last year.

No.	Question	Response
35.	Were there months, in the past 12 months, in which you did not have enough food to meet your family's needs?	No……0 (Skip to Final Questions) Yes……..1
36 to 48.	If yes, which were the months in the past 12 months during which you did not have enough food to meet your family's needs? NOTE: THIS INCLUDES ANY KIND OF FOOD FROM ANY SOURCE, SUCH AS OWN PRODUCTION, PURCHASE OR EXCHANGE, FOOD AID, OR BORROWING. DO NOT READ THE LIST OF MONTHS ALOUD. Circle 1 IF THE RESPONDENT IDENTIFIES THAT MONTH AS ONE IN WHICH THE HOUSHOLD DID NOT HAVE ENOUGH FOOD TO MEET THEIR NEEDS. IF THE RESPONDENT DOES NOT IDENTIFY THAT MONTH, PLACE A 0 IN THE BOX. USE A SEASONAL CALENDAR IF NEEDED TO HELP RESPONDENT REMEMBER THE DIFFERENT MONTHS. PROBE TO MAKE SURE THE RESPONDENT HAS THOUGHT ABOUT THE ENTIRE PAST 12 MONTHS.	January 0 or 1 February 0 or 1 March 0 or 1 April 0 or 1 May 0 or 1 June 0 or 1 July 0 or 1 August 0 or 1 September 0 or 1 October 0 or 1 November 0 or 1 December 0 or 1 TOTAL _____

FINAL QUESTIONS

No.	Question	Response
50.	**Are you interested in referrals to different services in Balaka District?** What I mean by referral is that I could tell you about a service for food security, or health, or another area. If you are interested, I could connect you to the service. Some services you may know, and others you may not know.	No……0 Yes……..1
51.	What concerns do you have about a referral to a new service? **READ LIST**, but allow them to include other options.	Appointments not available 1 Staff not available 2 Service closed 3 Service too far/not convenient 4 Could not afford the service 5 Did not trust the service provider 6 Did not know where to go 7 Service is seasonal 8 Service no longer operational 9 Weather 10 Eligibility/participation criteria 11 Time to participate 12 OTHER Write in reason(s):
52.	Is your household already receiving government grants or other community services related to economic strengthening, livelihoods, food security or health?	No……0 (Skip to 60) Yes……..1

53.	If yes, what are these services?	Please list—free response
54.	Do you have access to a mobile phone in your household?	No……0 Yes……..1

TOOL B – DATA COLLECTOR DEBRIEF

SECTION ONE – TIMING

How many minutes did it take for you to:

1. Use the Diagnostic Tool with each client? [Answer in number of minutes—though this will be collected automatically using tablets]
2. Record client results? [Answer in number of minutes]
3. Prepare for and recruit the next client? **[Answer in number of minutes]**
4. Did you have any challenges preparing for or recruiting clients to take the survey? **[Answer is free response]**
5. Assuming you were going to refer the client to a service in Balaka District, how long do you think you would need to discuss the options available with the client to ensure you were referring them to a service they need and are eligible for? Later we will ask you more about your opinion on using this tool for referrals. (NOTE: This question is hypothetical. No referrals are to be made at this time.) **[Answer in number of minutes]**
6. Do you have any concerns about the length of the Diagnostic Tool (keeping in mind the finished tool will be a small portion of the complete tool you used)? **[Answer is free response]**

SECTION TWO – EASE OF USE

7. Please rank the Diagnostic Tool according to the following eight attributes (where 1 = very easy and 5 = not easy at all): **[Answer is 1 to 5, or 99 for refused]**
    a. Easy to learn the format and style of questions
    b. Efficient (in that the interviewees understood questions)
    c. Easy to memorize the sequence of questions
    d. Easy to record information correctly and not make errors
    e. Terminology used was easy to understand
    f. Design and layout were easy to use
    g. Easy to record data that isn't exactly a match for the provided answer choices
    h. Easy to explain the purpose of the tool to someone (not a specialist; the general public)
8. For each of the items A-H above ranked 3, 4, or 5 please explain why you made that selection and what can be done to improve your score. **[Answer is free response for A-H]**
9. Did any of the questions make the interviewee uncomfortable? **[Answer is free response]**
10. Were there any questions that were difficult because they were hard to explain, or that seemed out of context in Balaka? Were any questions difficult for another reason? **[Answer is free response]**
11. What was the best thing about the Diagnostic Tool? **[Answer is free response]**
12. What was the worst thing about the Diagnostic Tool? **[Answer is free response]**

SECTION THREE – VALUE OF THE TOOL FOR REFERRALS

13. Earlier we asked you to assume you were going to refer the client to a service in Balaka District, and how you long you think you would need to discuss the options available to ensure you were referring them to an appropriate service. Now we would like to know your opinion on how useful the interview process would be in making a referral—that is, do you think collecting this information helps make a referral easier?

    NOTE: To help the data collectors assess the value of the diagnostic for a referral they will be provided with the following information:
    a. list of services operating in Balaka
    b. hard copies of the data collection tools so they may refer to specific questions
    c. if possible, data from particular interviews they found insightful or challenging
14. Can you think of other materials (information, pamphlets, training, etc.) that would make providing referrals easier?

APPENDIX TWO – STUDY APPROVAL

This research was approved by two review boards: In Malawi by the National Committee for Research in Social Sciences and Humanities (NCRSSH) of the National Commission of Science and Technology (NCST) in Malawi, and the Office of International Research Ethics (OIRE) of FHI 360 in the United States. The NCRSSH approved the research with no objections on July 25, 2013, and the OIRE approved the research as *human subjects research—exempt* on July 5, 2013. In addition, the research team received approval from the Balaka District Council and Balaka District Hospital before data collection began within the district. Copies of all approval letters are available upon request.

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