

TECHNICAL REPORT

Tested Changes to Improve Nutrition Assessment, Counseling, and Support in HIV Care in Zambia

AUGUST 2017

This technical report was prepared by University Research Co., LLC (URC) under the United States Agency for International Development (USAID) Applying Science to Strengthen and Improve Systems (ASSIST) Project, which is funded by the American people through USAID's Bureau for Global Health, Office of Health Systems. The report was authored by Ebedy Sadoki, Robert Musopole, Patricia Milandu, Lawrence Mwewa, Mayssa el Khazen, Anisa Ismail, and Amy Stern of URC. The nutrition assessment, counseling, and support improvement work in Zambia was funded by the U. S. President's Emergency Plan for AIDS Relief (PEPFAR) through USAID.

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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.

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Acronyms

ART	Antiretroviral therapy
ARVs	Antiretroviral drugs
ASSIST	USAID Applying Science to Strengthen and Improve Systems Project
BMI	Body mass index
CNVs	Community nutrition volunteers
EAR	Engagement, adherence, and retention
EMTCT	Elimination of mother-to-child transmission
FANTA	Food and Nutrition Technical Assistance
HCW	Health care worker
HIV	Human immunodeficiency virus
LIFT	Livelihoods and Food Security Technical Assistance
MAM	Moderate acute malnutrition
MCH	Maternal and child health
MOH	Ministry of Health
MUAC	Mid-upper arm circumference
NACS	Nutrition assessment, counseling, and support
NHC	Neighborhood health committee
OPD	Outpatient department
PEPFAR	U. S. President's Emergency Plan for AIDS Relief
PIA	Performance improvement approach
PLHIV	People living with HIV
QI	Quality improvement
SAM	Severe acute malnutrition
SMS	Self-management support
TB	Tuberculosis
URC	University Research Co., LLC
USAID	United States Agency for International Development

I. Background

HIV and nutrition are related in innumerable ways. People living with HIV (PLHIV) have increased energy and nutrient requirements for optimal treatment and health outcomes. Malnutrition associated with HIV and AIDS can severely affect an already-compromised immune system, leading to increased risk of opportunistic infections and a decreased survival rate. In 2014, the USAID Applying Science to Strengthen and Improve Systems (ASSIST) Project, in collaboration with two other USAID-funded projects, the Food and Nutrition Technical Assistance (FANTA III) and Livelihoods and Food Security Technical Assistance (LIFT II), began supporting the Government of Zambia through the Ministry of Health (MOH) Nutrition Department to pilot nutrition assessment, counseling, and support (NACS) as part of HIV care in Kitwe and Mkushi, representing both urban and rural districts. The pilot activity was funded by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through USAID and designed to support the continued adoption, adaptation, and scale-up of NACS as a standard of care within national HIV/AIDS programs in Zambia. Using the NACS platform, ASSIST, FANTA III, and LIFT II also implemented an activity with the objectives of strengthening engagement, adherence, and retention (EAR) of PLHIV in HIV care and ultimately improving the wellness of adults and pediatric HIV patients.

A key component of this work was to improve the delivery of NACS services, share implementation experiences, and identify a set of practices and interventions that lead to desired outcomes and can eventually be spread to other sites. This report describes the results achieved in Kitwe and Mkushi districts, explains how the quality improvement (QI) work was carried out, and details the effective practices tested by teams in the two districts that can be readily applied by others in Zambia and elsewhere.

A. Learning from demonstration sites

Under this partnership, ASSIST initially supported eight sites in Kitwe District and five sites in Mkushi District. Later, 17 more facilities in Kitwe and five more in Mkushi were added to the list of facilities where ASSIST provided technical support for the provision of nutrition services to PLHIV using QI principles. This entailed enhancing the capacity of health care workers (HCWs) and community nutrition volunteers (CNVs) to analyze and use their own data for decision making at facility level to improve the quality of care given to their target population. The main task was to ensure the provision of nutrition assessment and categorization to 100% of HIV patients at every contact, be it clinical reviews or drug pick-ups.

This document describes simple steps that have been proven to work in the Zambian context through the efforts of improvement teams at the facilities, supported by district supervisors and coaches. These changes, which are described in more detail in the Recommendations and **Appendix 1** to this report, can be grouped in three areas:

- 1) Changes in data recording and management, including the introduction of new data tools
- 2) Changes in staff roles, task shifting, and engagement of the community volunteers
- 3) Changes in patient flow

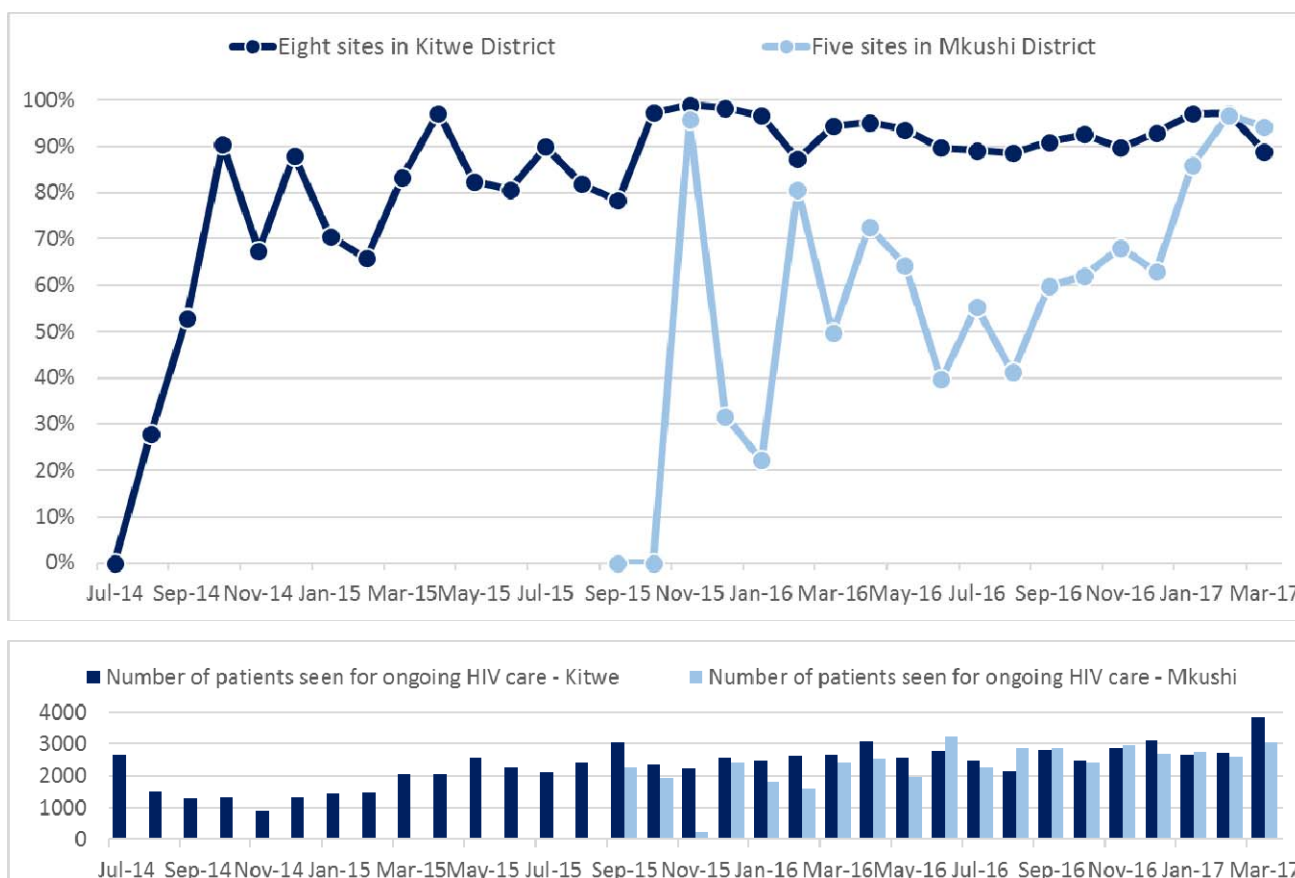
B. Results from NACS improvement work in Kitwe and Mkushi districts of Zambia

The changes implemented by the teams in each clinic to improve integration of NACS into HIV, maternal and child health (MCH), and tuberculosis (TB) care resulted in an increasing number of patients being assessed and categorized.

The participating sites in the two districts showed marked improvements compared to the baseline where no assessment and categorizations were being conducted to the results after teams began introducing changes in the three areas of data, staffing, and patient flow. **Figure 1** shows the increased proportion of patients who were assessed and categorized for nutritional status in the eight sites in Kitwe (six initial

sites from August 2014 to February 2015, after which two more sites were added to total eight sites and the five health facilities in Mkushi. In Mkushi, the slower pace of improvement was due to challenges at Mkushi district hospital, which contributed more than 50% of PLHIV to the district total. Initially, staff and volunteers at the hospital were using an incorrect denominator. After intensive coaching, the facility was able to identify and use the correct denominator; hence, the uptick in improvement recorded after January 2017.

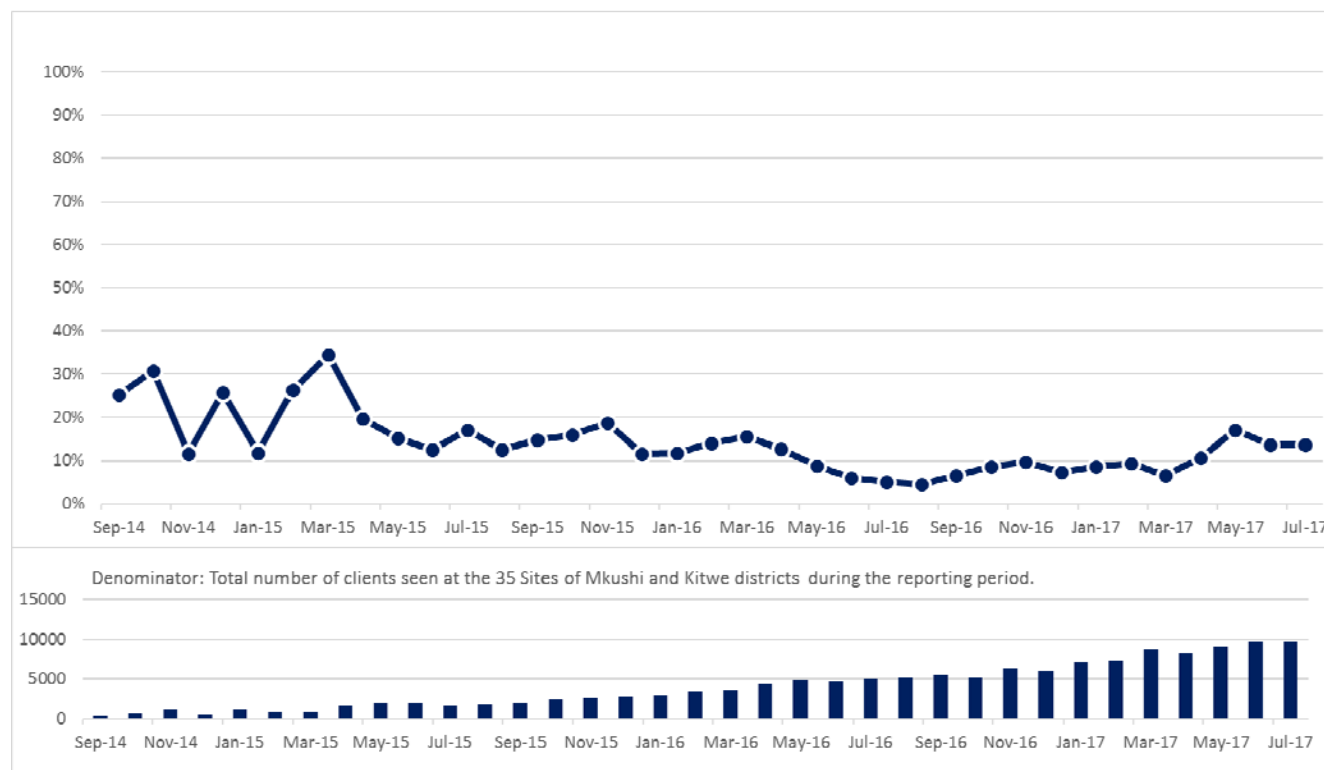
Figure 1: % of patients assessed and categorized for nutrition status, 8 sites, Kitwe (Jul 2014-Mar, 2017) and 5 sites, Mkushi (Sep 2015-Mar 2017)



The impact of integrating nutritional assessment and categorization in care for PLHIV and other nutritionally at-risk patients was the identification of larger numbers of patients with moderate acute malnutrition (MAM) or severe acute malnutrition (SAM) so that they could be treated and their nutritional status improved.

Figure 2 shows the impact of more thorough and accurate assessment and categorization of patients, with the number of patients who were found to be malnourished and diagnosed with severe or moderate acute malnutrition (SAM or MAM) increased from only a handful of malnourished patients to hundreds. Identification of these patients prompted health care workers to provide them with appropriate nutritional counseling. Where the severely malnourished were children, they were referred to the nutrition departments to be assisted with therapeutic foods. In addition, over time, the proportion of patients found to have MAM or SAM has decreased, as greater attention has been placed by health care workers on addressing nutritional issues of PLHIV.

Figure 2: Percentage of adult and child patients with SAM or MAM in Mkushi and Kitwe districts (Sept 2014-Jul 2017)



C. Intended use of this document

This document describes the successful operational changes made by the 13 health facilities in Zambia to integrate nutritional assessment and categorization into HIV care. The change ideas recommended here are supported by data collected over time, which show improvements in the proportion of PLHIV assessed and categorized.

The report aims to convey ASSIST’s experience in implementing QI approaches to reduce malnutrition in HIV patients in Zambia. Health care workers taking care of the HIV patients are the main targeted end-users of this change package. Others such as organizations and projects involved in the promotion of good nutrition for the HIV-infected patients, district health officials charged with the responsibility of supervising health facilities and MOH staff working on policies for improving the nutritional status of HIV patients will find the strategies described in this document very beneficial.

The improvement aim was reached after successful implementation of the changes. Each section outlines the problem being addressed, the change ideas tested, steps followed in introducing the change idea and the evidence that it led to improvement.

II. Applying Improvement to NACS Services in Zambia

A. How the NACS improvement work was implemented

The NACS improvement pilot activity had two goals:

1. Integrate nutrition assessment, care, and support into HIV, TB, and MCH care.

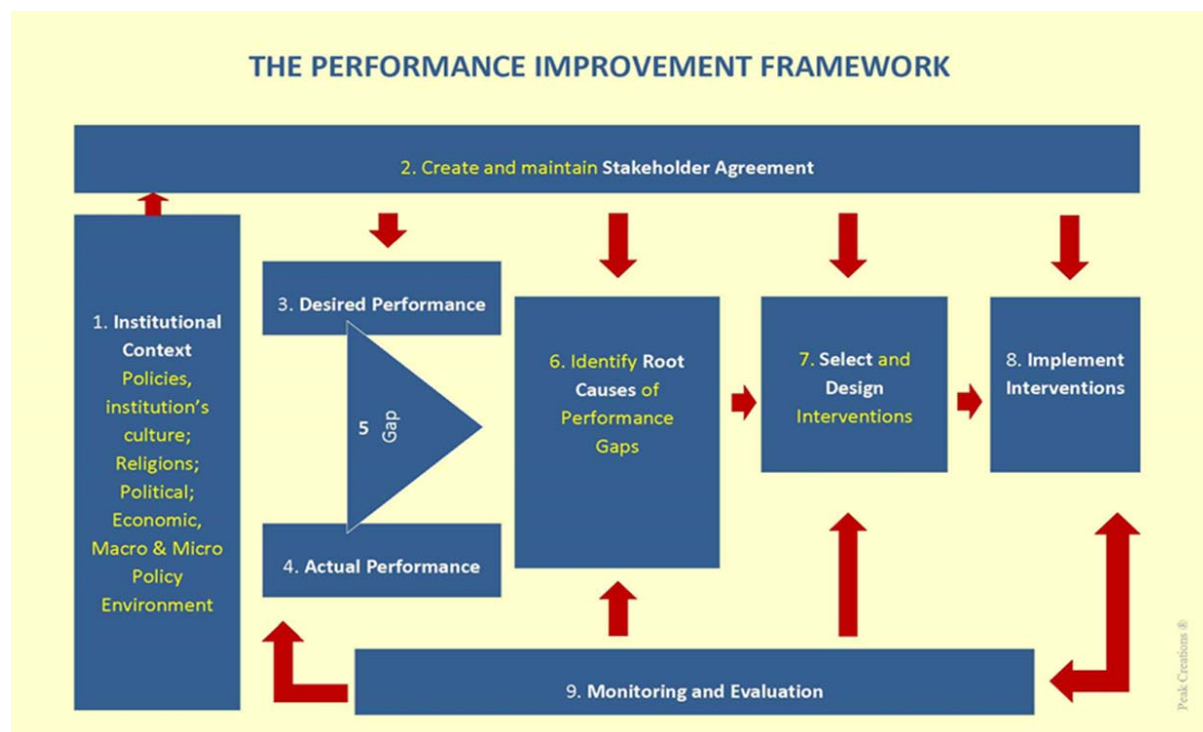
2. Provide evidence-based results that will help facilities, district health offices, provincial health offices, and the MOH to make decisions in the care of HIV, TB, and MCH patients.

The first step taken was to identify facilities that were providing HIV services and already working with a partner in nutrition. In the case of Kitwe and Mkushi, FANTA III had started implementing the NACS work in February 2014.

In July 2014, ASSIST, with the support of the MOH, selected eight out of the 25 sites that were supported by FANTA III in Kitwe District to pilot the NACS improvement activity. Of the initial eight sites that were selected to pilot the NACS improvement work, two were significantly delayed in starting and sustaining ART services. A decision was made to replace those sites with facilities that were already providing ART services to avoid further delays in the pilot. The two new sites began their improvement work about five months after the original six sites, in February 2015.

In August 2015, five MOH facilities in the more rural Mkushi District began working with ASSIST and FANTA III in integrating NACS within their HIV, TB and MCH departments. In Mkushi, ASSIST and FANTA III organized a joint NACS and QI training in October 2015. The training covered the basic nutrition care for PLHIV and general principles of QI. The general principle of QI was based on Zambia's national quality improvement guidelines, the performance improvement approach (PIA). **Figure 3** below shows the Performance Improvement Approach (PIA), which is a nine-step cycle for QI used to address identified performance gaps. The nine steps are: 1) Defining the context in which improvements will be made (resources/environment), 2) Obtaining and maintaining stakeholder agreement, 3) Defining the desired performance, 4) Defining the actual performance, 5) Defining the performance gap, 6) Identifying root causes of the performance gaps, 7) Selecting and designing interventions, 8) Implementing interventions, and 9) Monitoring and evaluating the results.

Figure 3: The Zambia Performance Improvement Framework



Adapted from the Guidelines on Quality Improvement for Health Care Workers in Zambia.

Between August and October 2015, the implementing partners and MOH conducted a joint planning meeting with the national, provincial and district MOH officials where all administrative issues were discussed.

The baseline data for Kitwe and Mkushi were collected prior to the implementation of the QI activities. **Figure 1** above show the baseline data for one month prior to the start of QI activities

During training, the facilities started the process of developing action plans, which was later completed at their respective facilities with participation of other facility members on staff. This was done during facility meetings held to orient other staff members and volunteers. The QI teams were formed during orientation meetings in facilities and were tasked to ensure that action plans were implemented and guidelines adhered to.

B. Focusing on two areas to improve

To improve the percentage of patients assessed and categorized for nutritional status in the clinics, the staff and volunteers evaluated their work and identified the reasons why not all patients were receiving a comprehensive package of NACS services when they visited the facilities for HIV care. Among the problems identified were:

- Inappropriate patient flow leading to patients skipping some important steps, such as nutrition assessment and categorization
- Lack of data on the total number of patients seen on each clinic day for purposes of comparing with those assessed and categorized
- Limited human resources to do the assessment and categorization as the few HCWs in each of the facilities were already overwhelmed with work
- Lack of a simple way of screening patients that would enable non-clinical staff/volunteers to conduct assessment and categorization with ease

Based on the challenges identified, health care workers supported by ASSIST identified two improvement aims they wanted to work on. The first was to improve **data documentation**, and the second was to **increase nutrition assessment and categorization**. Working with ASSIST coaches and district supervisors, health care workers in the 13 sites began introducing a few changes. These were tested on a small scale to ensure they were effective, and if they proved to work well, and were rolled out and used to improve care through the facility and in other facilities.

The change ideas that health workers and CNVs in Kitwe and Mkushi tested and found to be effective are described in detail in **Appendix 1** and can be summarized as follows:

Data recording and management

- Use of data tools that enabled districts to accurately capture data for patients from the moment they arrived at the facilities until their departure by the introduction of:
 - a. ART attendance book for ART clinics, which is used to record every patient seen for HIV services, while the NACS log sheet included details on every patient assessed and categorized;
 - b. Introduction of the NACS log sheet which captures nutrition information for all screened patients.
- Crosschecking data completeness to ensure all data was documented; at the end of each clinic day, the staff and volunteers analyzed their data by checking if all patients recorded in the daily attendance book had been assessed and recorded in the log sheet.

- Additionally, they checked the nutrition register to see if all those diagnosed with SAM and MAM had been recorded for follow-up purposes.

Staff roles and task-shifting

- Involvement of non-clinical staff (such as community health volunteers, or neighborhood health committee members) to assess and categorize HIV patients.
- Clinical staff, such as nurses and pharmacy officers who were not initially trained in NACS, were then oriented to conduct assessment and categorization of HIV patients.

Patient flow

- Changing patient flow to ensure all patients are routinely assessed and categorized at registration.
- Pharmacists send patients back to registration if they bypass nutrition assessment.

1. Improving data documentation

The QI teams decided to focus on improving data documentation in all facilities, since it was observed that many patients were still being missed during this process, and documentation of those they managed to assess was poorly done. At the start of the work, there was no documentation in place to show how many patients attended the HIV care clinic. Then, the Mindolo I Clinic came up with the idea of a daily attendance book. This idea came about when clinical staff wanted to know the total number of patients attending the HIV clinic on a daily basis to enable them to measure their performance. The daily attendance book was introduced to capture information on all patients coming each day for HIV, eliminating mother-to-child transmission (EMTCT), and TB services. This book was placed at registration points for HIV and TB. At the end of the day, the number of patients who came were compared to the number of patients assessed and categorized, which was documented in a hard-cover book.

The hard-cover book, which was used for documenting patients assessed and categorized, was modified into a printed copy of a **NACS log sheet** (see **Appendix 2**). To harmonize the documentation of nutrition information in all facilities in the country, the NACS log sheet was suspended to test the use of the national nutrition register introduced by the MOH and planned for use as a screening tool and a register for all patients receiving NACS. However, documentation in the national nutrition register was a challenge for most volunteers because of their varying literacy levels and complexity of the register. Following this observation, the partners reached an agreement to bring back the NACS log sheet for documentation of nutrition assessment and categorization data and maintained the nutrition register for documentation of malnourished (under- and overweight) patients.

2. Increasing nutritional assessment and categorization of patients

The QI teams used seven steps to good nutrition care in their approach: assessment, categorization, counselling, food by prescription, follow-up, community links, and education. Nutrition assessment and categorization became part of the routine vital signs assessed at every visit for all patients coming for HIV, MCH and TB care, be it collection of ARVs, clinical review, or seeking Outpatient Department (OPD) services. Teams put four strategies in place to improve assessment and categorization:

1) Involvement of volunteers in conducting assessment, categorization, counseling, and documentation.

A good number of volunteers were already trained in NACS by FANTA III. They were assigned in HIV, MCH and TB departments in five of the clinics to carry out NACS activities, with the supervision of HCWs. The assessments used scientific methods, such as mid-upper arm circumference (MUAC) and body mass

index (BMI). The initial five clinics were: Ipusukilo, Kamitondo, Kamfinsa, Kamitondo, and Tinna. Of these, four were public institutions, while one belonged to the private sector.

2) Facility QI teams changed the flow of patients by moving assessment and categorization to the registry desks in HIV, TB, MCH departments in five clinics.

Before this change was implemented, patients were being assessed in the OPD, where most of them were missed as they by passed the OPD and went straight to the HIV or pharmacy departments.

3) Facility staff and volunteers (nurses, pharmacy personnel, psychosocial counsellors, clinicians and CNVs) were oriented in QI and NACS to help address challenges of manpower and improve efficiency.

This also helped staff to supervise volunteers effectively, since they knew what was expected of them.

4) QI teams observed that some patients still by passed the assessment desks, so an agreement was reached with pharmacy department to only dispense medicines to patients who have been assessed and categorized.

Those without assessment results were sent back to the desk to receive nutritional assessment and categorization. A piece of paper was used to document their assessment results, which the patients would then present at the pharmacy.

III. Recommendations

By using QI methods, 13 QI teams improved the care for HIV patients in their facilities by integrating NACS into routine HIV, TB, and MNCH services. The teams also shared data with the district management teams that could be used to strengthen nutrition systems locally and, ultimately, at a national level.

For the other health facilities in Zambia interested in improving the delivery of nutrition care to the HIV-afflicted population and beyond, ASSIST recommends the implementation of the following high-impact changes that the project has developed and tested through day-to-day work with the participating facilities in Kitwe and Mkushi districts:

- **Introduce an ART attendance book for ART clinics to capture the total number of patients seen each day.** The image at right shows a photo of the ART attendance book that Masansa Clinic improvised.
- **Introduce a NACS log sheet for screening patients and documenting all valuable information.** The log sheet is filled out by trained volunteers under the supervision of the health care workers (see **Appendix 2**).
- **Crosscheck data completeness to ensure all data is documented.** Staff and volunteers at the facility count the total attendance from the daily attendance book

SEX	AGE	HIV Status	Type of Visit	R/t/c	Next visit
M	49	R	ART clinic	✓	8/06/17
F	34	R	ART clinic	✓	8/06/17
M	25	R	ART clinic	✓	8/06/17
M	42	R	Supported	✓	8/06/17
F	30	R	ART clinic	✓	8/06/17
F	22	R	ART clinic	✓	8/06/17
M	32	R	ART clinic	✓	8/06/17
F	27	R	ART clinic	✓	8/06/17
M	34	R	ART clinic	✓	8/06/17
M	53	R	ART clinic	✓	8/06/17
M	44	R	Supported	same	27/4/17
F	36	R	ART clinic	✓	27/4/17
F	27	R	Supported	same	27/4/17
M	41	R	ART clinic	✓	27/4/17
F	43	R	ART clinic	✓	27/4/17
M	42	R	Supported		27/4/17
F	43	R	ART clinic	✓	27/4/17
M	47	R	ART clinic	✓	27/4/17

ART attendance book (Masansa clinic)

NACS LOG SHEET													
FACILITY NAME: _____										Department: _____			
Date	Patient's Name	Age (yrs)	File number	Nutrition Assessment							Classification	Support	Remarks
				HIV status (R, W, E, O)	HT	WT	BMI	Waist Circ (cm)	Waist-Hip Ratio	Oedema			
										IF SAM or MAM	Support		
										New	Continued	Follow up	
										Y	N	N	R

and compare the number with the total number of patients assessed and categorized in the log sheet. The number of malnourished patients in the NACS log sheet is also compared with the number in the nutrition register to ensure they are consistent.

- **Involve non-clinical staff (such as community health volunteers, or neighborhood health committee members) to assess and categorize HIV patients.** This is done through on-site orientation by the trained health care workers or volunteers. Under constant supervision by those trained, the oriented volunteers can perform assessment and categorisation accurately within one month of training.
- **Orient other staff in the facility on how to conduct nutrition assessment and categorization.** Health care workers in Kitwe and Mkushi found that nurses, adherence counselors, pharmacy officers and other staff in the HIV clinic who weren't initially trained in NACS could readily be done on site to have them help out when needed to ensure all patients were assessed and categorized.
- **Change patient flow to ensure all patients are routinely assessed and categorized for nutrition status**—making nutrition status part of critical “vital signs” considered in the clinical assessment and management of each patient (see **Appendix 3** for an illustration of how facilities simplified client flow to ensure nutritional assessment and categorization).
- **Place nutritional assessment at registration to avoid patients missing this important step.** If this step is somehow bypassed, pharmacists need to send patients back to registration to ensure every patient has their vitals taken, including nutrition assessment and categorization.

Appendices

Appendix 1: Changes that resulted in improvement in assessment and categorization

Area to improve	Challenge	Changes tested	How the change was tested
Improving data documentation	Lack of documentation to measure facility performance.	Introduction of ART attendance book for ART clinics.	During the ART clinic, as part of registration, the service providers (facility staff and volunteers) introduced the attendance book. All HIV patients were entered in the book when they came to the clinic. They excluded the patients who sent treatment supporters (spouse, friend, relative/relative) to collect drugs. At the end of each clinic day, the number of patients who came was compared to the number of patients assessed and categorized for nutrition status.
	Volunteers did not document all items in the nutrition register, such as counseling, date, revisits, and sex. Patient follow-up information for MAM and SAM patients were not recorded.	Introduction of the NACS log sheet.	A notebook was introduced, which was later modified to a printed log sheet to record details of all patients assessed. The log sheet was simplified to facilitate the process for volunteers so that they did not need to take their time to create columns, which also avoided the possibility of leaving out pertinent information. This standardized the process for all health facilities and provided consistency.
	Information was not kept updated daily or in one place.	Crosschecking data completeness.	At the end of each day, a health care provider in the ART clinic crosschecked documentation in the daily ART attendance book, the NACS log sheet, and the nutrition register to ensure that information is consistent
	The nutrition register would fill up very quickly and before a replacement was delivered to facilities, which would result in gap in documentation in the nutrition register.	Daily use of the NACS log sheet for nutrition assessment.	When the nutrition register arrived, it was decided that it would be used only to record MAM and SAM patient data. ASSIST and FANTA III re-introduced the NACS log sheet to the health facility staff as an assessment document to screen patients for nutritional status.

Area to improve	Challenge	Changes tested	How the change was tested
<p>Increasing the number of patients assessed and categorized</p>	<p>Shortage of trained staff that led to lack of nutrition assessment and categorization for patients.</p>	<p>Involvement of non-clinical staff (such as community health volunteers or neighborhood health committee members) to assess and categorize HIV patients.</p>	<p>Neighborhood health committee members and other volunteers were oriented on how to take weight, height, and MUAC of HIV patients. These staff were observed for one month by the trained service providers to see if they were taking the measurements correctly, and they were then allocated in the HIV and MCH clinics to assess and categorize patients. This was done in all the facilities in question</p>
	<p>Some patients were leaving the facility without being assessed and categorized, as this was not part of routine services.</p>	<p>Changing patient flow through the clinic.</p>	<p>The facility teams changed the patient flow by moving assessment and categorization to the registration desk at ART, TB, ANC and under-five clinics. Prior to this, all patients were expected to register at the outpatient department; many patients bypassed this step and went directly to the HIV clinic. They then incorporated nutrition assessment and categorization on the list of vital sign measures that were being done at registration. For example, weight, height, MUAC, and calculation of weight-for-height (for patients 5-18 years of age) and body mass index (BMI) for patients over 18 years of age. If a patient still managed to bypass this step, pharmacists at the dispensary were asked to send patients back to registration to ensure every patient had their vital signs taken including nutrition assessment and categorization.</p>
	<p>Shortage of trained staff led to omitting nutrition assessment and categorization of patients.</p>	<p>Clinical staff, such as nurses and pharmacy officers, who were not initially trained in NACS were oriented to conduct assessment and categorization of HIV patients.</p>	<p>Nurses, adherence counsellors, pharmacy officers who were not trained on NACS were oriented and allocated at the clinic to help with assessment and categorization of HIV patients and to oversee volunteers who were performing nutrition assessment and categorization.</p>

Appendix 2: NACS log sheet

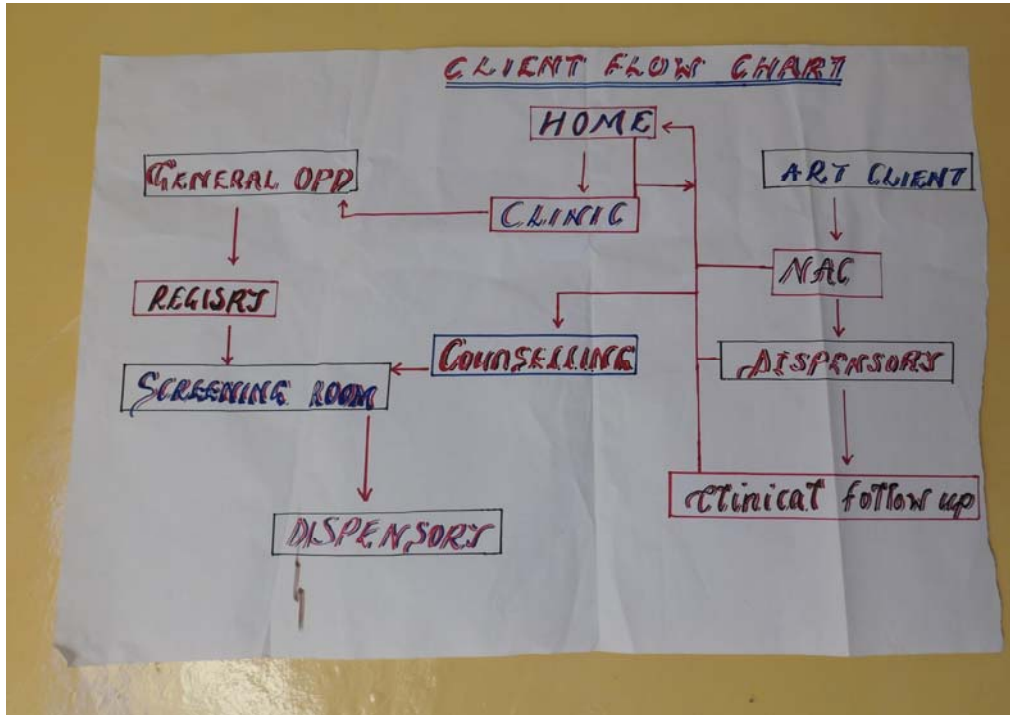
NACS LOG SHEET

FACILITY NAME: Department:

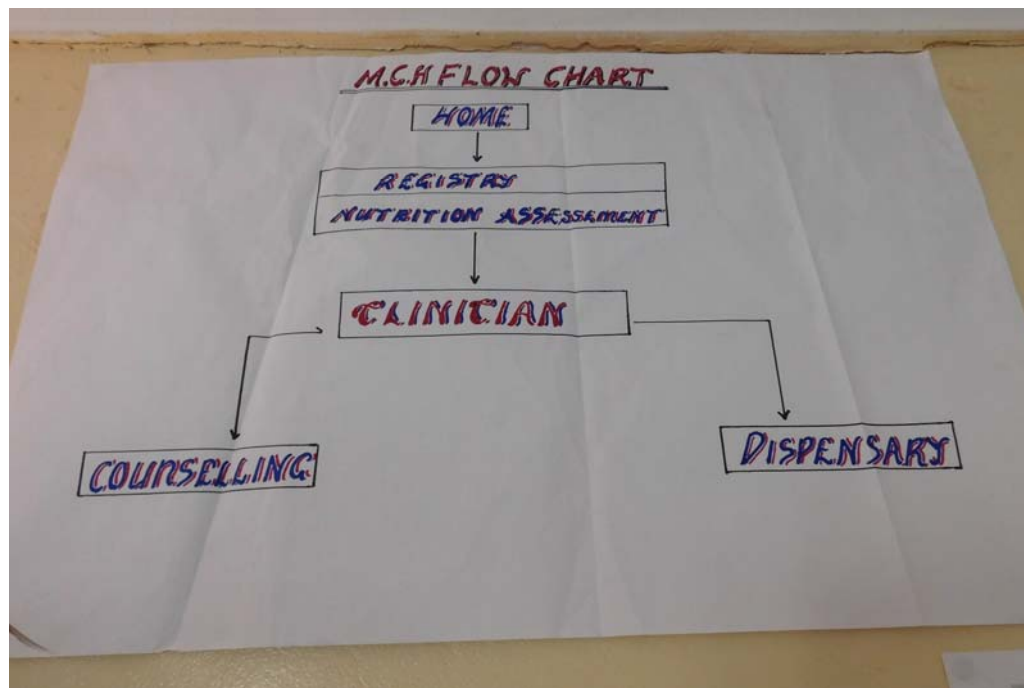
Date	Patient's Name	Age/Sex	File number	HIV status (R, NR, EXP)	Nutrition Assessment								Classification	IF SAM or MAM		Support		Remarks		
					HT	WT	BMI	MUJAC (cm)	Z - Score	Oedema		Visit		New	Follow up	Counseled	HEPS		RUTF	
										Y	N	N								R

Appendix 3: Client flow diagrams comparison

The pictures below show how health facilities change client flow to incorporate nutrition assessment and categorization. The chart prior to the intervention has more than one patient type and, hence, looks complicated, while the new one addresses only one patient type, making it more clear and concise.



Patient flow chart prior to intervention



Patient flow chart after intervention

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