TECHNICAL REPORT

Strengthening Systems for Improved Nutrition Care, Support, and Treatment in Malawi

SEPTEMBER 2015

This report was prepared by University Research Co., LLC (URC) for review by the United States Agency for International Development (USAID) and authored by Linley Hauya, Phindile Chitsulo, Tiwonge Moyo, Amy Stern, and Nigel Livesley of URC. Support for improving nutrition care, support, and treatment in Malawi was provided by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, which is made possible by the generous support of the American people through USAID, with funding from the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR).
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DISCLAIMER

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For more information on the work of the USAID ASSIST Project, please visit www.usaidassist.org or write assist-info@urc-chs.com.

Recommended citation

# Strengthening systems for improved nutrition care in Malawi

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### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIDS</td>
<td>Acquired immune deficiency syndrome</td>
</tr>
<tr>
<td>ART</td>
<td>Anti-retroviral therapy</td>
</tr>
<tr>
<td>ASSIST</td>
<td>USAID Applying Science to Strengthen and Improve Systems</td>
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<tr>
<td>CHAI</td>
<td>Clinton Health Access Initiative</td>
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<tr>
<td>DNHA</td>
<td>Department of Nutrition, HIV and AIDS</td>
</tr>
<tr>
<td>DREAM</td>
<td>Drug Resource Enhancement against AIDS and Malnutrition</td>
</tr>
<tr>
<td>EMR</td>
<td>Electronic medical record</td>
</tr>
<tr>
<td>FANTA</td>
<td>Food and Nutrition Technical Assistance</td>
</tr>
<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
</tr>
<tr>
<td>HSA</td>
<td>Health Surveillance Assistant</td>
</tr>
<tr>
<td>LIFT</td>
<td>Livelihoods and Food Security Technical Assistance</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MUAC</td>
<td>Mid-upper arm circumference</td>
</tr>
<tr>
<td>NACS</td>
<td>Nutrition assessment, counseling, and support</td>
</tr>
<tr>
<td>NCST</td>
<td>Nutrition Care, Support, and Treatment</td>
</tr>
<tr>
<td>OPC</td>
<td>Office of the President and Cabinet</td>
</tr>
<tr>
<td>PDSA</td>
<td>Plan-do-study-act</td>
</tr>
<tr>
<td>PEPFAR</td>
<td>U.S. President’s Emergency Plan for AIDS Relief</td>
</tr>
<tr>
<td>PMTCT</td>
<td>Prevention of mother-to-child transmission</td>
</tr>
<tr>
<td>QI</td>
<td>Quality improvement</td>
</tr>
<tr>
<td>RUTF</td>
<td>Ready-to-use therapeutic food</td>
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<tr>
<td>TB</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>URC</td>
<td>University Research Co., LLC</td>
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<td>USAID</td>
<td>United States Agency for International Development</td>
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</table>
EXECUTIVE SUMMARY

Recognizing the negative effect that malnutrition has on HIV infection, in 2005 the Malawi Ministry of Health (MOH) established the Nutrition Care, Support and Treatment (NCST) program, operating in a quarter of the HIV clinics in Malawi to provide nutritional support for people living with HIV. But the effectiveness of the NCST program has been challenged in recent years. Lack of data at the national level limited the ability of the Nutrition Department to forecast and budget for ready-to-use therapeutic food (RUTF), and as a result, most facilities rarely had therapeutic food in stock. Due to the absence of therapeutic food at the clinics, health workers stopped assessing the nutritional status of the HIV clients. Thus the program was in a vicious circle: no data coming from the facilities about nutritional needs meant no RUTF was purchased, and no RUTF available meant that clinics were not assessing and reporting data on the need for RUTF.

As part of assistance from the United States Agency for International Development (USAID) to the Government of Malawi, USAID requested its Applying Science to Strengthen and Improve Systems (ASSIST), Food and Technical Assistance (FANTA), and Livelihoods and Food Security Technical Assistance (LIFT) projects to support the MOH Nutrition Department and the Office of the President and Cabinet Department of Nutrition, HIV and AIDS (OPC/DNHA) to improve nutrition care for people living with HIV. The three USAID projects were asked to work with selected sites in Karonga and Balaka districts to integrate nutrition assessment, care, and support into general HIV care; generate data on the real number of malnourished clients to inform district and national decision-making and support for the NCST program; and use the lessons from these districts to strengthen the national NCST program.

Beginning in February 2013, USAID ASSIST started working with teams of district coaches and facility-based health care workers in eight facilities to apply a quality improvement approach to integrate nutrition services in HIV care. After examining their care processes, the teams decided to focus first on ensuring that all patients who came for HIV and tuberculosis care were screened for malnutrition. By focusing on this key assessment and categorization step, the sites were able to make rapid gains. In January 2013, only 2% of clients coming to the clinics were being assessed for malnutrition in the seven sites that worked on this aim. After incorporating the changes to improve nutrition service delivery, those seven facilities improved nutrition assessment to 99% by December 2013 and maintained the results over time.

USAID ASSIST then supported the sites to look at other gaps in providing good nutrition care and found that a large proportion of the patients found to be malnourished were missing appointments and defaulting from nutrition care. In November 2013, the eight sites found that 38% of malnourished patients who had been enrolled in nutrition care had defaulted. After the teams tested various changes to address reasons patients themselves gave for dropping out of care, the default rate was reduced to 2% by September 2014.

In addition to improving care at the facility level, this work generated learning that was critical to strengthening the NCST program nationally. Firstly, data provided at these facilities on the number of people requiring nutritional support provided evidence that the Nutrition Department and OPC/DNHA were able to use to develop a budget and to advocate for additional funds for nutrition supplies. Based on these data and advocacy work, World Vision and Clinton Health Access Initiative (CHAI) came forward to provide short-term support to the MOH in the eight sites. CHAI later agreed to provide long-term support for therapeutic food on a larger scale.

Secondly, the results of this work convinced the MOH to incorporate indicators of nutritional assessment into the Malawi Health Management Information System, which in turn is helping to generate data on the extent of malnourished HIV patients and further demonstrate the need for making RUTF available in all HIV clinics.

This experience illustrates the impact of using quality improvement methods to improve the Malawi NCST program. By using quality improvement methods, eight teams were able to improve care for the patients
in their facilities. The teams also provided data to the national level which was used to improve the entire NCST program and strengthen the entire system.

Although ASSIST stopped supporting the NCST program in September 2014, the MOH, with the support of FANTA, has continued supporting the 12 sites to use quality improvement approaches to improve the delivery of NCST services. They also continued the advocacy and sharing of data from the sites with other partners. In 2015, the Ministry of Health, with the support of FANTA, is planning a nation-wide roll-out of the new NCST guidelines in 15 districts using quality improvement approaches, working through PEPFAR-supported implementing partners (Dignitas International, Partners in Hope/EQUIP, and USAID Support for Service Delivery Project/SSDI-Services).

This final report of USAID ASSIST support for the NCST program in Malawi describes the improvement strategy applied by the eight sites in Karonga and Balaka districts to integrate nutrition assessment, care, and support into general HIV care, provides examples of what specific sites did to improve care, and presents the results achieved across all eight sites. The report also summarizes the changes tested by these sites that were found to improve nutritional assessment and retention in care of malnourished patients.
I. INTRODUCTION

Infection with human immunodeficiency virus (HIV) increases an individual’s energy and nutrient requirements. Malnutrition accelerates the progression of HIV infection. Because of this negative interaction, the Malawi Ministry of Health (MOH) established the Nutrition Care, Support, and Treatment (NCST) program in 2005. The program operates in 157 out of the 657 antiretroviral therapy (ART) clinics in Malawi to provide nutritional support for people living with HIV.

The effectiveness of the NCST program has been challenged in recent years. A key problem was that there were no data at the national level on the number of people requiring ready-to-use therapeutic food (RUTF). Because of this, it was hard for the MOH Nutrition Department to forecast and budget for RUTF, and as a result, most facilities rarely had RUTF in stock. Due to the absence of therapeutic food at the clinics, health workers stopped assessing the nutritional status of the HIV clients. Thus the program was in a vicious circle: no data coming from the facilities about RUTF needs meant no RUTF was purchased, and no RUTF available meant that clinics were not assessing and reporting data on the need for RUTF.

As part of assistance from the United States Agency for International Development (USAID) to the Government of Malawi, USAID requested its Applying Science to Strengthen and Improve Systems (ASSIST), Food and Technical Assistance (FANTA), and Livelihoods and Food Security Technical Assistance (LIFT) projects to support the MOH Nutrition Department and the Office of the President and Cabinet Department of Nutrition, HIV, and AIDS (OPC/DNHA) to improve nutrition care for people living with HIV. The three USAID projects were asked to work with selected sites in Karonga and Balaka Districts and to use the lessons from these districts to strengthen the national NCST program.

II. IMPROVEMENT INTERVENTION

In February 2013, the MOH and OPC/DNHA, with support from USAID ASSIST, started working with district coaches and facility-based health care workers from eight facilities in the two districts to improve nutrition care for people with HIV and tuberculosis (TB). The work had two objectives:

1. Integrate nutrition assessment, care, and support into general HIV care.
2. Provide data on the number of malnourished clients to the district and national levels and to identify sources of funding to provide RUTF and other support for the NCST program.

USAID ASSIST started by providing initial classroom training on the basics of nutrition care for people with HIV and the general principles of quality improvement (QI). Subsequently, the project provided monthly on-site coaching support to guide facility-based improvement teams through their initial efforts to improve nutrition care.

USAID ASSIST supported the teams to use the Model for Improvement (shown in Figure 1) to guide their efforts to provide better nutrition support. The model guides teams to improve care by working through four steps: 1) choosing an improvement aim, 2) deciding how to measure whether progress is being made towards meeting the improvement aim, 3) developing ideas for what changes to make to reach the aim, and 4) testing the changes using plan-do-study-act (PDSA) cycles to learn which changes work and then implementing the successful changes.
A. Deciding What to Improve

The first thing the teams did was to identify a limited number of priorities to work on. To help them identify priorities, USAID ASSIST asked them to review their own data about the seven steps for good nutrition care shown in Figure 2, which had been found in prior nutrition assessment and care improvement efforts in Uganda and Kenya to result in better nutrition care.

Figure 2: Seven steps to good nutrition care

B. Improving Assessment and Categorization

To begin with the improvement work, seven of the eight teams decided focus on ensuring that everyone coming to the HIV, prevention of mother-to-child transmission (PMTCT), and TB clinics was screened for malnutrition. The eighth team had already been able to provide routine nutrition assessment to every client coming to the clinic before the QI initiative began, so they decided to focus on ensuring that all malnourished clients were referred for nutrition support services as discussed in Box 1. To ensure that all patients visiting the clinics were assessed, the teams realized they first needed to measure how many patients were visiting the clinics.

Measuring the total number of patients attending clinics was done in various ways: 1) Counting all clients who visited the clinic during the month as shown in the TB, ART, and PMTCT registers; 2) Counting the total number of patient registration cards used in ART clinics at the end of each clinic day; 3) Using number tags given to patients on arrival at the PMTCT clinic (clients then left the tags at the last step of care; at the end of the day the health workers would count the total number of tags); and 4) Using the electronic medical record (EMR) which tallied the number of clients seen.

The teams needed to ensure that all patients were assessed. Before the improvement work, assessments were only done on clients who looked very sick, and data was only kept on those clients who were found to be malnourished. Since there were no assessment registers, teams tried different

Box 1: Improving referral of malnourished clients to nutrition services at Andiamo DREAM Centre
Andiamo DREAM Centre team was doing very well on assessments by using an EMR system. But despite doing many assessments, they were referring fewer than 10% of malnourished clients for nutrition services. The team therefore decided to work on improving referral of clients to nutrition services. The team agreed to try increasing the number of days when nutrition service providers were available from two days to five days a week. They decided to test this change for one month. At the end of the month when they met to review their data they noted that the change had led to an increase in the number of clients referred. They were now able to refer all clients (100%) to nutrition services, up from referring only 5% (6 clients) out of 102 malnourished clients a month before the change was tried.
strategies to document how many clients were assessed: 1) Adding a new column for nutrition assessment to the patient register; 2) Improvising new registers to record the names of all clients assessed; and 3) Using paper sheets to document information of all clients assessed at ART clinics.

To improve assessment and categorization, the teams proposed a number of ideas that could be tested to increase the number of clients assessed. After developing some ideas to improve care, the teams tested the changes using PDSA cycles. Changes that seemed to work were implemented while those that did not work were discarded and new changes were tried. Box 2 illustrates how one team tested a change using PDSA cycle.

C. Improving Retention of Patients in Nutrition Care

Patients who are enrolled in nutrition care are required to visit the health facility regularly where service providers continue to 1) monitor changes in weight and nutrition status, and follow up on opportunistic infection investigations, and 2) provide continued counselling on proper feeding practices.

In December 2013, the 8 teams were assessing 99% of all their patients attending ART, TB and PMTCT clinics. ASSIST then guided them to review their NCST data, where they noted that many of their malnourished patients enrolled in care were missing appointments and defaulting from NCST care. There were two reasons identified from this analysis: 1) Service providers were not tracking the patient’s appointments, 2) Service providers had no mechanism in place for tracing patients who missed an appointment and hence there were no efforts to bring back patients who had defaulted from nutrition care.

To ensure patients were retained in nutrition care, the eight QI teams developed an improvement aim to retain all malnourished patients in nutrition care. Before the teams began to work on this improvement aim, ASSIST guided them to conduct a simple survey on the reasons why patients were defaulting from nutrition care. This was done to help them develop good changes to test. The teams then conducted a quick survey on 10 malnourished patients who had missed an appointment in the previous month, asking the patients why they missed an appointment. After analyzing the results, the following are the common responses that clients gave:

1) Stock-out of food supplements,
2) Long distance to the facility,
3) Patients forgetting their appointment dates, and
4) Long waiting periods at the facility.

The teams then developed changes to address the patient’s responses. They also developed changes to improve the tracking of patients by the service providers. Boxes 3 and 4 give examples of how two teams reduced default rate and patient waiting period.

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**Box 2: Improving nutrition assessment of HIV and TB clients at Karonga District Hospital**

The team at Karonga District Hospital realized that a major issue for improving assessments was the need to improve their data system. They therefore invented a one-page form that recorded the patient’s name and registration number, address, nutrition measurement, and status for all patients they were assessing at the ART clinic.

The team started using this form. They noted that their data improved with this procedure, but the process used a lot of paper and was time consuming. The team then decided to try using an improvised register to record assessments done. They felt that a register that recorded the name and registration number, nutrition measurement, and status of the patients would be simple and easy to use.

The team tested the register for one day. They noted that because there were two or more staff assessing clients, each had to leave their work station to record patients’ details into the single register. This resulted in patients waiting too long to be assessed. The team then decided to revert to the old method of recording patients’ details on paper forms but to make the form more concise so that one piece of paper included the data for 12 clients. At the end of the next clinic day, the team reviewed their work and noted that the 12-client form was easier and quicker to use than their two previous solutions, and it also saved more paper.
III. RESULTS

A. Nutrition Assessment and Categorization

The teams’ work to improve the routine assessment of the nutritional status of HIV patients resulted in a large increase in the identification of clients who are malnourished. The main factor associated with the increase in identification of malnourished clients is that there was a substantial increase in the number of clients whose nutrition status was assessed.

In January 2013, only (106) 2% of clients coming to the clinics were being assessed for malnutrition in the seven sites that worked on this aim. After incorporating the changes to improve nutrition service delivery, those seven facilities improved nutrition assessment to 99% by December 2013 and maintained the results over time, as seen in Figure 3. This means that close to 6000 people each month now receive routine nutrition assessment in those sites.

Box 3: Reducing the proportion of malnourished patients defaulting from nutrition care

Balaka District Hospital provides services to more than 3500 HIV patients. A quality improvement team was established at the facility to improve the quality of NCST services. In December 2013, the team realized that almost all malnourished HIV patients who were enrolled in the nutrition treatment program were defaulting from care. The team decided to develop an aim to improve retention of the patient in NCST care. A small survey they conducted on their patients who missed appointments showed that many of their patients were not returning because of long distances to the facility, stock out of RUTF and attitude of health service providers. The team also realized that apart from the patient’s views, the service providers needed to put in place a process that will ensure patient recover from malnutrition within the recommended 3 to 4 month period of nutrition support from the facility.

The team tested several changes that include documenting next appointment date in the nutrition register, allocating a room for nutrition services before clients see the clinician and following up patients who miss an appointment. When they tested these and other changes, the number of defaulters reduced from 100% in November 2013, to 12% in September 2014.

Box 4: Reducing waiting periods for malnourished HIV patients

Kaporo Rural Hospital noted that nutrition services were being affected by the lack of coordination of service providers. This resulted in patients missing appointments. From a survey the service providers conducted to understand reasons why patients miss appointments, long waiting period emerged as one of the reasons why patients missed their appointment.

The team realized that patients came very early but the two clinicians stationed at the facility would not begin providing ART services until late morning. Each of the two clinicians thought his colleague was attending to patients at the clinic and yet there was no one at the clinic. This resulted in patients waiting long periods before they were attended to. It also lead to delays in providing other services such as provision of nutrition supplements and drugs at the pharmacy hence patients would leave before they received nutrition support services such as food supplements and more counselling and referral and drugs at the pharmacy. The team agreed to develop a schedule to allocate the two clinicians and other staff to the ART clinic and shared copy of the schedule to each staff. This was to ensure each staff including the clinicians know which day and what time they are assigned to work at the ART clinic. They tested this change for a week and noted that patients were being attended to in good time. A clinic that served clients up to 4pm now finishes serving clients before 2pm.
With the attained improvement, USAID ASSIST trained four other sites in Balaka District to apply the same approach. Effective changes that were tested by the initial seven teams were compiled and shared with the four new teams. Applying the effective changes resulted in the new sites rapidly increasing nutrition assessment. Within three months, the four sites increased nutrition assessments from 2% in June 2014 to 96% in September 2014, as shown in Figure 4.

**Figure 3: Percentage of patients assessed and categorized for malnutrition at seven sites in Karonga and Balaka Districts (January 2013 – September 2014)**

**Figure 4: Percentage of patients assessed and categorized at four new sites in Balaka District (June 2014 – September 2014)**
B. Retention of Patients in Care

In November 2013, the eight sites recorded 38% of patients defaulting from nutrition care. After the teams tested various changes, the default rate was reduced to 2% by September 2014, as shown in Figure 5.

Figure 5: Percentage of patients defaulting from NCST care at eight sites in Karonga and Balaka districts (November 2013 – September 2014)

C. Improving Patient Outcomes

Once malnourished clients were identified, they received a package of nutritional management interventions that included: 1) Investigations for opportunistic infections that may cause weight loss; 2) Initiation on antiretroviral therapy if they were not already on it or investigations on adverse events or resistance if they were on ART, and 3) Provision of nutrition support, including counseling, therapeutic or supplementary food to ensure recovery from the episode of malnutrition and linkage to community-based nutritional or livelihood support. As the teams engaged in these improvement efforts, the proportion of clients recovering from malnutrition increased steadily, as shown in Figure 6.

Figure 6: Percentage of clients who recovered from malnutrition, eight sites in Balaka and Karonga districts (May 2013 – September 2014)
D. Strengthening the National-level System

USAID ASSIST’s work with teams in Balaka and Karonga districts of Malawi also demonstrates how frontline improvement activities can strengthen the entire health system. In the first year of implementation, USAID ASSIST introduced the global nutrition assessment, counseling, and support (NACS) indicators to the facility improvement teams, district coaches, and national NCST staff. Together, they selected six relevant NACS indicators to track the improvement work. The indicators include:

1. Number of patients who receive nutrition assessment
2. Number of patients whose nutrition status is classified
3. Number of patients with severe malnutrition
4. Number of patients with moderate malnutrition
5. Number of patients who receive nutrition supplements/therapeutic food
6. Number of patients linked to economic strengthening, livelihood and food support

Before the improvement work, these global NACS indicators were not part of the national NCST program indicators. In 2014, these indicators were incorporated into the Malawi Health Management Information System and national data collection and reporting tools.

One of the constraints of the NCST program implementation was lack of therapeutic supplies for treating malnourished clients. Using the results from the eight sites, USAID ASSIST supported the Ministry of Health to adequately budget for nutrition activities and advocate for support of supplies for the malnourished patients. World Vision and Clinton Health Access Initiative (CHAI) came forward to provide short-term support to the MOH in the eight sites. CHAI later committed to provide long-term support on a larger scale. The results from the eight sites also generated interest among other partners who have begun to support the MOH to scale up the NCST program in HIV service sites they support.

The data from the eight sites were made available to other partners supporting NCST for forecasting of the national level estimates for supplementary and therapeutic food needs by the ministry and all other partners supporting the program.

Although ASSIST stopped supporting the NCST program in September 2014, the MOH, with the support of FANTA, has continued supporting the 12 sites to use quality improvement approaches to improve the delivery of NCST services. They also continued the advocacy and sharing of data from the sites with other partners. In 2015, the Ministry of Health, with the support of FANTA, is planning a nation-wide roll-out of the new NCST guidelines in 15 districts using quality improvement approaches, working through PEPFAR-supported implementing partners (Dignitas International, Partners in Hope/EQUIP, and USAID Support for Service Delivery Project/SSDI-Services).

IV. CONCLUSION

This report illustrates the impact of using quality improvement methods to improve nutrition care for patients with HIV in Malawi. By using quality improvement methods, eight QI teams were able to improve care for the patients in their facilities. The teams also provided data to the national level which were used to improve the national NCST program and strengthen the entire system. ASSIST’s support to the Ministry of Health helped the MOH to generate support from other development partners for the NCST program that was essentially non-functional.
## Appendix: Change Package for Improving Nutrition Assessment and Categorization and Retention of Malnourished Patients in Care

<table>
<thead>
<tr>
<th>Improvement aim: Improve the assessment and categorization of HIV and TB clients</th>
<th>Area of focus</th>
<th>Changes tested</th>
<th>How the change was tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring number of clients coming to the clinics</td>
<td>Counting the total number of patient registration cards used in ART and TB clinics at the end of each clinic day</td>
<td>After the ART clinic, the service providers counted all the cards before refiling them to know how many patients attended the clinic. They excluded the patients who sent guardians to collect drugs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Using number tags in the PMTCT clinic</td>
<td>Number tags were given to patients on arrival at the clinic. Clients then left the tags at the last step of care. At the end of the day, the health workers counted the total number of tags collected from the last step of care.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Using the electronic medical record (EMR) which tallied the number of clients seen</td>
<td>All patients that visited the ART clinic were registered in the computer, and at the end of the clinic day, they were able to know how many patients they had seen.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improvising new registers to record the names of all clients assessed</td>
<td>A notebook was improvised as a register to record details of all patients assessed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Using paper sheets or stamps to document information of all clients assessed at ART clinics</td>
<td>Paper forms with address and assessment details were printed, and service providers filled in the patient information during the clinic.</td>
<td></td>
</tr>
<tr>
<td>Increasing the number of clients assessed and categorized</td>
<td>Shifting point of assessment to registration</td>
<td>Point of assessment was shifted from after seeing the clinician to the registration station.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use non-clinical staff (such as clinic support staff or expert patients) to conduct assessment and categorization at registration</td>
<td>Non-clinical staff, such as expert clients and hospital attendants, were trained and assessed on their competency to conduct assessment using weight, height and MUAC. They were then allocated to assess patients in the clinics.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Developing a schedule to ensure there is always a person available to do nutrition assessment and categorization.</td>
<td>A roster was developed allocating service providers to conduct assessments during the clinics.</td>
<td></td>
</tr>
</tbody>
</table>
## Improvement aim: Retaining malnourished patients in nutrition care

<table>
<thead>
<tr>
<th>Area of focus</th>
<th>Changes tested</th>
<th>How the change was tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving documentation and tracking of patient visits</td>
<td>Documenting the appointment dates in the register to allow easy tracking of patients</td>
<td>Service providers documented the next appointment date with the patient in the register. Before a clinic began, the service providers summarized the expected number of clients on that clinic day from the register. With this process, they were able to identify clients who missed an appointment at the end of each clinic.</td>
</tr>
<tr>
<td>Reducing the waiting period</td>
<td>Ensuring coverage of the nutrition room so there is always someone available to counsel patients before ART appointments</td>
<td>Service providers were placed in the nutrition room to provide nutrition services and give appointment dates every day. Before the change, service providers had no schedule for coverage of the nutrition room, and many patients were not given appointment dates because there was no service provider in the nutrition room.</td>
</tr>
<tr>
<td>Roster for clinicians and nurses allocating them for ART service provision to reduce long waiting periods for patients</td>
<td>Service providers introduced a roster for clinicians and nurses and ensured that allocated staff attended to clients in good time. Before the change, there was no proper system to know which clinician is running a clinic; hence clinicians or nurses were not available or they would begin providing services very late. The clients waited for long periods before being assisted by a clinician/nurse and hence often went back home rather than furthering wait to receive nutrition services.</td>
<td></td>
</tr>
<tr>
<td>Changing the flow of patients to begin with nutrition services before the patient’s ART appointment</td>
<td>Clients visit the nutrition room for counseling and food prescription before their appointment with the clinician/nurse or receiving drugs. Before the change, clients received nutrition services after their appointment with a clinician or receiving drugs. Some clients opted to visit the nutrition room for the services, but some did not; hence, many clients were missed in this way.</td>
<td></td>
</tr>
<tr>
<td>Providing nutrition services to patients individually as they come to reduce waiting period</td>
<td>Services in the nutrition room are given to clients individually as they come. Before the change, the service providers waited for a group of clients to arrive to start providing nutrition services; hence, many clients were waiting long periods without being attended to, and some were discouraged to return to the facility.</td>
<td></td>
</tr>
<tr>
<td>Counseling and education</td>
<td>Counseling patients and guardians on the importance of returning for appointments</td>
<td>Providing effective counseling on the importance of subsequent visits. Emphasis was made on the importance of coming back on given appointment dates.</td>
</tr>
<tr>
<td>Documentation of next appointment date in the patient’s health passport book as a reminder for the patient</td>
<td>The date documented in the patient health passport book served as a reminder to the patient about the date the patient needed to return to the facility.</td>
<td></td>
</tr>
</tbody>
</table>
### Improvement aim: Retaining malnourished patients in nutrition care

<table>
<thead>
<tr>
<th>Area of focus</th>
<th>Changes tested</th>
<th>How the change was tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improving follow-up of patients enrolled in NCST program</td>
<td>Use of community HIV support or care group members to follow up patients who miss an appointment</td>
<td>Names of patients who have missed appointments were given to HIV support group volunteers or community care group volunteers to trace them and bring them back to the facilities.</td>
</tr>
<tr>
<td></td>
<td>Using different types of providers, such as Health Surveillance Assistants (HSAs) and expert clients, to follow up patients who miss an appointment</td>
<td>Names of patients who missed appointments were given to HSAs or expert clients for follow-up.</td>
</tr>
<tr>
<td></td>
<td>Changing the return period from two weeks to one month</td>
<td>The return period for moderately malnourished patients was changed from two weeks to one month. This was done to reduce the number of times a patient returned to the facility, as they were more likely to miss appointments if they were traveling long distances to attend the appointments.</td>
</tr>
<tr>
<td></td>
<td>Use of reminder phone calls</td>
<td>The service providers used phones to remind patients about their appointments and also to follow them up when they missed an appointment.</td>
</tr>
<tr>
<td></td>
<td>Use of guardians or healthy HIV clients to follow up those who miss an appointment</td>
<td>During the HIV clinic day, the service provider called out names of clients missing appointments. The provider asked patient’s guardians or healthy HIV-positive clients who knew these people, or live closer to them, to encourage them to return to the clinic.</td>
</tr>
</tbody>
</table>

Strengthening systems for improved nutrition care in Malawi