Kingdom of Cambodia
Nation Religion King

Ministry of Health

Standard Operating Procedure (SOP)

For the Continuous Quality Improvement for Continuum of Care for People Living with HIV/AIDS in Cambodia

National Center for HIV/AIDS, Dermatology and STD

Year 2012

Standard Operating Procedure (SOP)

For the Continuous Quality Improvement for Continuum of Care for People Living with HIV/AIDS in Cambodia

Table of Contents

Abbreviation

ACU	AIDS Care Unit
ART	anti-retroviral therapy
COC	continuum of care
CQI	Continuum Quality improvement
HBC	Home-based care
M&S	Monitoring and supervision
MCH	Maternal and Child Health
MMM	Mondul Mith Chuoy Mith (friend help friend center)
NCHADS	National Center for HIV/AIDS Dermatology and STD
OD	Operational health district
OI	Opportunistic infections
PASP	Provincial AIDS and STI program
PDCA	Plan Do Check Act
PHD	Provincial health department
PLHIV	People Living With AIDS
PMTCT	Prevention mother to child transmission
SOP	Standard Operational Procedure
TWG	Technical working group

បញ្ជីឈ្មោះក្រុមជំនាញការបច្ចេកទេសរៀបចំចងក្រងនិយាមបែបបទសំរាប់ការអនុវត្តវិធីសាស្ត្រកែលំអគុណភាព ជាបន្តលើសេវាថែទាំនិងព្យាបាលបន្តនៃជំងឺអេដស៍

Technical Working Group for SOP Development ofthe Continuous Quality Improvement for Continuum of Care for People Living with HIV/AIDS in Cambodia

Names	Institution
H.E Dr.Mean ChhiVun	Director of NCHADS
H.E Dr. SaphonnVonthanak	Rector of University of science
Dr. Ly Penh Sun	Deputy Director of NCHADS
Mr. Mam Sovatha	Deputy Director of NCHADS
Dr. ChheaChhorvann	Deputy Director of NIPH
Dr. KholVohith	Deputy Chief of Research Unit
Dr. Chon Vichea	Deputy of Chief Technical Bureau,Research officer, NCHADS
Dr. SarunSaramony	Research officer, NCHADS
Dr. Kea Chettra	Research officer, NCHADS
Dr. SauSokunmealiny	Research officer, NCHADS
Dr. OukVichea	Chief of Technical Bureau, NCHADS
Dr. SengSopheap	Deputy of Chief Technical Bureau, NCHADS
Dr. SamrithSovannarith	Chief of AIDS Care Unit, NCHADS
Mr. CheaChamnan	Deputy Chief of Data Management, NCHADS
Dr. Ngauv Bora	Deputy Chief of AIDS Care Unit
Mr. PhatVeasna	Data management officer
Dr. Thomas Heller	HIV Clinical Advisor of CDC
Dr. Perry Killam	HIV Care & Treatment Coordinator of CDC
Dr. Chan Sodara	Public Health Specialist of US-CDC Team
Mr. Jeffry Mutuc	Fellowship Associate of school of Public Health, US-CDC
Dr. Nicole Seguy	WHO /HIV Program Adviser
Dr. Pieter JM Van Maaren	WHO Representative
Dr. Masami Fujita	Medical Officer on HIV/AIDS, WHO
Dr. Peter Cowley	Country Director, FHI
Mr. Steve Penfold	FHI-360 Country Director
Dr. Laurent Ferradini	Associate Director, Care and Treatment, FHI
Dr. Song Ngak	Deputy Country Director, FHI
Mr. Tony Lisle	Country Coordinator,UNAIDS
Dr. SavinaAmmassari	M&E Adviser, UNAIDS
Ms. Katha Keary	Consultation of UNAIDS
Dr. OumSopheap	Executive Director, Khana
Dr. ChhimSarath	Country Director of AHF,
Dr. Chan Phana	Technical Support and Training Manager, AHF
Dr. Men Pagnaroal	AHF, CAMBODIA, CARES
Dr. Kim Chindamony	HIV Project Manager , Hope Center
Dr. Khum Kim Eam	Deputy Chief of Technical, CENAT
Dr. TuonSovanna	PMTCT Program Manager, NMCH

Preface

Cambodia is one among the successful countries in the Western Pacific Region in the response to the HIV epidemic by reducing the HIV prevalence among people aged 15-49 years-old from 1.7% in 1998 to 0 .8 % in 2010. It is estimated that there are 75,131 people who are living with HIV, of whom 50,927 people are in need for antiretroviral therapy.

Since its launching in 2003, the Comprehensive Continuum of Care (CoC) Framework for PLHIV, Cambodia has achieved the universal access target for HIV treatment, with over 80 percent of adults and children in need receiving antiretroviral therapy (ART). In 2012, there are 61 pre-ART/ART sites for Adult, and 34 Pediatrician pre-ART/ART sites delivering HIV care and ART to 46,487 patients at the first quarter of 2012.

Noting the number of HIV/AIDS patients attending the pre-ART/ART clinics increases year by year although new infection is successfully prevented. The quality of care at the pre-ART/ART has been improved, but we need continuously improve the quality of health services at these facilities to maintain and improve quality of life of the people living with HIV/AIDS.

The Ministry of Health would like to congratulate NCHADS and all development partners who were actively participating in developing a Standard Operational Procedure (SOP) for Continuous Quality Improvement for Continuum of Care for People Living with HIV/AIDS in Cambodia. The SOP is important and helpful to guide our health care providers at pre-ART/ART sites to use it to improve their knowledge.

Ministry of Health officially approves the SOP and expects that all involving stakeholders will implement the continuous quality improvement effectively to improve quality of life of the people living with HIV/AIDS.

Phnom Penh,..26../..11..../ 2012

Minister of Health

Dr. MAM BUNHENG

ACKNOWLEDGEMENT

The National Centre for HIV/ AIDS, Dermatology and STD closely collaborates with the National Centers and Development Partners including NGOs to comprehensively discuss through many technical meetings to develop the SOP for implementing Continuous Quality Improvement for CoC services. This SOP is the result of intense efforts at implementation sites that contribute their experiences during a pilot phage of implementation of CQI for CoC services since 2008.

National Center for HIV/AIDS Dermatology and STD thanks all experts in working group who actively participate in the development of this useful document successfully.

In particular, NCHADS wishes to record our special thanks to:

- Minister of Health for his constant ideal recommendations and supports for all activities to prevention the HIV epidemic, and care and treatment for people living with HIV/ AIDS.
- Staff of AIDS Care Unit, Research Unit, Data Management Unit and other Units of National Centre of HIV/ AIDS, Dermatology and STDs, and City, Provincial AIDS and STD Program Officers for their efforts and coordination with all development partners; and for their active participation in development of the SOP.
- Continuous Quality Improvement Technical Working Group members for their supports, technical expertizes, and experiences in developing the SOP.

We also thank especially to medical doctors, medical assistants, nurses, midwives, drug and logistic management officers, data management officers, at pre-ART/ART sites, ANC services, Maternal and Child Health Departments, and TB departments, and national and international researchers for their active participation and sharing experiences in development of this valuable document.

Phnom Penh, 05 / 11 / 2012

Director of NCHADS

Dr. Mean Chhivun

1- Background and Rationale

The care and treatment of people living with HIV is a global health priority. The number of people with HIV infection receiving treatment with antiretroviral therapy (ART) worldwide is 34 million at the end of 2010[1].

Until recently, Cambodia was recognized as having the highest national prevalence of HIV infection in the Asia-Pacific regions. Despite considerable socio-economic constraints, Cambodia embarked on a comprehensive response to HIV/AIDS that resulted in declining HIV prevalence in adults from 1.7% in 1998 to 0.8% in 2010[2]. However, as the large number of people infected in the mid-1990s progressed to symptomatic stages of infection, HIV treatment and care needs increasing. HIV/AIDS care and treatment program in Cambodia was started in 2001 and in late 2003 the Ministry of Health approved the implementation of continuum of care (CoC) framework. This framework provides guidance to implement comprehensive HIV/AIDS care and treatment program, which creates a linked system between community supports and health care services. In addition, stigma and discrimination were also reduced, that created a favorable environment for PLHIV came and received care and treatment services. Since then projects CoCs have been expanded to 6 sites in 21 provinces and city in the country[3]. As a result, the ART coverage among those in need of ART in Cambodia has increased tremendously over the last three years, from less than 10% in 2003 to approximately 80% by 2011. NCHADS is willing to strengthen the monitoring of quality of care and to put in place a standard quality improvement system.

In 2006 NCHADS data management unit designed a standard electronic database that allows for individual patient data entry from standardized paper records at pre-ART/ART sites. In January 2008, 15 pre-ART/ART sites are equipped with the electronic database and record individual patient information. At these sites, data entry is conducted either by the provincial data managers or by a clinic staff. The data base can produce an automatic aggregated report that is sent to the central Data Management unit at NCHADS every quarter. At other sites, paper based reporting on aggregated data is used. This quarterly report provides information on the number of pre-ART and ART patients lost to follow, transferred out and died during the current quarter and the remaining number of active pre-ART and ART patients at the end of the quarter. All aggregated data from the pre-ART/ART services are input into a national database.

However, the electronic data quality is not checked regularly yet, and the use of data by ART site team (clinician, data management, nurses, ART site managers…) to monitor quality of patients' management at their own facility is still limited.

2- Concept and Objective of CQI

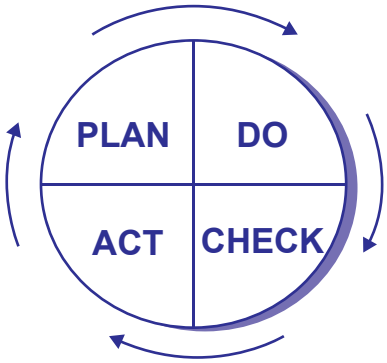
2.1 Concept

W. Edwards Deming. Deming began working in Japan in 1950 and was instrumental in building the Japanese industry into an economic world power. His strongly humanistic philosophy is based on the idea that problems in a production process are due to flaws in the design of the system, as opposed to being rooted in the motivation or professional commitment of the workforce. Under Deming's approach, quality is maintained and improved when leaders, managers and the workforce understand and commit to constant customer satisfaction through continuous quality improvement.

Deming and his colleague, Shewhart, promoted the PDCA cycle -- Plan, Do, Check and Act.

PLAN to implement a policy to improve quality and/or decrease the cost of providing services. After the plan is developed, we ***DO*** it by putting the plan into action and then ***CHECK*** to see if our plan has worked. Finally, we ***ACT*** either to stabilize the improvement that occurred or to determine what went wrong if the gains we planned for did not materialize. PDCA is a continuous cycle; any improvement realized by carrying out one PDCA cycle will become the baseline for an improvement target on the next PDCA cycle. The process of improvement (PDCA) is never ending, although the dramatic improvements of initial PDCA efforts may be hard to sustain.

Fig.1 The PDCA Cycle



CQI is a problem-*solving* method.

CQI focuses on system problems; rather than people problems.

CQI examines processes to identify areas for improvement; defects are analyzed using statistical principles and, when identified, are considered to be opportunities for improving the process.

In CQI, standards are based on best-practice models and National Guidelines that are emulated throughout the system.

2.2 Objectives

Overall objective

To improve the quality of care and treatment services provided to PLHIV in Cambodia

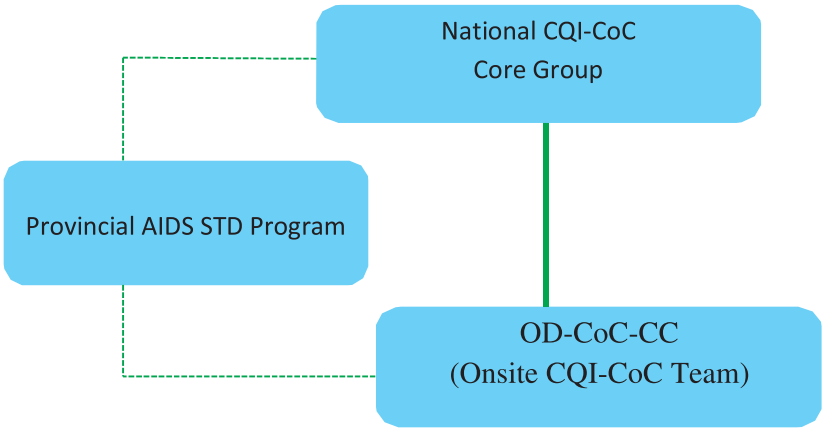
Specific objectives

1. To improve the quality and use of data related to standard criteria at pre-ART/ART sites
2. To improve communication between clinician team, community support teams and data management team at pre-ART/ART sites to work together in improving the quality of patient care
3. To develop a continuous quality improvement system at pre-ART/ART sites

3 - Structure, Role and Membership

3.1 Structure of CQI-CoC

Fig.1. Structure of CQI-CoC



There are two levels for the implementation of the CQI-CoC activities – the National Core Group and Onsite CQI-CoC team which is an element in the OD-CoC-CC, with coordination and facilitation from the Provincial AIDS and STD officers. The National CQI-CoC Core Group equips all necessary capacity to the PASP that continuously and directly supports, monitors, facilitates and coordinates the CQI at site to attain quality of care for PLHIV, and to Onsite CQI-CoC team, to achieve and maintain the objectives set by the National Program. The necessary capacity to implement the CQI includes but not limited to:

- Clinical skills and knowledge for the health providers,
- Knowledge on obtaining and producing quality data,
- Knowledge and skills on data management, data analysis, and use of data,
- Knowledge and skills on problem solving, and planning.

3.2 Members and Responsibility of CQI Team at each level

3.2.1 Members and Responsibility of National CQI-CoC Core Group

3.2.1.1 Members of National CQI-CoC Core Group

- Director of NCHADS
- Chief of Data Management Unit, NCHADS
- Chief of AIDS Care Unit, NCHADS

- Chief of Research Unit, NCHADS
- Representative from PLHIV
- Representatives from development partners
- Representative from CENAT
- Representative from NMCHC who is responsible for the PMTCT

3.2.1.2 Responsibilities of National CQI-CoC Core Group

- Develop and review the annual plan of the CQI
- Develop and amends the Standard Operation Procedure of the CQI
- Ensure that the implementation of CQI is in consistent with CQI SOP
- Monitor and evaluate the implementation of CQI in consistent with CQI SOP
- Provide inputs to PASP and pre-ART/ART sites to solve any problem or issue encountered
- Analyze data collected from field level, generates results and provides feedback to the PASP and sites for either quality improvement or for improvement of the gaps at a regular basis and timely manner
- Build capacity of PASP and pre-ART/ART sites through training, onsite coaching or study tour
- Provide recommendation and take a lead in developing and updating technical guidelines and documents: training materials, monitoring tools…etc.
- Develop a system to measure the CQI performance
- Advocate and facilitates stakeholder collaboration to ensure their technical capacity is used and adequate resources allocation to CQI activities
- Coordinate and arranges technical forum or meetings: CQI annual forum, CQI TWG…etc.
- Share lessons learned of HIV/AIDS CQI to the Ministry of Health for expansion to other health sectors
- Conduct any special study as required to fulfill the needs for program improvement.

At the early stage of the CQI implementation, the National CQI-CoC Core Group, especially the data management unit will generate reports at either the national level or provincial level (for specific sites in the province) to share with respective provinces at a regular quarterly basis. The report should contain required numerator and denominator for each indicator, considerations for data quality and points for the national and provincial/site team to follow up.

3.2.2 Members and Roles of OD-CoC-CC (Onsite CQI-CoC Team)

3.2.2.1 Members of OD-CoC-CC (Onsite CQI-CoC Team)

- District/Town vice-governor
- Director of OD
- Director of pre-ART/ART site
- pre-ART/ART team
- Representative from TB
- Representative from MCH
- Data person
- Representative from HBC

- Representative from MMM
- Representative from development partners

3.2.2.2 Responsibilities of OD-CoC-CC

- Support the implementation of CQI appropriately to the SOP
- Organize quarterly CQI meetings to monitor the progress update
- Conduct supportive supervision to identify problems, causes and develop an appropriate improvement plan
- Attend technical forums, meetings and CQI-related trainings…etc.
- Collaborate with the National CQI-CoC Core Group to conduct special study as required

3.2.2.3 Responsibilities of onsite CQI-CoC Team

- Ensure the quality of data – all patients have patient file with complete, correct and consistent information
- Enter and send data, findings from data analysis and feedback to the PASP on a regular basis and in a timely manner
- Organize quarterly CQI meetings to monitor the progress update and to analyze the minimum information for both program improvement and individual patient monitoring
- Collaborate with PASP conducting supportive supervision to identify problems, causes of the problems, and develop improvement plan as appropriate
- Attend technical forums, meetings and CQI-related trainings…etc.
- Collaborate with the National CQI-CoC Core Group to conduct special study as required

3.2.3 Coordination Roles of PASP

PASP has important roles in coordination the CQI-CoC teams, especially the pre-ART/ART team to develop the CQI implementation plan, and to coordinate between national CQI-CoC team and onsite CQI-CoC team to implement CQI smoothly.

The coordination role of PAS is as follow, but not limited to:

- Incorporate the CQI plan from each site into the PASP's CQI plan at provincial/city level,
- Coordinate with all ART sites in their province and national level to solve problems or encountered issues, for example, incomplete data, lack of supplies, or resource issues,
- Ensure data collected from site level are correct and sent in a timely manner to national level,
- Assist and build capacity of staff at pre-ART/ART sites to analyze the minimum information for both program improvement and individual patient care improvement,
- Advocate and facilitate stakeholder collaboration to ensure evidence based technical and resources allocation to CQI activities,
- Facilitate in conducting technical forum or meetings: CQI annual forum, CQI TWG…etc.,
- Provide appropriate supports for data management to staff at CoC services (especially at pre-ART/ART services) to ensure the quality of data management (enter data, collect data and analyze data) and data use for CQI implementation,
- Collaborate with and facilitate the national CQI-CoC Core Group to conduct a study if needed.

Quality improvement is a routine practice of the health care providers in providing quality

health services to the patients. The PASP and site team are supposed to continuously practice the CQI by using quality data to generate evidence to manage and implement the health services provision at their own province/site.

4 – Implementation of the CQI

Treatment of opportunistic infections and ARV treatment ensure people living with HIV maintain good health status and survive as normal life. Continuous quality improvement of the CoC is very important not only for the quality of life of the people living with AIDS, but also limits the ARV drugs resistant, and reduces new infection.

All pre-ART/ART sites in Cambodia will implement the CQI concepts in order to maintain and improve quality health care services and this practice will become a habit for all health care providers.

The implementation of the CQI will require efficient collection and management of data and its transformation into indicators that will provide useful information about trends in the standard of quality of healthcare services at pre-ART/ART sites. This section of the SOP describes the steps in implementation of the CQI activities. .

Fig.2. Steps in Implementing CQI-CoC Activities

4.1 Data collection

4.1.1. *Data collection for electronic database*

Health care providers collect and record patients' data in the patient chart. Data in the patient charts are daily computerized by the data entry clerk at pre-ART/ART site. Every quarter, the data for the relevant fields/variables will be extracted from the database, and the indicators are calculated from the information.

4.1.2. *Data collection for paper-database*

Additional data that are not containing in the pre-ART/ART sites electronic database need collecting at a quarterly basis using paper-based questionnaire from a predetermined number of patient records. The indicators will then be calculated from the collected data, for example, TB screening indicator, ANC1, or PMTCT. At the transitional stage, members of the National CQI-CoC core group, who are from NCHADS will collect these required data and calculate relevant indicators. In the long run, as it becomes a routine practice the PASP officers together with onsite CQI-CoC team are responsible in collecting the data and calculate the indicators accordingly.

4.2 Quality check and Clean electronic database

4.2.1 Log book for problems faced during data entry

Electronic data quality assurance measures have to be in place. The staff in charge of electronic data entry will record all problems they are facing during the data entry in a specific logbook. Data entry staff will meet on a weekly basis with health care providers from the pre-ART/ART site where the data are from, to discuss the problems that arise while entering data containing in patient records into the database, such as unclear script, unclear number, no data were recorded/written in the patient file, etc. These problems will be recorded in the data entry logbook, with a note about how the faced problems were overcome. The clarification of these problems should be immediately addressed to the health care providers.

The weekly meeting is important to ensure that the high quality data are gathered, processed, maintained and used. The meeting should include in the agenda of the pre-ART/ART site routine meeting.

The data entry staff will save the dataset on a regular basis into an external hard drive as a backup file.

4.2.2 Validation of electronic data using the paper-based patient records

Site manager should perform the following steps in checking the data quality:

- Obtain a 5% random sample of patient records in the database.
- Check the data against the paper records.
- For each field, check the number of discrepancies between the paper record and the electronic record.
- Record of the discrepancies, verify, find out the cause and make correction so that they reflect the actual information in the patient files and to prevent repeated errors in the future.

The data quality validation should be done at a regular basis (for example, monthly) by comparing the data in the electronic file and data in patient files.

The PASP officer should control the quality of data at least quarterly basis. The Team should perform the data quality check but not limited to completeness (make sure there is no missing

data for each variable of interest in each patient record and there is no missing records), code consistency (make sure the entered code are the same as they are recorded on the paper-base), and the accuracy (for example, date when IPT is stopped is never the same as date when IPT is started). The data should be collected and reported in timely manner.

4.2.3 NCHADS will check the data quality while compiling data sets from all pre-ART/ART sites, looking for missing or illogical or the completeness and accuracy of some key variables for CQI such as CD4 counts and viral load testing.

4.3 Analysis and interpretation of the CQI indicators

The analysis of the CQI indicators should be done at a regular basis, at least every quarter. Onsite CQI-CoC team is encouraged to analyze, interpret and use the results from their own data to monitor their services quality with appropriate supports from PASP and development partners in the province, as frequent as they wish to. At minimum site should analyze to monitor their performance on some important indicators, but not limited to:

- % of ART patients who died
- % of pre-ART patients who died
- % of ART patients who were lost to follow-up
- % of pre-ART patients who were lost to follow-up
- % of late visits beyond buffer
- % of HIV infected patients who received CD4 count for every six month (maximum 210 days)
- % of TB screening for all visits
- % of patients receiving viral load testing if eligible

The analysis can be done by the Data Management Unit at NCHADS to generate national indicators, specific provincial indicators, and pre-ART/ART site specific indicators as needed. DMU would share the results of the analysis with specific province, site and relevant Units at NCHADS, for example, Research Unit, and AIDS Care Unit for them to use these results as references to develop action plan or relevant interventions. For the province/site specific, DMU will send the analysis results to facility director, clinic/department (within a health facility) manager and PASP officer in order for them to monitor their own performance.

4.4 Problem Analysis, Prioritization, Proposed Solution and Action Plan

4.4.1 Investigation for problems indicated by the key indicator analysis

At each quarter, after completing the analysis or receiving the analysis results from Data Management Unit of NCHADS, facility director, site manager and PASP will organize a meeting to review the results and identify “alarm points” for flagging problems when they fail to meet pre-defined thresholds; or exceed pre-defined thresholds for the bad outcomes.

Onsite CQI-CoC team with technical support from development partner at site, and or National CQI-CoC core group, may generate list of patients who had bad outcomes noted during the analysis phase. For example, list of patients who died, or were lost to follow-up, or did not get Cotrimoxazol/Fluconazole if eligible, patients who were late beyond buffer, or patients whose CD4 testing is greater than seven months, or patient with missing data on required information,

etc. These lists could be reviewed to determine if it is a data related problem, or a problem of practice following the physicians' instruction, and then these patients could be flagged to fix the bad outcome. Action plan would be developed for the flagging purposes (see examples in Annex 4).

It is important to improve communication between clinician team, community support team and data management team to ensure good participation in this CQI process.

4.4.2 Problem analysis and development of the action plan to solve the identified problems

Onsite CQI-CoC team will analyze to identify the root causes of the problems, to identify appropriate solutions to solve these problems. There may be many problems occurring during the quarter, so the team should prioritize them based on preselected criteria, for example, magnitude of the problem, how strong it impacts on the quality of services, it causes death, it causes another problem, is it feasible to solve the problem, etc. Three minimum criteria have been used during the pilot phase of the CQI program in prioritizing a problem: important, urgent and feasible.

After selecting the most prioritized problem(s), the team will further analyze to look for it causes by simply ask each other why the problem occurred, what caused the problem. Onsite CQI-CoC team with technical support from PASP and/or appropriate development partners will then develop action plan to solve the causes of the problem. Action plan should be developed based on criteria below:

- Relevance to the defined problem
- Feasible
- Integrated with existing activities
- Effectiveness
- Ease in targeting
- Cost effectiveness
- Ease in evaluation

The action plan should be specific about the steps necessary to assure improvement in the indicator in question, and should give a timeline for the sequence of actions planned. The team is encouraged to use the problems solving matrix attached in Annex 3 (see examples in Annex 4). Below are several examples of the causes associated with a particular problem.

> Example 1: If the reason for poor performance against a process indicator is the lack of understanding of instructions in the OI or ART guidelines, the staff from NCHADS AIDS Care Unit will provide technical support. If the reason for poor performance is the lack of drugs or lab tests, the NCHADS AIDS care unit staff will have to work on forecasting and supply issue, or communicate with other concerned groups etc.
>
> Example 2: Poor appointment keeping can be due to poor adherence counseling and/or poor community/self-help group involvement.
>
> Example 3: Low percentage of patients receiving viral load testing can be caused by physician did not request, physicians are not aware of viral load testing eligibility, etc.

At any situation that needs support from the National CQI-CoC Core Group, the PASP should immediately or as soon as possible contacts the national team to dig more in-depth analysis of

the CQI indicators and related problems, and together with the PASP and site team develop action plan to address the identified problems.

4.5 Implementation of the proposed action plan

Once the action plan was developed, the onsite CQI-CoC team shall implement the plan accordingly with facilitation, coordination and appropriate supports from PASP and involved stakeholders.

4.6 Monitoring and evaluation of action plan

Onsite CQI-CoC team, PASP and involving partners will monitor the implementation of the action plan to see whether they have effects on the identified problem(s).

- The effects of the action plan should be reflected in the following quarters. If the plan and its proposed activities were effective, the CQI team at site will note improvements in the indicators of concern.
- If the action plan was not effective, and if the indicators continued to show a deteriorating trend, it may be necessary to share the concerns with national CQI-CoC Core Group and to modify the action plan in consultation with the team accordingly (see Annex 5: Follow-up report).

4.7 Key Indicators

The following list of indicators will be used to assess and monitor the quality of various aspects of the Continuum of Care (CoC) services being provided to PLHIV, which include services being provided at the pre-ART/ART site, as well as pre-ART/ART service linkages with other aspects of healthcare provision such as PMTCT and TB.

4.7.1 The mortality indicators

1. Percentage of ART patients who died
2. Percentage of ART patients who were lost to follow-up
3. Percentage of pre-ART patients who died
4. Percentage of pre-ART patients who were lost to follow-up

4.7.2 Quality of service indicators

5a. Percentage of late visits beyond ARV supply buffer date.
5b. Percentage of late visits within ARV supply buffer date.
5c. Percentage of visits on schedule among ART patients.
5d. Percentage of early visits among ART patients.
6. Percentage of ART eligible patients received ART within 30 days
7a. Percentage of patients with CD4 counts less than 200 cc/mm^3 receiving prophylaxis with CXT
7b. Percentage of patients with CD4 counts less 100 cc/mm^3 receiving prophylaxis with fluconazole
8. Percentage of patients newly registered at the pre-ART/ART site who were screened for TB symptoms
9. Percentage of patients received IPT among IPT eligible pre-ART patients
10. Percentage of HIV infected patients on IPT who have completed the 6 month regimen
11. Percentage of HIV infected patients who received CD4 count for every six months

(maximum 210 days)

12. Percentage TB symptom screening for all visits of all HIV infected patients (by quarter)
13. Percentage of patients who receive viral load testing routinely according to the National Guideline.

4.7.3 Case-finding and prevention indicators

14. Percentage of new pre-ART patients with an initial CD4 count of >350 cc/mm^3
15. Percentage of new TB patients who receive HIV testing and counseling (TB)
16. Percentage of ANC1 women who receive HIV testing and counseling (PMTCT)
17. Percentage of known HIV+ pregnant women who receive HAART or ARV prophylaxis to prevent HIV transmission from mother to child.(pre-ART) (Option B+)
18. Percentage of pregnant women known HIV status at the delivery.

4.8 Update, revision of CQI indicators

- The National CQI-COC working group is responsible for identifying any indicators that cannot currently be calculated from the patient records, and that might need modification of patient records/charts
- The working group will also propose an appropriate action plan for modification of existing records and data collection tools in order to collect data for these indicators.

5 - Link with other services

Although Continuous Quality Improvement for pre-ART/ART patients is focused on the quality of services for patients registered within these clinics, many CQI activities can involve a close linkage with other aspects of the Continuum of Care, for example, hospitalization, VCCT, Home-Based Care, TB, and PMTCT. Below are several examples:

5.1 CQI for pre-ART/ART services may require assessment of and improvements in HBC

HBC, CPN+ and MMM: The pre-ART/ART clinic sees nearly all known PLHIVs on a periodic basis. It may be the most convenient location to assess the overall levels of patient participation in, and satisfaction with, other services such as MMM, self-help groups or home based care and so can provide a source of information for feedback and improvement in these services.

- Loss to follow-up: Home Based Care teams may be needed to gather data on what has happened to the individuals who are lost and to help carrying out interventions to reduce this loss to follow-up.
- Adherence to treatment regimen: Some measures to improve adherence can take place at the pre-ART/ART clinic, but others may require Home Based Care teams to assess and organize household and community support for better adherence.

5.2 Hospitalizations

An investigation of the rate of hospitalization of pre-ART/ART patients may require data from the in-patient services if this is not always recorded on the pre-ART/ART patient charts.

It may find that many patients had a hospitalization or TB treatment in several years prior but no HIV test, in which case the intervention may need to be to strengthen the TB-HIV referral program or testing of selected hospital patients. In these cases the intervention is not at the pre-ART/ART clinic itself.

5.3 VCCT

Late presence at pre-ART/ART site: An investigation into patients who appear late for pre-ART/ART (with very low CD4 counts) may find that some had been tested and knew their HIV status long before presenting to pre-ART/ART for treatment. If this is the case, then the intervention may need to take place at the VCCT site, through improved counseling and referral.

5.4 PMTCT

All pregnant women newly identified as HIV+ under the PMTCT program should be registered with pre-ART and placed quickly on ART if they meet the criteria for pregnant women. Although this is a PMTCT program, these services are provided by the pre-ART/ART clinic and may best be evaluated there.

PMTCT/Family planning: Women who are HIV+ who do not wish to be pregnant and who are in a relationship should be using an effective method of family planning which are available at the pre-ART/ART clinics (condoms, pill and Depo-Provera injection).

5.5 TB/HIV

The number of new patients who are known to have active TB at the time of registration represent a check on the results reported from the program to refer TB patients for HIV testing. If the numbers are much lower than the TB-HIV program reports then the TB program data is in error or patients are failing to register for pre-ART after being tested HIV+.

5.6 Prevention/STI

Entertainment workers report high rates of HIV testing, so many or most of those who are HIV+ should know their status and should be registered for pre-ART/ART. Review of pre-ART/ART patients may be able to reveal the proportion EW who are registered compared to expectations, the proportion of female patients who are former or current EWs and provide a basis for investigating the process by which HIV+ women decide to continue with or discontinue commercial sex work.

The listing above is only to provide possible examples of linkages between CQI for pre-ART/ART and other services. As experience with CQI in the pre-ART/ART setting is gained, other examples of the linkage between pre-ART/ART and other services are likely to be found. While many CQI activities can take place completely within the pre-ART/ART clinic, CQI-CoC teams should recognize the opportunities for linking CQI with other services.

6- Monitoring, Supervision, Reporting and Training

6.1 Monitoring & Supervision:

The main objectives of monitoring and supervision are to support onsite CQI-CoC team to maintain the quality of data and quality of health services.

The National CQI-CoC Core Group should schedule the M&S at least for every quarter to the onsite CQI-CoC team at the early stage of the CQI implementation. Later on, after things are in place, the National CQI-CoC team will conduct supportive supervision for every six months.

PASP should schedule the M&S at least for every quarter. Joint M&S should be scheduled with

National team and development partner working in the area.

During the M&S, the team should provide necessary supports, but not limited to:

- Ensure the completeness of the data: all required data from each patient are collected, and they are collected from all registered patients,
- Ensure consistency of the data on patient record and electronic form,
- Ensure availability of the required data from other services – HBC, TB and PMTCT,
- Ensure availability and use of log book for problems faced during data entry,
- Ensure that each level that is under the monitor and supervision is able to analyze, interpret and use the data.

6.2 Reporting:

Team Leader at the pre-ART/ART site sends electronic data to the PASP who checks and analyzes the data from all pre-ART/ART sites in the province. PASP should perform analysis of the indicators that are needed for the quality improvement at site and send the feedback to site at a quarterly basis.

PASP sends the data to the data management unit at NCHADS, who regularly shares the data with AIDS Care Unit (ACU) for the follow-up and quality of care purposes, and other relevant Units within NCHADS. ACU and/or other relevant Units should be able to analyze the CQI indicators with technical assistance from the national CQI-CoC Core Group, if deemed necessary. Providing feedback about the analysis results to onsite CQI-CoC team is necessary to promote the health care providers.

At a quarterly basis, onsite CQI-CoC team reports the progress updates of the CQI indicators, progress updates related to follow-up activities for the problem solving in the preceded quarter, problems and challenges and action plan for the next quarter to PASP and the National CQI-CoC Core group. The progress reports should be posted on the NCHADS website, so that all relevant stakeholders can learn from the CQI implementation, and inter-sites can learn from each other.

6.3 Evaluating the Effectiveness of the Continuous Quality Improvement Program

- The National CQI-CoC team will meet with the members of the CQI-CoC team from each pre-ART/ART site in a joint yearly meeting in order to evaluate the overall progress of the CQI program at each site.
- Each of the sites will present CQI indicators as well as the National ART Database Quality Control reports from the preceding two quarters, a qualitative overview of the action plans developed and the outcomes and effectiveness of the action plans.

In the light of this overall report from the sites, the National CQI-CoC Core Group will evaluate how are the accomplishments of the program compare with the overall and specific objectives of the CQI-CoC. They will discuss any qualitative issues that arise with the implementation of the CQI plan, such as data collection and aggregation, calculation and appropriateness of the indicators used for monitoring quality as well as any modifications or additions to the indicators that may become necessary.

6.4 Training & Capacity Building:

CQI's most important asset is the dedicated people who work throughout the system. These individuals hold the key to successful and lasting quality improvement efforts.

The CQI workforce includes all those who contribute to the delivery of the organization's mission and services, regardless of career or volunteer status. The workforce can be ***empowered*** and ***enabled*** to develop and use their full potential to achieve their local agency and regional or statewide system vision for the future. For this to occur, the organization must provide opportunities for performance excellence, as well as for personal, professional and organizational growth.

6.4.1 SOP training

To implement CQI-CoC effectively, relevant and involved staff members of the CQI-CoC team at all levels, must take a 2-day training about the Standard Operational Procedures of the CQI. At the end of the training, participants will be able to:

- Understand the objectives of the CQI program,
- Understand the cycle of CQI and steps to implement CQI,
- Apply the procedures stated in the SOP,
- Develop provincial, site specific plan for the implementation of the CQI.

6.4.2 Data management training

Selected members of the CQI-CoC teams whose work relating with data shall take this training which will provide the basic knowledge and skill for them to work with data. At the end of the training, participants will be able to:

- Apply the concepts of data quality in collecting and processing the data,
- Use the set database layout to entry and backup the data,
- Know how to protect the data,
- Cite the rules, regulations and/or policies related to the use of data, or working with data,
- Understand advantages and disadvantages of using quality data,
- Develop a plan to manage their own data,
- Develop a data quality control mechanism for their own dataset.

6.4.3 Basic research method training

Physicians at pre-ART/ART site and health officials at OD and PHD level shall be knowledgeable about the research activities. At the end of the training, participants will be able to:

- Understand the rationale of research – translating data into evidence,
- Apply a research method to find out answers for CQI related priority issues.

ANNEX I: CQI Indicators

Mortality Indicators

1. % of ART patients who died	
Description	Number of ART patients died relate to all patients on ART at the clinic in the reporting period.
Purpose	To monitor the quality of the ART program
Method of Measurement	Count all dead patients in the reporting period and compute for percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Total number of patients known to have died during the quarter.
Denominator	Total number of patients on ART at the end of the reporting period (active patients + LTF + died + transfer out)
Source of data	The facility ART electronic database, patient records or the ART register
Interpretation	Action point. National average figure will be used as a reference for the comparison purpose. Appropriate actions should be taken to understand the cause of the death, and then preventing them accordingly when the analysis result exceeds the national average figure. Interpretation. The ultimate goal of HIV management is to preserve the lives of the patients. While not all patients can be saved, facilities should strive to provide good quality care that keeps deaths to a minimum. Intervention. The facility should review the reasons for mortality among ART patients, what changes in the system could reduce the chance of death and implement those that appear feasible.

2. % of ART patients who were lost to follow-up	
Description	Percentage of patients in the reporting period who have not presented themselves at the facilities for at least 3 months. The patients are not classified as dead, transferred out or stopped ART.
Purpose	To monitor the quality of the ART program and ARV drug resistance
Method of Measurement	The overall indicator is already reported quarterly as part of the national HIV information system. Further data for interpretation is available from the facility ART electronic database, patient records or the ART register.
Frequency	Quarterly
Numerator	Total number of patients who were lost to follow up during the reporting period. "Lost to follow up" is defined in the National ART Guidelines as lost for at least 3 months and not classified as dead, transferred out, or stopped ART.
Denominator	Total number of patients on ART at the end of the reporting period (active patients + LTF + died + transfer out)
Source of data	The facility ART electronic database, patient records or the ART register
Interpretation	Action point. National average figure will be used as a reference for the comparison purpose. Appropriate actions should be taken to understand the cause of the lost, and then preventing them accordingly when the analysis result exceeds the national average figure. Interpretation. The ultimate goal of HIV management is to preserve the lives of the patients. While not all patients can be saved, facilities should strive to provide good quality care that keeps loss to follow up to a minimum. Intervention. The facility should review the reasons for loss among ART patients, what changes in the system could keep the patients adhere to the treatment.

3. % of pre-ART patients who die	
Description	Percentage of patients in the reporting period who die regardless any causes.
Purpose	To monitor the quality of the pre- ART services
Method of Measurement	Count number of dead patients at the pre ART services during the reported period. Compute for the percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Total number of pre ART patients who die during the quarter.
Denominator	Total number of patients on pre ART at the end of the reporting period (active patients + LTF + died + transfer out)
Source of data	The facility ART electronic database, patient records or the ART register
Interpretation	Action point. National average figure will be used as a reference for the comparison purpose. Appropriate actions should be taken to understand the cause of the death, and then preventing them accordingly when the analysis result exceeds the national average figure. Interpretation. It is expected that a large proportion of pre ART patients who are reported as "lost" have died. The ultimate goal of HIV management is to preserve the lives of the patients. While not all patients can be saved, facilities should strive to provide good quality care that keeps deaths to a minimum. Intervention. The facility should review the reasons for mortality among pre-ART patients, what changes in the care and treatment approaches could reduce the chance of death or loss to follow-up, and implement those that appear feasible.

4. % of pre ART patients who were lost to follow-up	
Description	Percentage of patients who were lost to follow-up during the pre-ART period.
Purpose	To monitor the quality of the pre ART services
Method of Measurement	Count number of patients who were lost to the follow-up during the reporting period. Compute for percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Total number of pre ART patients who were "lost to follow up" during the quarter. "Lost to follow up" is defined in the National ART Guidelines as lost for at least 3 months and not classified as transferred out. Pre ART patients known to have died are classified as lost in the national reporting system.
Denominator	Total number of patients on pre ART at the end of the reporting period (active patients + LTF + died + transfer out)
Source of data	The facility ART electronic database, patient records or the ART register
Interpretation	Action point. It is estimated that about 5% of all Pre ART patients are lost each quarter from the national database figure. Facilities with more than 8% lost in a quarter should take action to understand the problem and try to reduce the rate. Interpretation. It is expected that a large proportion of Pre ART patients who are reported as "lost" have died. The ultimate goal of HIV management is to preserve the lives of the patients. While not all patients can be saved, facilities should strive to provide good quality care that keeps deaths to a minimum. Intervention. The facility should review the reasons for mortality among Pre ART patients, what changes in the system could reduce the chance of death or loss to follow-up, and implement those that appear feasible.

Quality Service Indicators

5a. % of late visits beyond ARV supply buffer date.	
Description	Percentage of visits that beyond the appoint schedule and beyond the ARV supply buffer date.
Purpose	To promote counseling services and encourage patients to follow the physician's appointment recommendations in order to avoid care and treatment interruption. This indicator is to be used as a proxy for measuring adherence to ART.
Method of Measurement	Count number of appointments that are beyond ARV buffer supply date. Calculate for the percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Total number of visits beyond ARV buffer supply date during the quarter.
Denominator	Total number of visits during the quarter.
Source of data	Facility ART electronic database, patient records or the appointment register
Interpretation	Action point. Facilities should limit the late beyond ARV buffer supply date to lo less than 2.5%. Interpretations. High percentage of late beyond ARV buffer supply likely lead to drug resistance. Interventions. The facility should review the cause of late beyond buffer, what problems may exist in the system and how these can be corrected to reduce the rate of missed appointments.

5b. % of late visits within ARV supply buffer date.	
Description	Number of late visits within ARV supply buffer date relative to total visits in the quarter.
Purpose	To promote counseling services and encourage patients to follow the physician's appointment recommendations in order to avoid care and treatment interruption. This indicator is to be used as a proxy for measuring adherence to ART.
Method of Measurement	Count number of appointments that are within ARV buffer supply date. Calculate for the percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Total number of visits within ARV buffer supply date during the quarter.
Denominator	Total number of visits during the quarter.
Source of data	Facility ART electronic database, patient records or the appointment register
Interpretation	Action point. Facilities should limit the late within ARV buffer supply date to less than 10%. Interpretations. High percentage of late within ARV buffer supply likely lead to late beyond buffer, and burdening daily work of health care providers. Interventions. The facility should review the cause of late within buffer, what problems may exist in the system and how these can be corrected to reduce the rate of missed appointments.

5c. % of visits on schedule among ART patients.	
Description	Number of visits on schedule relative to total visits in the quarter.
Purpose	To promote counseling services and encourage patients to follow the physician's appointment recommendations in order to avoid care and treatment interruption. This indicator is to be used as a proxy for measuring adherence to ART.
Method of Measurement	Count number of appointments that are on schedule. Calculate for the percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Total number of visits on schedule during the quarter.
Denominator	Total number of visits during the quarter.
Interpretation	Action point. Facilities should encourage the visits on schedule more than 85%. Interpretations. High percentage of visit on schedule is likely to keep the patients on adherence. Interventions. The facility should encourage patients to keep their visit on schedule.

5d. % of early visit among ART patients	
Description	Number of early visits relative to total visits in the quarter.
Purpose	To promote counseling services and encourage patients to follow the physician's appointment recommendations in order to avoid care and treatment interruption. This indicator is to be used as a proxy for measuring adherence to ART.
Method of Measurement	Count number of visits that are early than the appointment date. Calculate for the percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Total number of visits that are earlier than the appointment date during the quarter.
Denominator	Total number of visits during the quarter.
Source of data	Facility ART electronic database, patient records or the appointment register
Interpretation	Action point. Facilities should limit the early visits at less than 10%.

	Interpretations. High percentage of early visits will burden daily work of health care providers. Interventions. The facility should encourage patients to keep their visit on schedule.

6. % ART eligible patients received ART within 30 days	
Description	ART eligible patients are patients with CD4<350 cc/mm^3 or patients with WHO stage 3 or stage 4 or HIV infected patients with TB
Purpose	To monitor the timing of the initiation of ART treatment and to ensure that this is in line with the national guidelines on ART.
Method of Measurement	Count number of eligible ART patients who received ART within 30 days. Compute for percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Number of ART eligible patients who received ART within 30 days in the selected quarter. Eligible ART patients: patients with CD4<350 cc/mm^3 or patients with WHO stage 3 or stage 4 or HIV infected patients with TB.
Denominator	Total number of ART eligible patients expected to receive ART within 30 days in the selected quarter.
Source of data	Electronic database or the patient records
Interpretation	Action point. At least 85% of ART eligible patients should receive ART within 30 days. Interpretation. A high rate of delay in starting ART endangers the patient and is a sign of quality of care problems. Interventions. The facility should review reasons for delay in starting ART in any patient (not just those waiting more than 30 days), determine what interventions would help to reduce these delays, and adopt program changes to correct the problem.

7a. % of patients with CD4 count less than 200 receiving prophylaxis with Cotrimoxazol	
Description	All HIV infected patients with CD4 cell counts < 200 cc/mm^3 are eligible for Cotrimoxazol prophylaxis.
Purpose	To monitor the appropriate management of patients registered for pre-ART/ART care in terms of OI prophylaxis
Method of Measurement	Count number of patients whose most recent CD4<200 cc/mm^3 and who receive a new or ongoing prescription for Cotrimoxazol. Compute for percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Number of patients with most recent CD4 levels of less than 200 cc/mm^3 who received a new or ongoing prescription for Cotrimoxazol at the most recent visit in the selected quarter.
Denominator	Total number of patients whose most recent CD4 count was below 200 cc/mm^3 cc/mm^3 and had a patient visit during the selected quarter.
Source of data	The electronic database or patient records
Interpretation	Action point. All patients with CD4<200 cc/mm^3 must receive Cotrimoxazol for opportunistic infections prophylaxis. Interpretation. Failure to provide prophylaxis significantly increases the risk that patients will suffer from opportunistic infections and so is an indicator of sub-optimal quality of care. Interventions. The facility should review reasons for not starting prophylaxis, determine what interventions would help to reduce these delays, and adopt program changes to correct the problem.

7b. % of patients with CD4 count less than 100 cc/mm^3 receiving prophylaxis with Fluconazole	
Description	All HIV infected patients with CD4 cell counts < 100 cc/mm^3 are eligible for Fluconazole prophylaxis.
Purpose	To monitor the appropriate management of patients registered for pre-ART/ART care in terms of opportunistic infections prophylaxis
Method of Measurement	Count actual number of patients whose most recent CD4<100 cc/mm^3 and who receive a new or ongoing prescription for Fluconazole. Compute for percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Number of patients with most recent CD4 levels of less than 100 cc/mm^3 who received a new or ongoing prescription for Fluconazole at the most recent visit in the selected quarter.
Denominator	Total number of patients whose most recent CD4 count was below 100 cc/mm^3 and had a patient visit during the selected quarter.
Source of data	The electronic database or patient records
Interpretation	Action point. All patients with CD4<100 cc/mm^3 must receive Fluconazole for OI prophylaxis. Interpretation. Failure to provide prophylaxis significantly increases the risk that patients will suffer from opportunistic infections and so is an indicator of sub-optimal quality of care. Interventions. The facility should review reasons for not starting prophylaxis, determine what interventions would help to reduce these delays, and adopt program changes to correct the problem.

8. Percentage of patients newly registered at the pre-ART/ART site who were screened for TB symptoms	
Description	Ideally, all PLHIV patients have to be screened for TB which is the most prevalence and cause of death of AIDS patients.
Purpose	To monitor the proportion of registered PLHIV who are being screened for TB on a regular basis as recommended in the national Standard Operating Procedure for TB/HIV collaborative activities.
Method of Measurement	Count number of newly registered patients at the pre-ART/ART site in the reporting period who have been screened for TB. Compute for the percentage using numerator and denominator below.
Frequency	Quarterly
Numerator,	Number of patients who newly registered for opportunistic infection care at the pre-ART/ART site during the selected quarter who were also screened for TB (among those who were not already under treatment for TB).
Denominator	Total number of patients who newly registered for opportunistic infection care at the pre-ART/ART site during the selected quarter and who were not already under treatment for TB.
Source of data	Electronic database, modified pre-ART/ART register or patient records.
Interpretation	Action point. All HIV infected patients should receive TB screening on enrolment in pre-ART. National average figure will be used as a reference for the comparison purpose but sites should monitor their performance and initiate improvements if their failure rate doubles in any quarter compared to previous rates . Interpretation. Tuberculosis is common in HIV patients (approximately 20% of newly registered patients are found to have active tuberculosis), often has atypical presentations and is associated with high mortality, particularly if treatment is delayed. Failure to screen regularly for tuberculosis is a significant quality problem. Interventions. The facility should review reasons for not screening for tuberculosis, determine what interventions would help to optimize screening, and adopt program changes to correct the problem.

9. % of patients received IPT among IPT eligible pre-ART patients	
Description	It is observed that up to 40% of PLHIV enrolled in pre-ART/ART cohorts can develop TB. The indicator measures the IPT coverage at pre-ART/ART sites.
Purpose	Monitor the coverage of IPT at PRE-ART/ART sites.
Method of Measurement	Count number of IPT eligible patients who received INH for TB prophylaxis purpose. Compute for the percentage using the numerator and denominator below.
Frequency	Quarterly
Numerator	Number of IPT eligible pre ART patients defined in the SOP for implementing three Is in continuum of care setting, received INH during the reporting period. IPT eligible: patients who do not present the sign and symptom below In the last 4 weeks: - Fever anytime for any duration - Cough anytime for any duration - Two weeks or more of drenching night sweats, and Who do not have below laboratory test result and characteristics: - ALT or AST > 3-fold ULN - Active alcohol abuse - Prior history of Isoniazid toxicity
Denominator	All IPT eligible pre-ART patients in the reporting period.
Source of data	The facility ART electronic database, patient records or the ART register.
Interpretation	Action point. The national average figure will be used as a reference for comparison purpose, but sites should monitor their performance and initiate improvements if their coverage is lower compared to previous quarters. Interpretation. In general, a high coverage of IPT means all patients are appropriately screened for TB followed by appropriate intervention for those who are unlikely to have active TB. Intervention. If a facility has a low IPT coverage, they should review reasons for this occurring (e.g. poor TB screening practice), determine what interventions would help to improve the situation.

10. Percentage of HIV infected patients on IPT who have completed the six month regimen	
Description	It is observed that up to 40% of PLHIV enrolled in pre-ART/ART cohorts can develop TB. The indicator measures the IPT completion rate.
Purpose	To monitor the successful completion rate of patients taking INH for six months.
Method of Measurement	Count number of patients who have completed the 6-month IPT. Compute for the percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Number of IPT patients who have completed the 6 month course (180 days) during the reporting quarter. Six month completion course is for at least 180 days.
Denominator	Number of IPT patients who started IPT for at least 180 days ago during the reporting quarter.
Source of data	The facility ART electronic database
Interpretation	Action point. The national average figure will be used as a reference for comparison purpose, but sites should monitor their performance and initiate improvements if the completion rate is lower compared to previous period. Interpretation. In general, a high completion IPT rate results in lower TB-HIV co-infection which is the common cause of death among PLHIV. Intervention. If a facility has a low IPT completion rate, they should review reasons for this occurring (e.g. poor adherence), determine what interventions would help to improve the situation.

11. Percentage of HIV infected patient who received CD4 count for every six months (maximum 210 days)	
Description	Recommended routine laboratory monitoring during ART and opportunistic infection care, CD4 count is essential for every 6 months.
Purpose	To measure compliance (CD4 testing frequency) of health care providers.
Method of Measurement	Count number of HIV infected patients whose CD4 count interval is within 210 days. Compute for the percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Number of HIV infected patients whose CD4 count interval is within 210 days in the reporting period.
Denominator	Total number of patients who have CD4 count in the reporting period.
Source of data	The facility ART electronic database, patient records or the ART register.
Interpretation	Action point. Failure to comply with national guideline (CD4 testing frequency) by health care providers, may lead to inefficacy treatment and care. Sites should monitor their performance and initiate improvements if percentage of non-compliance to the guideline exists. Interpretation. In general, a higher non-compliance, a poorer medical practice. Intervention. If a facility has a high percentage of patients whose CD4 count is greater than 210 days, they should review reasons for this occurring (e.g. no reminder), determine what interventions would help to improve the situation.

12. % TB symptom screening for all visits of all HIV infected patients (by quarter)	
Description	It is observed in up to 40% of PLHIV enrolled in pre-ART/ART cohorts developed TB. The indicator measures efforts on TB/HIV actions.
Purpose	To measure performance on TB screening among HIV infected patients.
Method of Measurement	Count number of visits that TB symptom screening was performed. Compute for the percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	Number of visits that had TB symptom screening during reporting period.
Denominator	Total number of visits excluded visits of known TB patients, during reporting period.
Source of data	The facility ART electronic database, patient records or the ART register.
Interpretation	Action point. All HIV infected patients should receive TB symptom screening during their visit, if they are not TB confirmed patients. There is no national experience with this indicator, but sites should monitor their performance and initiate improvements if the percentage is lower than the previous quarters. Interpretation. Lower percentage of TB symptom screening indicates poor TB prevention among HIV infected patients together with poor identification TB/HIV co-infection. Interventions. The facility should review reasons for not screening for tuberculosis, determine what interventions would help to optimize screening, and adopt program changes to correct the problem.

13. Percentage of patients who receive viral load testing routinely according to the National Guideline on use of ARV, 2012.	
Description	Viral load testing confirms the treatment failure and can avoid unnecessary switches in ART when current regimens are effective.
Purpose	To measure the coverage of viral load testing among viral load eligible patients.
Method of Measurement	Count number of patients who have been assessed eligible for routine viral load testing and received viral load testing during the reported period. Compute for the percentage using numerator and denominator below. **Eligible criteria for routine viral load testing**[4] (National Guideline for the use of Antiretroviral Therapy, Jan 2012): - As annual routine monitoring beginning after at least 24 months of ART therapy
Frequency	Quarterly
Numerator	Number of viral load testing eligible patients who received testing during the reported period.
Denominator	Total number of viral load testing eligible patients during the reported period.
Source of data	The facility ART electronic database, patient records or the ART register.
Interpretation	Action point. Routine viral load testing should be performed following the National Guideline. National average figure will be used as a reference for the comparison purpose, but sites should monitor their performance and initiate improvements if the coverage is lower than previous quarters. Interpretation. Higher percentage of viral load testing lead to early detection of treatment failure Interventions. The facility should review reasons for lower percentage in viral load testing among eligible patients, determines what interventions would help to optimize the viral load test-based shift treatment, and adopt program changes to correct the problem.

Case-finding and prevention indicators

14. Percentage of new pre-ART patients with an initial CD4 count of >350 cc/mm^3	
Description	ART treatment given early can increase the chances of survival and reduce acquisition of new infections. ART usually should start as soon as CD4≤350 cc/mm^3.
Purpose	To monitor the ability of the CoC to identify and enroll patients early in the course of their disease and to avoid excess morbidity and reduce mortality.
Method of Measurement	Count number of new enrolled patients whose CD4> 350 cc/mm^3 in the reporting period. Compute for percentage using numerator and denominator below.
Frequency	Quarterly (or less often depending on resources)
Numerator	Patients with an initial CD4 count of >350 cc/mm^3.
Denominator	All patients newly registered at pre-ART/ART site during the reporting quarter.
Source of data	Electronic patient database or patient records.
Interpretation	Action point. It is estimated about 50% of newly enrolled patients whose CD4 count is greater than 350 cc/mm^3. Interpretation. Successful management of HIV to reduce morbidity and mortality is greatly aided when patients are enrolled in pre-ART care before their immune compromise causes serious problems with opportunistic infections. Interventions. Methods to improve early enrolment include PMTCT, TB- HIV screening and encouraging testing and enrolment among populations at risk for HIV. Facilities should discuss what actions are likely to identify patients prior to late stage disease and induce them to enroll in pre-ART.

15. Percentage of new TB patients who receive HIV testing, counseling and test result	
Description	All new TB patients should be counseled and tested for HIV because there is a high risk of co-infection.
Purpose	Tuberculosis is a common first opportunistic infection for patients who have HIV. Routine screening of all new tuberculosis patients can identify those who are HIV positive improve their therapy and reduce mortality.
Method of Measurement	Count number of new enrolled TB patients who received HIV counseling and testing in the reporting period. Compute for percentage using numerator and denominator below.
Frequency	Quarterly
Numerator	New TB patients who went for HIV testing and received their results in the reporting quarter
Denominator	New TB patients registered in the reporting quarter who do not already know their HIV status (i.e. HIV+ or recent HIV- test)
Source of data	Routine national reporting system for tuberculosis services. Quarterly report from TB service.
Interpretation	Action point Some provinces achieve over 80% testing rates and all areas should attempt to do as well. Interpretation. The dangers of undiagnosed HIV in persons with active tuberculosis are so high that universal screening is desirable even if the number of positives found is low. Interventions. The national TB-HIV program notes that in addition to sending patients for HIV testing, facilities collect blood from patients at their routine service and send the blood samples to test at the VCCT site (follow the SOP for HTC implementation 2012).

16. Percentage of ANC1 women who receive HIV testing, counseling and test result	
Description	One of the HIV prevention efforts is to prevent the transmission from other to child. The indicator measures the coverage of the HIV testing among first ANC mothers.
Purpose	All pregnant women should be screened for HIV in order to provide them prophylaxis so as to reduce the chance of transmission of HIV to their child and to provide early OI care for the woman.
Method of Measurement	Count number of ANC1 women who received HIV counseling and testing in the reporting period. Compute for percentage using the numerator and denominator below
Frequency	Quarterly
Numerator	ANC1 pregnant women who received HIV test and test result with appropriate post-test counseling.
Denominator	Total number of pregnant women who presented for ANC1 at the facility.
Source of data	PMTCT sites and the provincial PMTCT program.
Interpretation	Action point. Percentage of HIV testing among ANC1 should be more than 90%. If the percentage at site is lower than 80%, actions should be taken for the improvement. Interpretation. Individual PMTCT site should attempt to test over 90% of their own ANC1 patients and as many patients from nearby non-PMTCT site facilities as possible. Interventions. Facilities need to examine the causes of lower coverage, if any, and take appropriate measures to improve it.

17. Percentage of known HIV+ pregnant women who receive HAART or ARV prophylaxis to prevent HIV transmission from mother to child.	
Description	Once identified, HIV+ pregnant women shall receive appropriate care and treatment, to prevent the transmission to the child. The indicator measures the coverage of the prevention from mother to child activity.
Purpose	All known HIV+ pregnant women require careful follow-up to ensure that they receive optimal prophylaxis and advice to minimize the risk of transmitting HIV to their child and to protect their own health.
Method of Measurement	Count number of known HIV status women who received ART prophylaxis and follow up during the reporting period. Compute for the percentage using the numerator and denominator below.
Frequency	Quarterly
Numerator	Number of known HIV+ pregnant women in the denominator who received HAART or ARV prophylaxis.
Denominator	Number of known HIV+ pregnant women in the reporting period
Source of data	PMTCT site and from the provincial PMTCT program.
Interpretation	Action point. HIV services should strive to have no HIV+ pregnant women fail to receive prophylaxis. Action should be taken, to the extent possible, on all cases to prevent failure. Interpretation. Lower percentage of ANC1 tested for HIV, higher chance of HIV transmission from mother to child. Interventions. Facilities need to examine the causes for failure to ARV prophylaxis and inappropriate feeding practices and design interventions that will reduce this risk of HIV transmission from mother to child.

18. Percentage of pregnant women known HIV status at the delivery	
Description	Once identified, HIV+ pregnant women shall receive appropriate care and treatment, to prevent the transmission to the child. The indicator measures the coverage of the prevention from mother to child activity.
Purpose	Increase known HIV status among pregnant women.
Method of Measurement	Count number of known HIV status women at the delivery. Compute for the percentage using the numerator and denominator below.
Frequency	Quarterly
Numerator	Number of pregnant women known HIV status at the delivery in the reporting period.
Denominator	Total number of deliveries in the reporting period.
Source of data	MCH PHD or MCH OD or RH or HCs
Interpretation	Action point. HIV services should strive to know HIV status for all women at delivery (even it is low) in order to take appropriate action to prevent HIV transmission from mother to child. Interpretation. Higher percentage of the indicator helps to prevent the HIV transmission from mother to child more effectively. Interventions. Facilities need to examine the causes for lower coverage and design interventions to correct the problems.

ANNEX II: Cost for CQI-related activities

In order to implement the CQI-COC activities effectively, several necessary trainings and meeting, and monitoring and supervisions should be planned and budgeting ahead before launching:

1. Trainings
    a. Refresher training for physicians at the pre-ART/ART site on National Guidelines for the use of Antiretroviral Therapy in Adults and Adolescents, 2011; and National Guideline on PMTCT, 2011.
    b. Standard Operating Procedures for Implementing the Three I's in Continuum of Care Settings
    c. Standard Operating Procedures for Implementing the CQI-CoC
    d. Data management training
    e. Basic research method training
2. Meetings
    a. Weekly meeting at pre -ART/ART site for the data entry clerk using the log book dialogues with the physicians at site (CQI-CoC team at site level).
    b. Monthly meeting at pre-ART/ART site to validate, analyze and feedback, and to develop improvement plan.
    c. Quarterly meeting to review the progress, follow-up the improvement plan and develop action plan for next quarter. The meeting may include national, provincial and onsite CQI-CoC teams.
3. Supervision and Monitoring
    a. From the national level to the pre-ART/ART sites
    b. From the provincial level to the pre-ART/ART sites

ANNEX III: Problem Solving Matrix

(1) Problem (Prioritized problem)	(2) Cause (Causes of the problem)	(3) Proposed solution (Counter measures to the problem)	(4) Responsibility	(5) Timeline	(6) Follow-up
Discuss and prioritize the indicators based on how important, urgent and feasible. List all indicators considered as priority.	Discuss about all possible causes that lead to the problem. List all causes from patients, heath care providers and system point of view.	Discuss about possible solution. List all counter measures to the problem.	Who will be responsible for each proposed solution, individual or group	Set timeline to complete the proposed solution	State the status of the proposed solution, whether it was done, not done, or in progress.

ANNEX IV: Example use of Problem Solving Matrix

(1) Problem (Prioritized problem)	(2) Cause (Causes of the problem)	(3) Proposed solution (Counter measures to the problem)	(4) Responsibility	(5) Timeline	(6) Follow-up report
% of late beyond ARV supply buffer date high	**Patient's side:** - Lack of support for travelling to the clinic - Working far from home	(not selected for problem solving)			
	- Forget the appointment date	- Couselor-MMM-HBC have appointment list, set up reminder, remind the patients 2 days prior appointment date	- MMM	- Today	In progress
	- Rely on drugs borrowing from others	- Clearly and repeatedly inform the patients during any meeting, there is no borrowing or lending drugs.	- Health care providers	- At next meeting on …(date)	Not start yet. Will be followed-up (follow-up report)
	- Don't care about ART, too poor - Being late many times, don't dare to see doctor - Feel healthy	- Cousellor-HBC (self-help group) provide counseling, health education focus more on related topics (health care, adherence, how to maintain your good health) and conduct home visit more often.	- Counselor, HBC (self-help group leader)	- Within this week	Not start yet. Will be followed-up (follow-up report)

	Provider's side: - Make appointment coincide with holidays	Post visible holiday schedule at physician, counselor and MMM desk	Site manager	Today	In progress
	- Next appointment was not made (Dr. forgot or he was absent)	Counselor-MMM review and set up reminder for next appointment (as above)	MMM	Starting from today	In progress
	- Few health care providers but many patents/visits per day	(not selected for problem solving)			
	- Lack of patient appointment book	Update and regularly share information regarding inventory (at any meeting). Make request on time.	Site manager	Next meeting	Not start yet. Will be followed-up (follow-up report)
	- HBC team was not allowed to visit patient's home	- Cousellor-HBC (self-help group) provide counseling, health education focus more on related topics (health care, adherence, how to maintain your good health) at the MMM. Clearly stated the objective of home visit	Counselor, MMM, SHGL	Next MMM	Not start yet. Will be followed-up (follow-up report)
	- HBC team has limited resource for transportation support - Incentive comes late - Lack of medical consumables	(not selected for problem solving)			

	System side: - Lack of system to monitor patient's visit	Further investigation should be conducted to identify specific component in the "system" which is absent.	Health facility director and site manager	October	Not start yet. Will be followed-up (follow-up report)
	- lack of communication between doctor-MMM-HBC	Revitalize weekly (or monthly) meeting among health care providers, data management clerk, MMM and HBC	Site manager	Next weekly/monthly meeting	Not start yet. Will be followed-up (follow-up report)
	- IT does not maximize the use of data for patient monitoring	Further investigation should be conducted to identify specific what we want	PASP, HF director, site manager and IT	Next week	Not start yet. Will be followed-up (follow-up report)
	- Fund disbursement to HBC was late or interrupted - Lack of coordination when planning for HBC	(not selected for problem solving)			

ANNEX V: Follow-up report (the solutions and outcomes of the previous quarter are reviewed in the current quarter)

Proposed solution number ...: Further investigation should be conducted to identify specific component in the "system" which is absent.	
1. Initiated	Yes (or No).
2. When is it completed?	On 28 September 2012
3. What are the results?	The specific components were identified. They are ....
4. Are there constraints, challenges in completing the proposed solution?	No
5. Are there good things to learn from completing the proposed solution?	Yes, they are: - -
6. What can we conclude from "ACTING" the proposed solution?	A specific component which is absent in the system to monitor patient's visit was identified and solutions are proposed in the recommendation below.
7. What do we recommend from the above conclusion?	....
Proposed solution number ...: Revitalize weekly (or monthly) meeting among health care providers, data management clerk, MMM and HBC	
2. Initiated	
2. When is it completed?	
3. What are the results?	
4. Are there constraints, challenges in completing the proposed solution?	

5. Are there good things to learn from completing the proposed solution?	
6. What can we conclude from “ACTING” the proposed solution?	
7. What do we recommend from the above conclusion?	

References

1. UNAIDS, UNAIDS Global Report. 2010.
2. NCHADS, Estimation of the HIV Prevalence among General Population in Cambodia, 2010.
3. NCHADS, FIRST QUARTERLY COMPREHENSIVE REPORT, 2012.
4. NCHADS, National Guideline for the use of Antiretroviral Therapy. 2012.

ផលិតដោយ

មជ្ឈមណ្ឌលជាតិប្រយុទ្ធនឹងជំងឺអេដស៍ សើស្បែក និងកាមរោគ

គបត្ថម្ភដោយ

នាយកដ្ឋានបច្ចាវេក្ខណ៍ជំងឺឆ្លង របស់សហរដ្ឋអាមេរិក

CDC

Produced by

National Center for HIV/AIDS, Dermatology and STD

Supported by

US CDC