



**USAID**  
FROM THE AMERICAN PEOPLE

**USAID**  
**ASSIST PROJECT**  
*Applying Science to Strengthen  
and Improve Systems*

## **Strengthening Systems to Improve Nutrition Care, Support and Treatment in Malawi: Results from Balaka and Karonga Districts**

### **INTRODUCTION**

Infection with human immunodeficiency virus (HIV) increases an individual's energy and nutrient requirements. In addition, 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 currently operates in 157 out of the 657 clinics that provide antiretroviral therapy (ART) 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 consequence, most facilities rarely had RUTF in stock. Because there was no food in the clinics to give malnourished patients, health workers were not assessing their nutritional status. Thus the program was in a vicious circle: no data coming from the facilities about need 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 directed 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 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.

### **IMPROVEMENT STRATEGY**

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). There were two initial aims:

1. To integrate nutrition assessment, care and support into general HIV care.
2. To provide data on the number of malnourished clients to the district and national level 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. Subsequently, the project provided monthly on-site coaching support to guide facility-based improvement teams through their initial efforts to improve nutrition care. We 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

### **JUNE 2014**

This short technical report was authored by Linley Hauya, Phindile Chitsulo, Tiwonge Moyo, and Nigel Livesley of University Research Co., LLC (URC) and produced by the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, made possible by the American people through USAID's Bureau for Global Health, Office of Health Systems with support from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). USAID ASSIST is managed by URC under the terms of Cooperative Agreement Number AID-OAA-A-12-00101. URC's global partners for USAID ASSIST include: EnCompass LLC; FHI 360; Harvard University School of Public Health; HEALTHQUAL International; Institute for Healthcare Improvement; Initiatives Inc.; Johns Hopkins University Center for Communication Programs; and Women Influencing Health Education and Rule of Law, LLC. For more information on the work of the USAID ASSIST Project, please visit [www.usaidassist.org](http://www.usaidassist.org) or write [assist-info@urc-chs.com](mailto:assist-info@urc-chs.com)

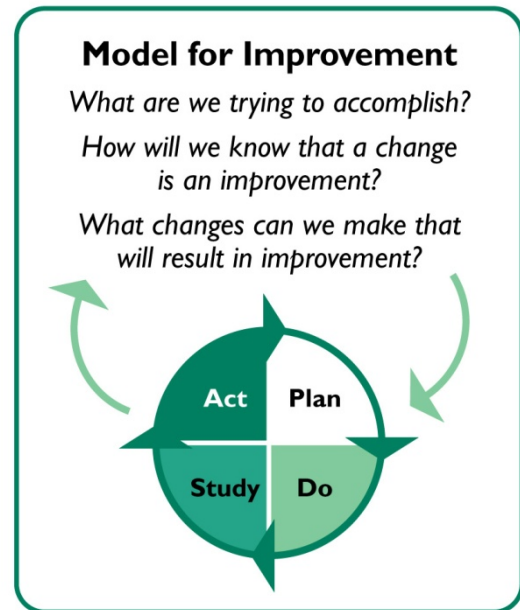
being made towards meeting the improvement aim, 3) developing ideas for what changes to make to reach the aim, and 4) testing the changes using Plan-Do-Study-Act cycles to learn which changes work and then implementing the successful changes.

### Deciding what to improve first

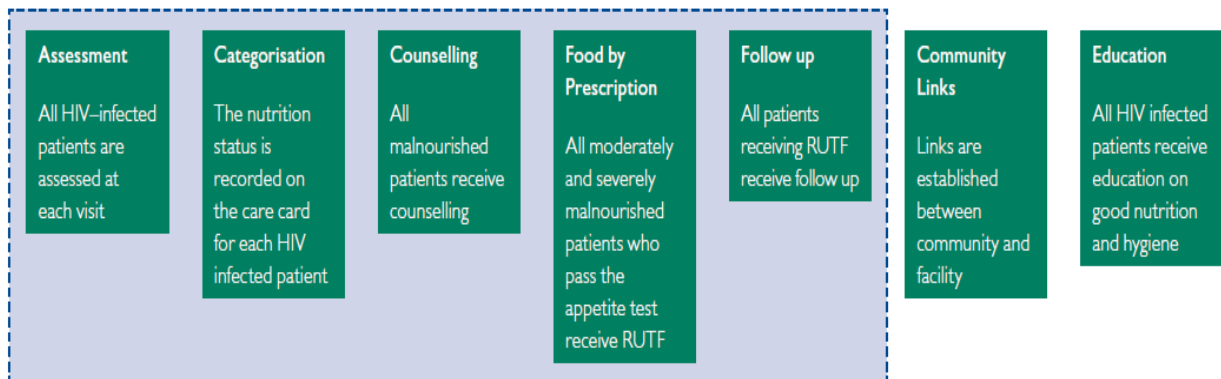
The first thing the teams did was to identify a limited number of priorities to work on. To help them identify priorities, ASSIST asked them to review their own data about the seven steps for good nutrition care shown in Figure 2, which had been found in prior nutrition assessment and care improvement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

Seven of the eight teams decide to focus on ensuring that everyone coming to the HIV, 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, so they decided to focus on ensuring that all malnourished clients were referred for nutrition services.

**Figure 1: The Model for Improvement**



**Figure 2: Seven steps to good nutrition care**



### Deciding how to measure whether they were making progress in reaching their aim

After deciding to improve the identification of malnourished clients, the teams explored how to measure whether changes led to any improvements. The teams had data on the number of clients visiting the clinics but no documented evidence on the number of clients assessed for malnutrition. They tested two strategies to measure who was receiving nutritional assessment:

#### 1) Measuring the number of clients coming to the clinic

Health facilities started capturing the total number of clients visiting the clinics 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 counted the total number of tags. 4) Using the electronic medical record (EMR) which tallied the number of clients seen.

## 2) Measuring if the clients were assessed

Previously, assessments were only done on clients who were very sick and data was only kept on those clients who were found to be malnourished. Teams tried different 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.

### Developing and testing changes to see if they led to improvement

While teams were trying to understand the challenges in conducting nutrition assessments, they reviewed how patients flowed through their clinics and identified where and when the assessment was done and by whom. The teams proposed a number of ideas that could be tested to improve 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. The following changes were tested by the teams:

- **Shifting the point of assessment**

Six teams shifted the points where assessment was done in the ART, TB and PMTCT clinics from having assessment being done at the end of the visit to the beginning of the visit.

- **Using different types of staff to conduct assessments**

To make sure that waiting time wasn't adversely affected, the teams incorporated expert clients, clerks and different types of hospital support staff (such as hospital attendants, maids, ground laborers, and security guards) to assist Health Surveillance Assistants

### ***How one hospital tested a new approach to recording nutritional assessment data***

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 were improving but that this procedure 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 procedures and also saved paper.

### ***Shifting patient assessment to non-clinical staff***

Kaporo Rural Hospital in Karonga District sees about 500 clients in a day but is staffed by only one Medical Assistant, two nurses, and a few Health Surveillance Assistants. The Kaporo team was concerned that they had too few staff to carry out the assessments. They brainstormed about how they would address this gap and realized that there are ground laborers at the facility that are usually not very busy and could be trained to conduct mid-upper arm circumference (MUAC), weight, and height assessments. The team trained the ground laborers to take MUAC measurements and record them in the registers. By observing the laborers assess a few clients each, the team learned that these staff were able to do the nutrition assessments accurately. They then worked out ways to integrate these staff into the clinic with the responsibility of conducting nutrition assessments. This resulted in an increase in the number of clients assessed from 0 clients (0%) in January 2013 to 167 (46%) of 366 clients seen at the facility in March 2013.

(HSAs) and nurses in assessing clients in ART, TB, and PMTCT clinics.

- Three teams used expert clients to perform MUAC, weight, and height assessments.
- Six teams used hospital support staff such as ground laborers, auxiliary nurses, ART clerks, hospital maids/servant, and security guards to perform MUAC, weight, and height assessments.
- One team used HSAs to conduct MUAC, weight, and height assessments.
- One team used nurses to conduct MUAC, weight, and height assessments.

- **Developing a schedule for facility staff**

The teams allocated different staff to conduct assessments in ART, TB, and PMTCT clinics. At one facility, they developed a roster that took into consideration the times when the HSAs were not engaged in community work and allocated them to do assessments.

- **Expanding the number of days nutrition services were available**

One team tested changing the schedule of nutrition services to make them available five days a week instead of only two. Nurses were re-assigned from other duties to staff the nutrition clinic starting at 9:00 am, five days a week. The change did not negatively affect other HIV services, particularly taking blood samples, because the nurses provided those services during the busiest period from 7:30 to 9:00 am when they have more clients.

## RESULTS

The efforts of the teams in these facilities have led to improvements in both the identification and management of malnourished clients and the successful integration of nutrition assessment, care, and support into general HIV care.

### Identification of malnourished clients

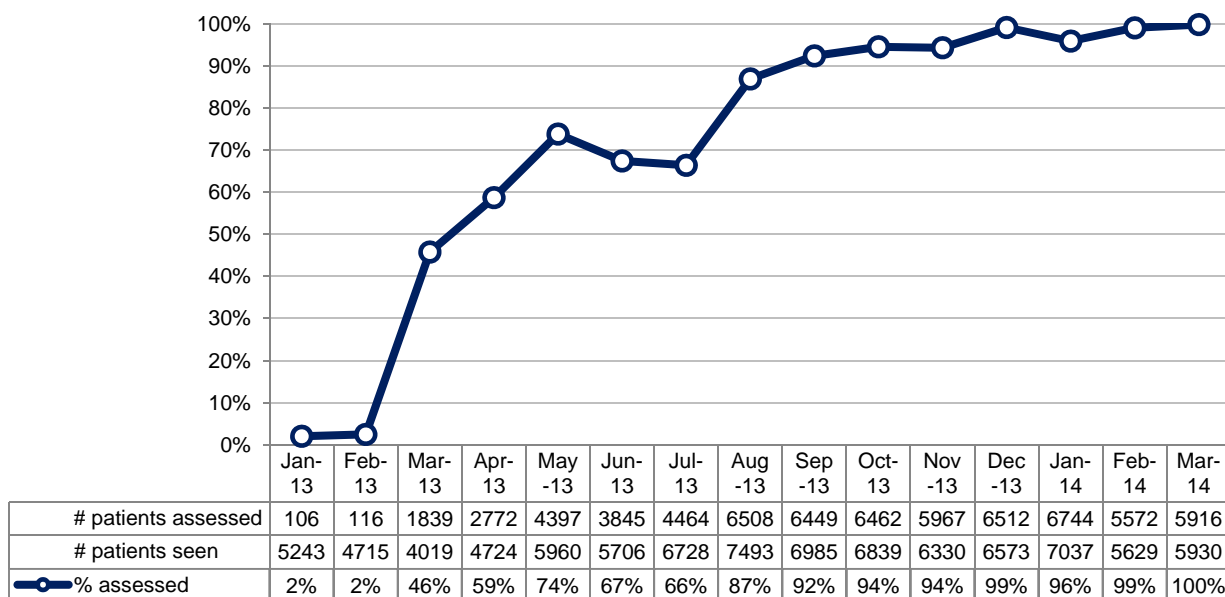
The improvement in the routine assessment of the nutritional status of HIV patients resulted in a large increase in the identification of clients who are malnourished. The main factor associated with the increase in identification of malnourished clients is that there has been a substantial increase in the number of clients whose nutrition status is assessed. In January 2013, only (106) 2% of clients coming to the clinics were being assessed for malnutrition in seven of the eight sites. The eighth site was already assessing 100% of clients. After incorporating the changes to improve nutrition service delivery, those seven facilities are now assessing 100% of people coming to the clinics, as shown in Figure 3. This means that close to 6000 people each month are now receiving routine nutrition assessment in those sites. The appendix presents individual site data and the changes tested in each site.

Figure 4 shows the increase in number of clients who have been identified as malnourished. Since March 2013, the eight sites are identifying over 350 clients a month who are malnourished.

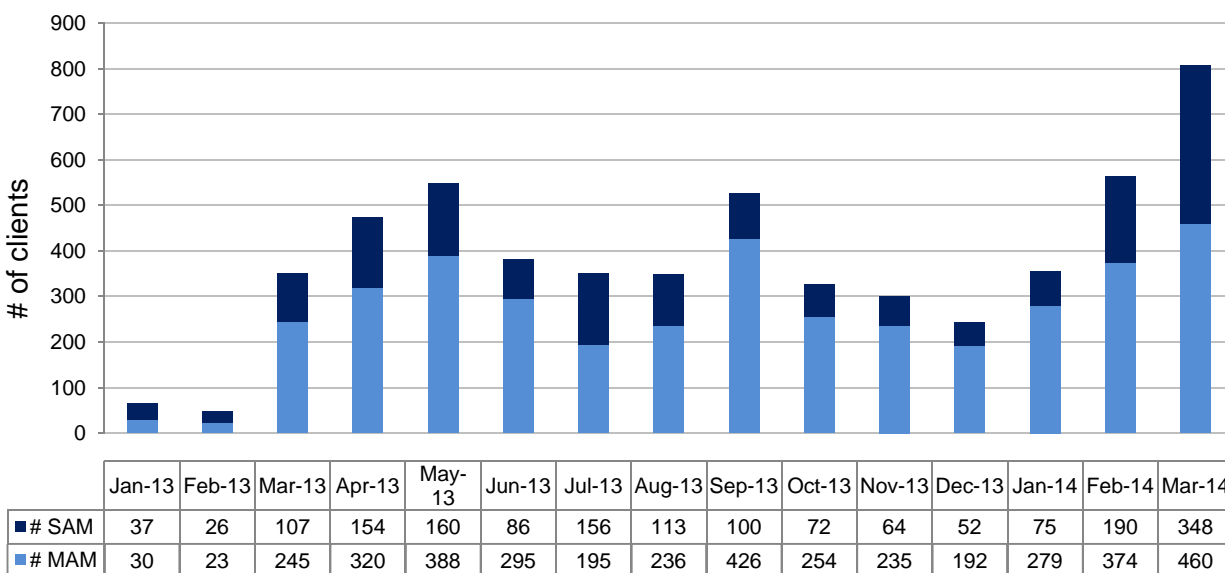
### ***Increasing the availability of nutrition service providers from two to five days a week***

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 to nutrition services. The team agreed to try increasing the number of days when nutrition service providers are 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.

**Figure 3. Percentage of clients assessed with their nutritional status recorded, 7 sites in Balaka and Karonga districts, Malawi (January 2013 – March 2014)**



**Figure 4: Number of clients identified with severe (SAM) and moderate (MAM) acute malnutrition, 8 sites in Balaka and Karonga districts, Malawi (January 2013 – March 2014)**



### Changes that led to improved identification of malnourished clients

A number of changes were associated with increased identification of malnourished clients.

- 1) **Shifting the point of assessment:** A month before making this change, six facilities were only assessing an average of 71 clients per month. After changing the point of assessment, the number of clients assessed increased to an average of 288 clients in a month.
- 2) **Using different types of staff to conduct assessments:**

- Expert clients: A month before this change the three sites assessed an average of 58 clients per month. After making this change the number of clients assessed increased to an average of 247 clients in a month.
  - Hospital support staff (e.g., laborers, auxiliary nurses, clerks, cleaners and security guards): Before this change, the sites assessed an average of 56 clients per month. After this change, the number of clients assessed increased by an average of 470 clients per month.
  - Health Surveillance Assistants: At the beginning of testing the change, it seemed like this change would be successful but the team realized after two months that the change was not effective when the number of clients assessed decreased from 1450 per month to 488 per month. This was because the HSAs assigned to do assessment were not always available at the clinic due to the extension services they provide in the communities.
  - Nurses: A month before the nurses were assigned to do assessment, there were no clients assessed. A month after the change, only 5 (3%) clients of 177 clients who visited the clinic were assessed. The nurses had more work providing antenatal services and did not have enough time to take the mothers' anthropometric measurements.
- 3) **Developing a schedule for facility staff**: A month before this change at this facility, they were assessing 98 clients per month. After this change the number of clients assessed increased to 364 clients a month.
- 4) **Use of electronic medical records**: One of the eight teams uses an electronic medical record system for all clients who visit the clinic. For a client to move to the next stage of the treatment flow, his/her weight and height must be entered into the system first. The system calculates the Body Mass Index and interprets the nutrition status of the client. This facility assesses 100% of all clients coming to the clinics.

### **Improving management of malnourished clients**

Once malnourished clients are identified, they require a change in management. Some of the interventions that these clients may require are: 1) conducting investigations for opportunistic infections that may cause weight loss, 2) starting them on antiretroviral therapy if they are not already on it or looking for adverse events or resistance if they are on ART, and 3) providing nutrition support, including counseling, therapeutic or supplementary food, or community-based nutritional or livelihood support.

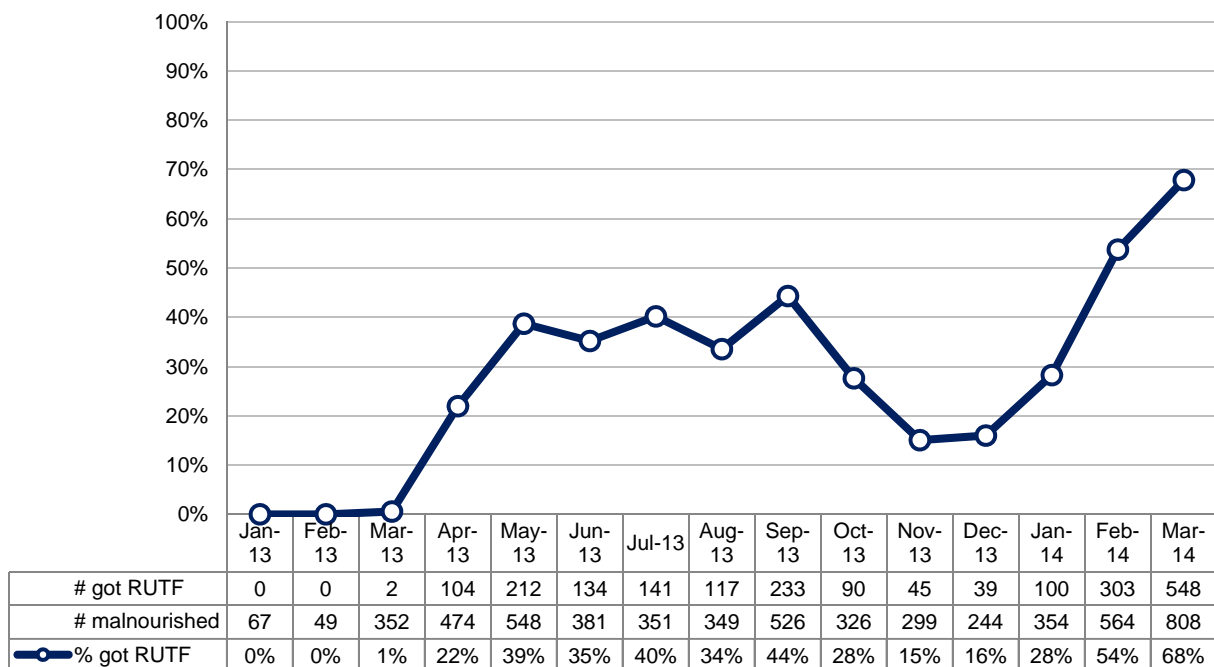
The eight facilities have been successful in improving management of malnourished clients. Data are not available at the facilities on whether malnourished clients receive more thorough diagnostic work-ups. But malnourished clients do make up a significant proportion of clients started on ART. A sample of 20 ART treatment cards from each of the eight sites showed that 56 (29%) clients started ART due to malnutrition.

The facilities have also been successful in providing better nutritional support to malnourished clients. In January and February 2013, no clients received RUTF, while by March 2014, 2068 malnourished clients had been managed with RUTF (Figure 5), and 100% received counseling (Figure 6). There are no data yet available on links to community-based nutritional or livelihood support, but this is an area that will receive further attention moving forward.

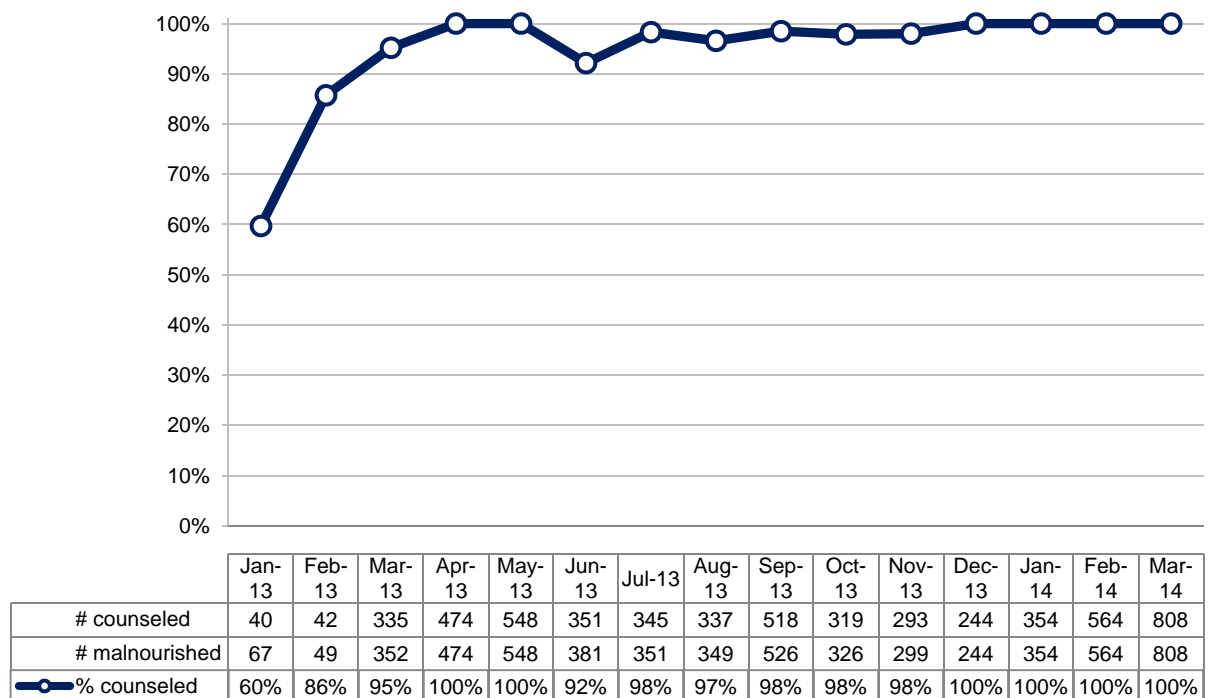
### **Increasing data on the number of malnourished clients available at the district and national levels and identification of RUTF funding sources**

The data from these eight sites represent the first time that the Ministry of Health has had data on the number of malnourished clients at NCST sites and on the management of these clients. These data allowed the MOH to advocate for short-term support from development partners to provide RUTF to these sites. Partners such as World Vision Malawi, Clinton Health Access Initiative, and the National AIDS Commission were identified and will be providing RUTF for the program. The Ministry has also been able to identify resources within their current budget to procure RUTF for the NCST program and now has included costs for RUTF supplies in their 2014-15 budget request.

**Figure 5: Percentage of malnourished clients who received RUTF, 8 sites in Balaka and Karonga districts, Malawi (January 2013 – March 2014)**



**Figure 6: Percentage of malnourished clients counseled on good nutrition practices and use of RUTF, 8 sites in Balaka and Karonga districts, Malawi (January 2013 – March 2014)**



The Ministry is also working to develop key indicators that will be incorporated into the national health management information system to ensure that NCST indicators are collected and updated routinely;

these data will be used to quantify RUTF needs on an ongoing basis and continuously improve the management of the NCST program.

## **NEXT STEPS**

USAID ASSIST staff facilitated a meeting between MOH, OPC/DNHA, district, and facility staff to discuss how to improve the situation. The group agreed to focus on improving care at the eight facilities and improving communication between all levels so that data was usable at all levels to improve program management.

An important strategy used by USAID ASSIST was to be honest with the staff at the facilities about the fact that we were asking them to identify malnourished patients who at least initially they may not be able to help. Facility teams were encouraged to work on improving identification of malnourished clients for two reasons. First, there were other interventions that they should be providing regardless of the availability of RUTF, such as a more thorough diagnostic work-up to identify the cause of weight loss, provision of ART if they weren't currently on treatment, nutrition counseling, or referral to community-based nutrition support, if it existed. Second, their efforts would generate data for the central government who could then use this to advocate for RUTF to be provided to the sites.

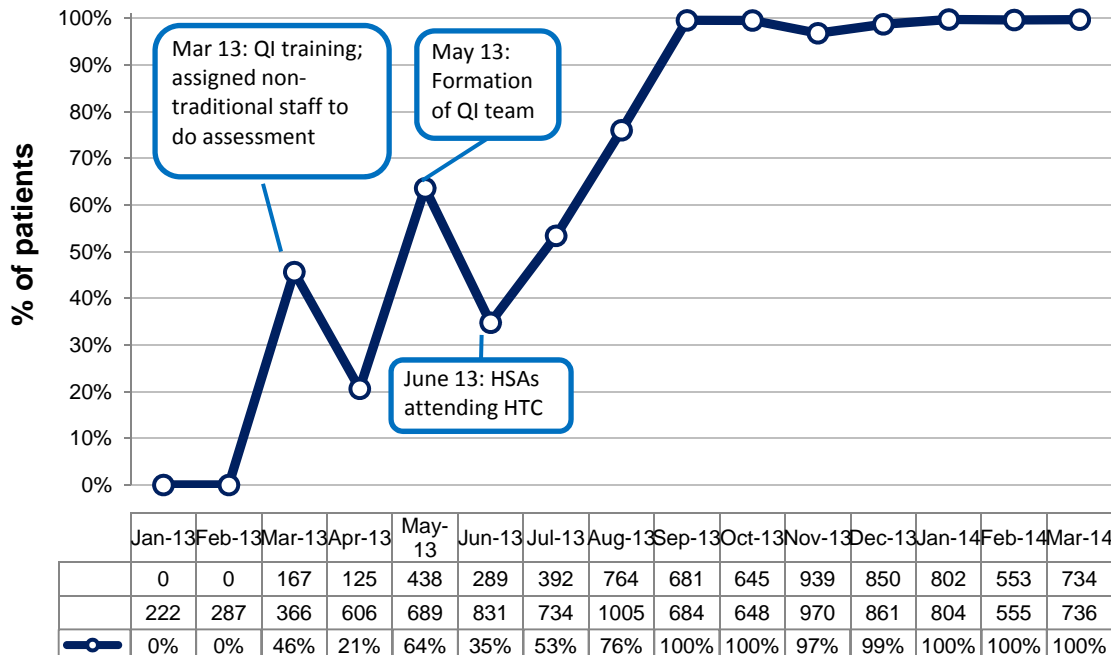
By using quality improvement methods, these facilities were able to improve care for the patients in their facilities and to also provide data to the national level which could be used to improve the entire NCST program. As of May 2014, the facilities had started receiving RUTF from World Vision Malawi as a consequence of the data that they were producing. The Ministry of Health has plans to improve RUTF supply for the entire NCST program through both government and partner funding.

USAID ASSIST will continue to provide support at the facility and national levels in Malawi to improve nutritional support for people living with HIV. Priority interventions for the next phase include working with the facilities to identify client-level outcomes in malnourished clients and to find ways to improve these outcomes. The project will also work with the central level to develop ways to integrate nutrition data into the existing health management information system so that the NCST program can be better managed and also receive budget support.

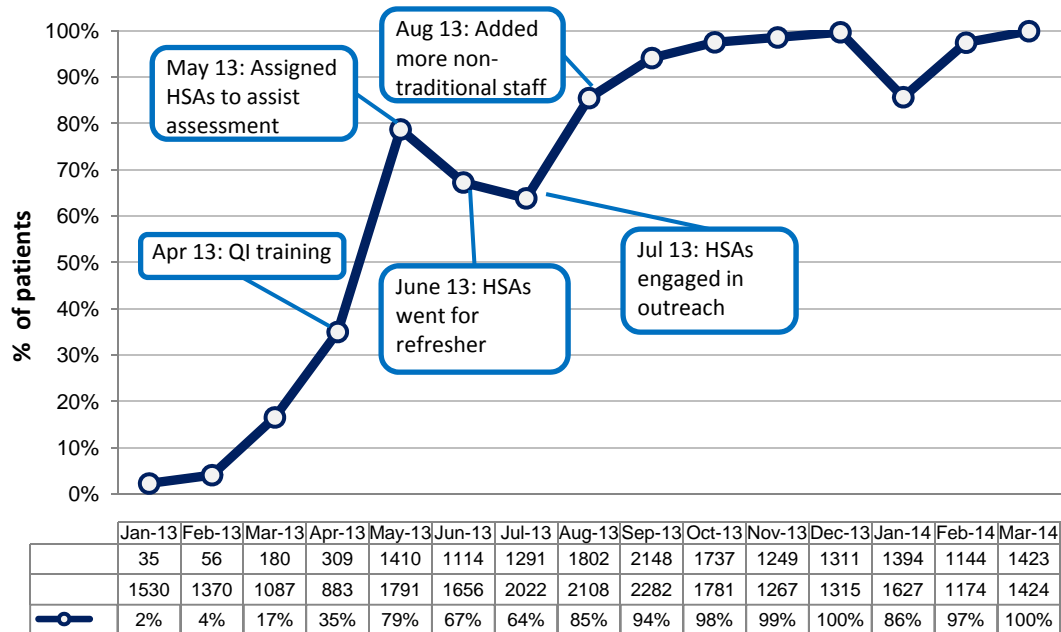


## APPENDIX: RESULTS BY FACILITY

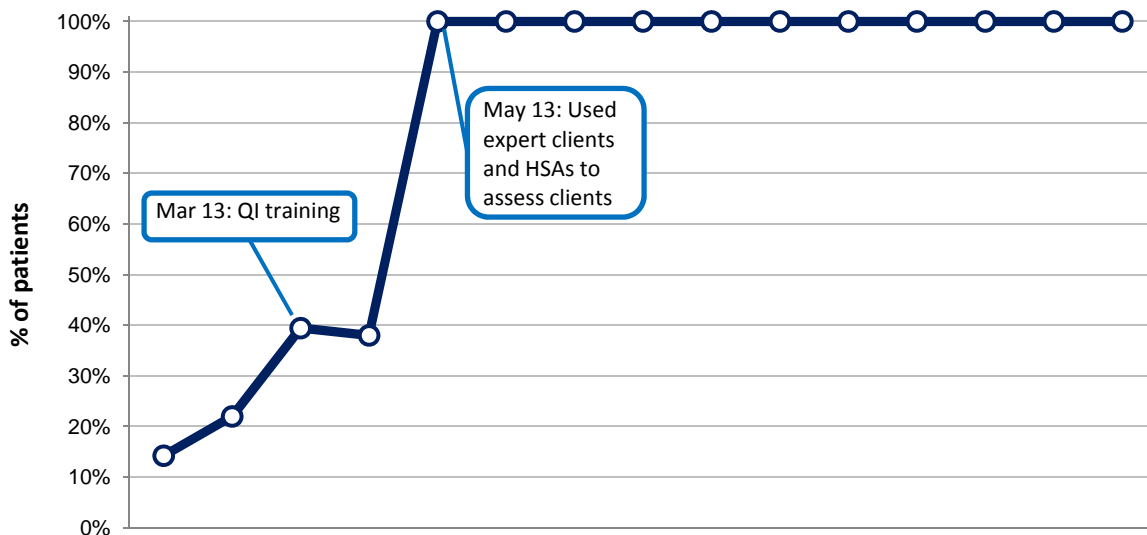
### Assessment and categorisation at Site 1



### Assessment and categorisation at Site 2

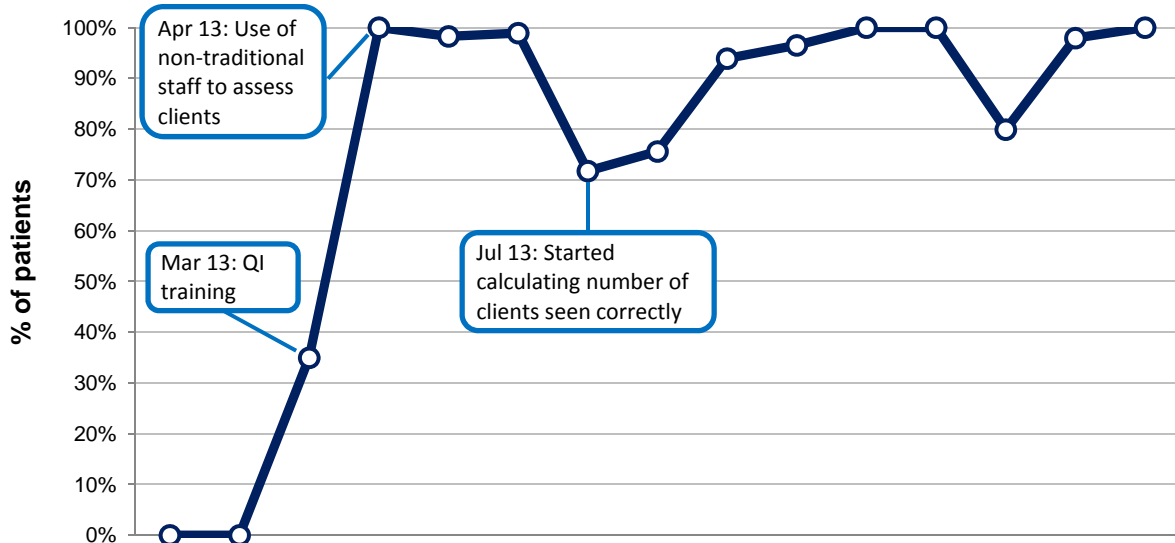


### Assessment and categorisation at Site 3



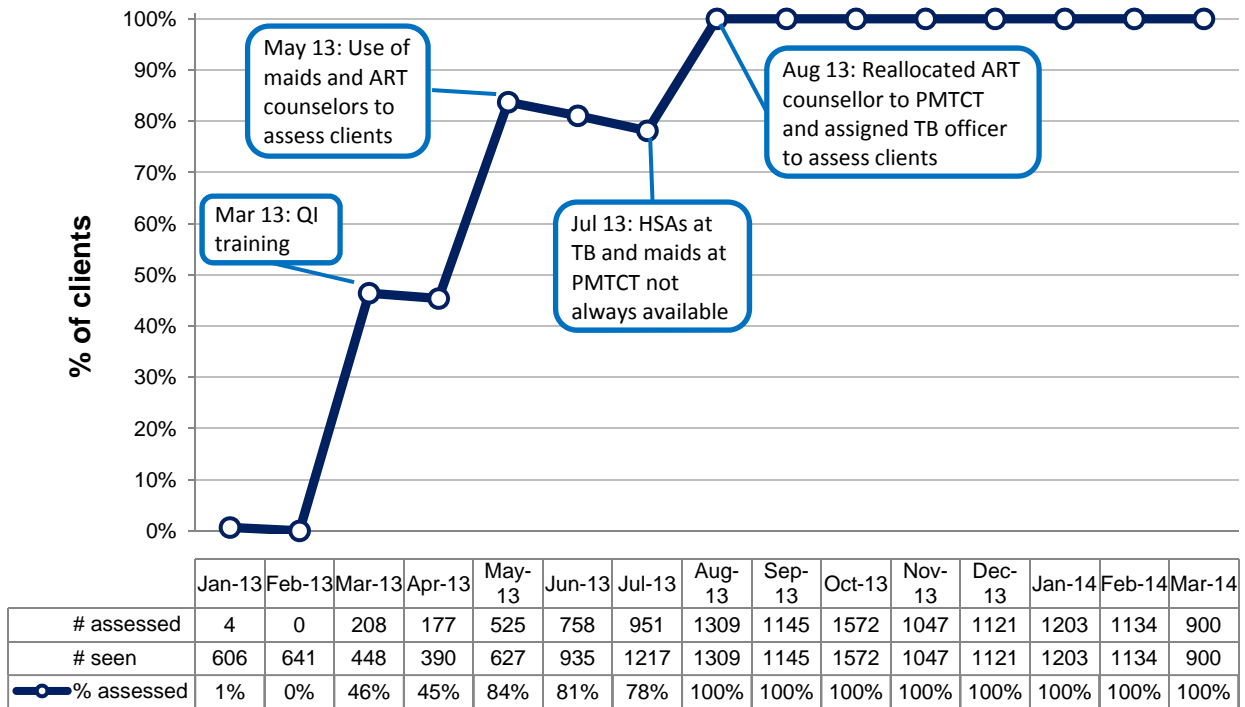
	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14
# assessed	40	53	123	220	279	319	185	158	132	113	450	562	562	181	467
# seen	281	241	312	579	279	319	185	158	132	113	450	562	562	181	467
● % assessed	14%	22%	39%	38%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

### Assessment and categorisation at Site 4

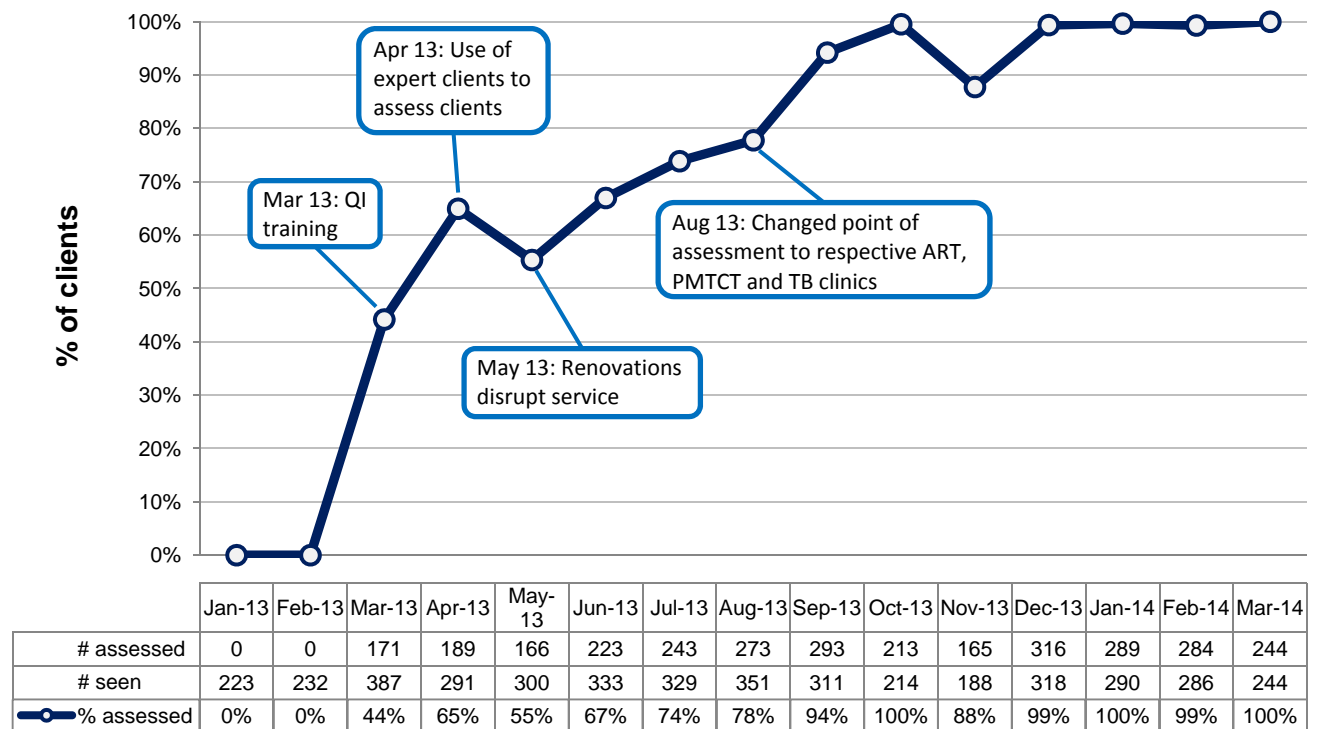


	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14
# assessed	0	0	50	98	284	364	396	502	538	469	558	500	489	426	477
# seen	650	637	143	98	289	368	552	664	573	486	558	500	612	435	477
● % assessed	0%	0%	35%	100%	98%	99%	72%	76%	94%	97%	100%	100%	80%	98%	100%

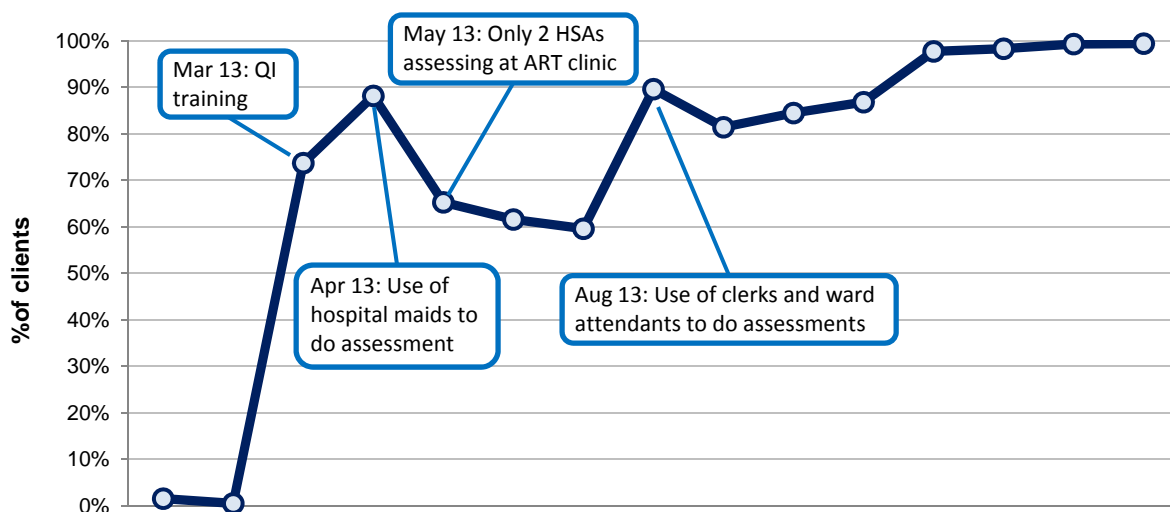
### Assessment and categorisation at Site 5



### Assessment and categorisation at Site 6

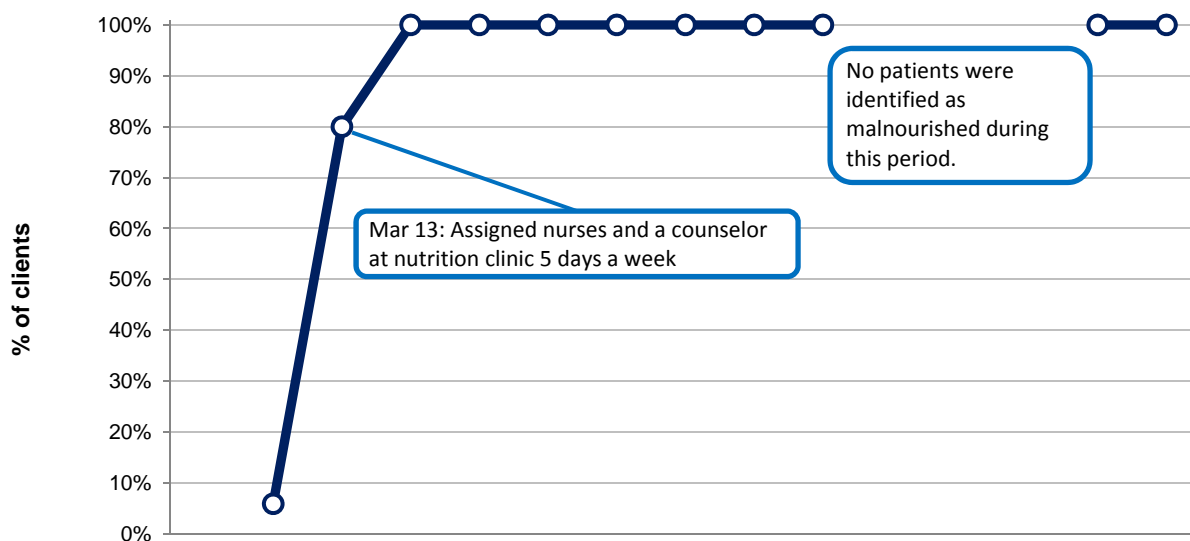


### Assessment and categorisation at Site 7



	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14
# assessed	27	7	940	1654	1295	778	1006	1700	1512	1713	1605	1852	1905	1850	1671
# seen	1732	1307	1276	1877	1985	1264	1689	1898	1858	2029	1850	1896	1939	1864	1682
● % assessed	2%	1%	74%	88%	65%	62%	60%	90%	81%	84%	87%	98%	98%	99%	99%

### Improving referral of malnourished clients to nutrition services at Site 8



	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14
# referred	0	6	72	126	92	33	21	22	144	8	0	0	0	57	45
# malnourished	0	102	90	126	92	33	21	22	144	8	0	0	0	57	45
● % referred		6%	80%	100%	100%	100%	100%	100%	100%	100%				100%	100%