Kingdom of Cambodia

Nation Religion King

Ministry of Health

Standard Operating Procedures

for Implementing Cervical Cancer Screening for Women Living with HIV Enrolled in ART Services in Cambodia

2025

National Centre for HIV/AIDS, Dermatology and STD

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Acronyms

AIDS	Acquired Immuno-Deficiency Syndrome
CC	Cervical Cancer
CCS	Cervical Cancer Screening
CIN	Cervical intraepithelial neoplasia
CMA	Case Management Assistant
CMC	Case Management Coordinator
DMU	Data Management Unit
DNA	Deoxyribonucleic acid
DPM	Department of Preventive Medicine
FHC	Family Health Clinics
GAVI	Global Alliance for Vaccines and Immunization
HBCR	Hospital based Cancer Registry.
HIV	Human Immunodeficiency Virus
HIS	Health Information System
HPV	Human Papilloma Virus
hrHPV	High-risk Human Papilloma Virus
IARC	International Agency for Research on Cancer
IEC	Information, Education and Communication
KAP	Knowledge, Attitude and Practices
LEEP	Loop electrosurgical excision procedure
LLETZ	Large loop excision of the transformation zone
MOH	Ministry of Health
MPA	Minimum Package of Activities
NCHADS	National Centre for HIV AIDS and Dermatology and Sexually Transmitted Diseases
OD	Operational District
PASP	Provincial AIDS and STIs Program
PHD	Provincial Health Department
PBCR	Population based Cancer Registry
RCC	Regional Cancer Centre
SO	Specific Objective
SOP	Standard Operating Procedure
STI	Sexually Transmitted Infections
VIA	Visual Inspection with Acetic Acid
WHO	World Health Organization
WLHIV	Women living with HIV

Preface

Cervical cancer ranks as the 2nd most frequent cancer among women in Cambodia and the 2nd most frequent cancer among women between 15 and 44 years of age. Data is not yet available on the HPV burden in the general population of Cambodia and even more so in women living with HIV (WLHIV). However, in South-Eastern Asia, about 3.0% of women in the general population are estimated to harbour cervical HPV 16/18 infection at a given time, and 70.4% of invasive cervical cancers are attributed to HPVs 16 or 18.

The Royal Government of Cambodia named HPV vaccine a primary prevention strategy toward eliminating cervical cancer, and the Ministry of Health recently launched the national HPV vaccination program for all 9-year-old girls. This indicates the MoH's strong commitment to improving the health of Cambodian girls and women.

To support the Ministry of Health's commitment, the National Center for HIV/AIDS, Dermatology and STD (NCHADS) has initiated and facilitated multiple meetings with involved stakeholders including the Department of Preventive Medicine (DPM) as well as national and international partner organizations to discuss the development of this important document. This Standard Operating Procedure (SOP) provides guidance on the setup and delivery of cervical cancer screening (CCS) services pertaining specifically to the HPV DNA testing and the referral system for HPV (+) WLHIV enrolled in ART services, who might be facing HIV-related stigma and discrimination, restricting the referral to and their uptake of these important screening services even though they are offered in public facilities.

The contents of this document are built on the SOP for CCS for the general population (2018) and incorporate the recent recommendations of the WHO (2021).

The Ministry of Health values the dedication and efforts of NCHADS, the DPM, the expert team recruited through Ginger International funded by Expertise France, all members of the Technical Working Group on HIV Care and Treatment, all development partners, and civil societies for their contributions to developing this SOP.

The Ministry of Health officially approved this SOP to be used at ART sites in Cambodia and expect that Provincial Health Departments at sub-national level, HIV and STD program, and all development partners will support and jointly implement this SOP effectively to improve equity in access and uptake of CCS services among WLHIV in Cambodia.

Phnom Penh, 11.../Apr./2025

Minister of Health

Prof. CHHEANG RA

Minister of Health

Acknowledgments

The National Center for HIV/AIDS, Dermatology and STD (NCHADS) would like to express its appreciation and acknowledge the dedication of the international and local team of experts (Dr. Jaap Koot, Dr. Kamran Mehed from Ginger International Agent and Dr. Kennarey Seang from University of Health Science) through the funding from Expertise France, the members of the Technical Working Group (TWG) on HIV Care and Treatment and the Department of Preventive Medicine (DPM) at the Ministry of Health (MoH) in the development of the *"SOP for Implementing Cervical Cancer Screening For Women Living With HIV Enrolled in ART Services in Cambodia"*.

The higher risk of developing cervical cancer among WLHIV is well established and the stigma and discrimination experienced by people living with HIV (PLHIV) according to various surveys conducted in the past by NCHADS highlights the importance of CCS services tailored specifically for WLHIV to ensure effective response and high service uptake. The process through which the SOP had been developed includes multiple rounds of meetings and discussion sessions to share experiences, insights, and recommendations between relevant individuals and experts from the NCHADS, DPM, and concerned national and international organizations directly or indirectly involved in HIV care and CCS. The SOP was presented on May 17 2024 at a meeting of the national TWG on Cancer and PMTCT, presided over by **H.E. Prof. Im Sethikar**, and revised following the group's comments and suggestions accordingly.

An estimated number of 25,000 WLHIV are eligible for CCS in Cambodia. The main aim of this SOP is to set up a screening and referral system for cervical cancer among WLHIV, so that cervical cancer screening with HPV DNA test among WLHIV could be initiated. Through these screening services that will be implemented among WLHIV, there is a contribution to universal health coverage (UHC) to a certain extent and an opportunity to build and strengthen collaboration and cooperation across national programs to ensure that WLHIV in Cambodia will receive standards of care recommended without stigma and discrimination with regards to cervical cancer screening, prevention, and treatment.

On behalf of NCHADS, I would like to thank the management team and officers of NCHADS (Dr. Samreth Sovannarith and Dr. Ngauv Bora, Deputy Directors of NCHADS, Dr. Kaoeun Chetra and Mr. Mom Chandara Deputy Head of Technical Bureau, Dr. Ky Sovathana, National Medical Coordinator for Care and Treatment of AIDS Care Unit, and Dr. Kay Sokha, Head of Admin Bureau) for both administrative and technical supports to the recruited expert team to develop this document. I would like to also extend my appreciation to Dr. Kol Hero, Head of DPM, **H.E. Prof. Im Sethikar**, Chair of the National TWG on Cancer and PMTCT, the TWG of the CCS program of the DPM, Dr. Deng Serongkea from the WHO Country Office, Mr. Ung Polin and Dr. Khin Cho Win Htin from the UNAIDS (Cambodia), Dr. Korn Aun, Head of Gyneco-Obstetric Ward, Assistant Prof. Lim Sreng Setha, Head of Medicine Ward B, and Dr. Vann Pisey, Head of AIDS Care Ward from Calmette Hospital for their contribution to the evaluation of screening algorithms of cervical cancer among WLHIV as well as institutions including FHI360/EpiC Project, CHAI Cambodia, and Chhouk Sar Association; all of whom had contributed their time and efforts discussing with the expert team to provide contextual insights that help guide the scope and feasibility of the ***"SOP for Implementing Cervical Cancer Screening For Women Living With HIV Enrolled in ART Services in Cambodia"***.

Phnom Penh, 10 /. April /2025
Director of National Center for HIV/AIDS Dermatology and STD

Assist.Prof. OUK VICHEA

1. Introduction

In 2018 the Ministry of Health of Cambodia issued the Standard Operating Procedure (SOP) for Cervical Cancer Screening (CCS).[1] The SOP is part of the National Action Plan for Prevention and Control of Cervical Cancer 2019 – 2023.[2] There is a screening algorithm for WLHIV in the general SOP. (Annex 1)

The programme for CCS for the general population is being rolled out in the country and from October 2023 onwards, the HPV vaccination is being rolled out for 9-year-old girls across the country. However, the activities as listed in the SOP 2018 for women living with HIV (WLHIV) are not yet implemented, especially HPV testing is not yet routine wise provided.

As WLHIV have 5-6 times higher risk of being infected with HPV and have a higher chance of developing pre-cancerous lesions and eventually cervical cancer, starting a CCS for this group is long overdue. There are estimated 25,000 WLHIV in Cambodia, eligible for CCS by the end of 2023.

In 2021 the WHO published guidelines on CSS, including an updated guideline for addressing the needs of WLHIV.[3]

This SOP for CCS for WLHIV builds on the SOP for CCS for the general population (2018) and incorporates the recent recommendations of the WHO (2021). It is developed to provide guidance to HIV program and ART service providers on how to make CCS service available for WLHIV who are on care at ART services.

2. Goal and Objective of this SOP

Goal

To reduce cervical cancer morbidity and mortality among women living with HIV in Cambodia.

Objectives

- To increase the technical capability of HIV service providers in HPV screening to prevent cervical cancer among women living with HIV,
- To build and strengthen the collaboration between HIV program and NCD prevention and control program to implement cervical cancer screening, prevention and treatment for women living with HIV,
- To monitor the uptake of cervical cancer screening, prevention and treatment services among women living with HIV in Cambodia.
- To set up a referral system for WLHIV with precancerous or cancerous lesions to access cancer diagnosis and treatment at general health services.

3. Cervical Cancer Screening (CCS) Algorithm

The algorithm for CCS for WLHIV in ART sites is shown in the diagram in figure 1 on the next page.

The CCS for WLHIV follows the screen-triage-treat approach and contains the following elements:

- CCS for WLHIV starts at the age of 25 years and continues until the age of 49 years. Women above the age of 50 years, who have never been screened before, are screened until two consecutive negative screening results are obtained.
- HPV-DNA samples come from self-collected swabs by WLHIV. If that is not possible, they are assisted by a healthcare provider.

- In the laboratory partial genotyping is performed of HPV-positive samples, and HPV genotypes 16 or 18 and/or other high-risk HPV genotypes are identified.
- Visual Inspection of the Cervix with Acetic Acid (VIA) is performed in the general health services to triage women after a positive HPV DNA test.
- Identification HPV genotypes 16/18 is followed by referral for ablation or LEEP. VIA helps to identify the location where ablation should be performed.
- Other hr HPV genotypes are assessed (triaged) using a regular VIA assessment. VIA-positive women are treated with ablation, LEEP or are referred to a higher level (provincial or national hospital) for advanced diagnosis.
- After an HPV negative test, WLHIV are screened again after 3 years using HPV DNA detection as the primary screening test.
- After an HPV positive test either treated or not treated, WLHIV are retested with HPV DNA testing at 12 months and, if negative, move to the recommended regular screening interval in figure 1 (3 years).

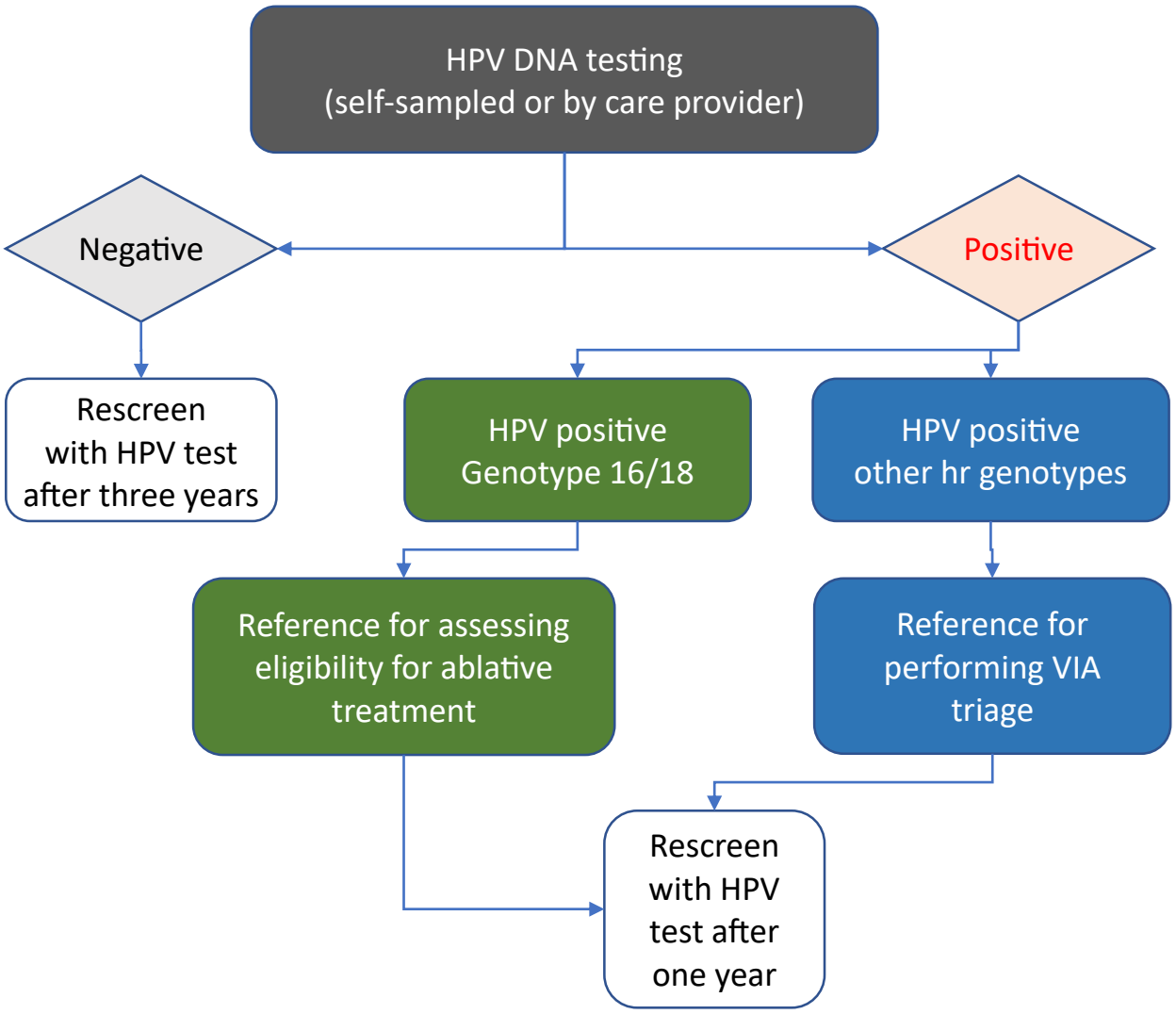


Figure 1 Algorithm for CCS of WLHIV in ART sites in Cambodia

4. Methods

Steps in the HPV screening for WLHIV

The steps as shown in the figure 2 below are taken in the screening process and described in the paragraphs below. It includes steps that will be performed in referral clinics.

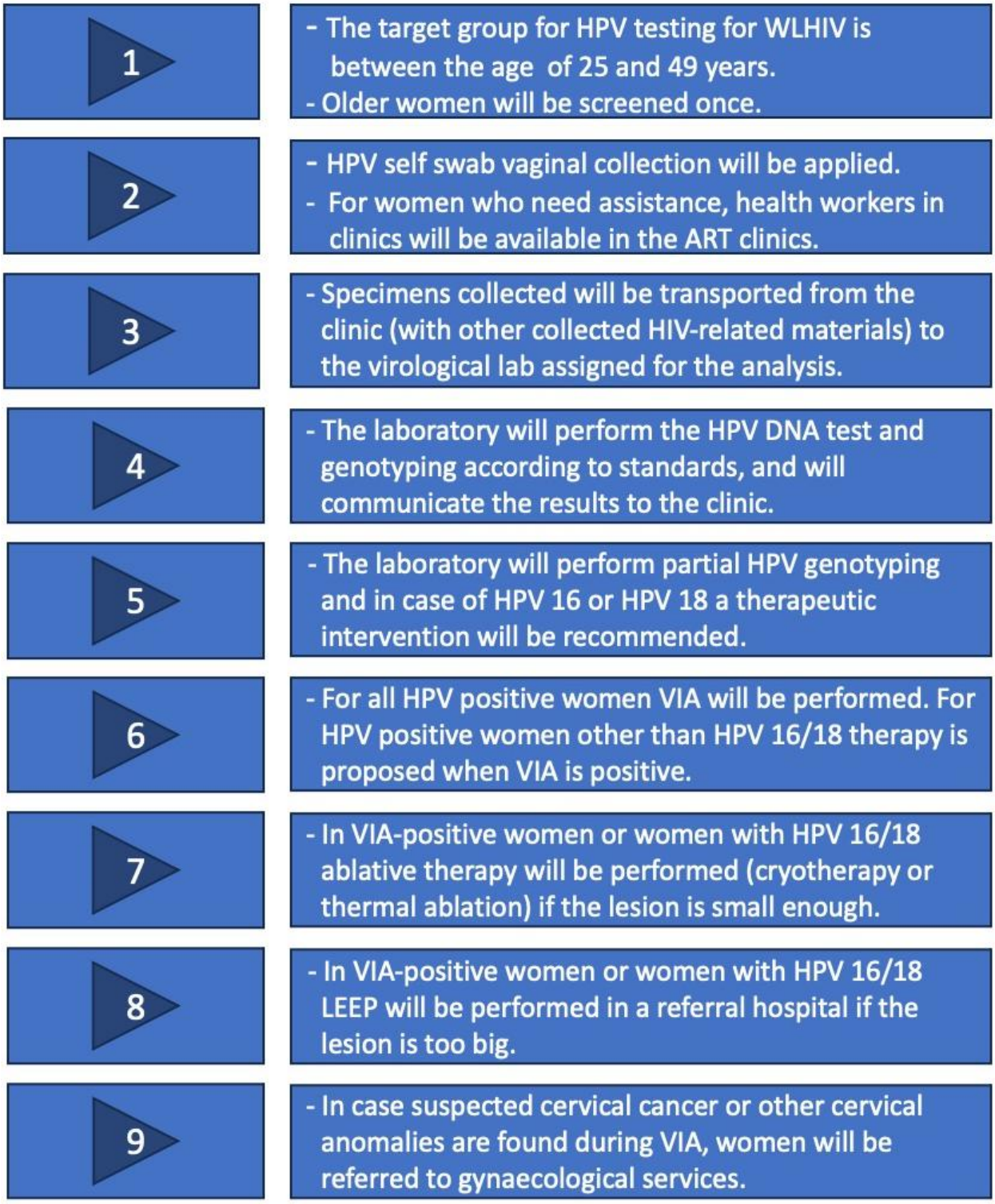


Figure 2 Steps in CCS for WLHIV

Step 1: Target group, counselling and eligibility criteria

The target group for the HPV DNA testing as first step in CCS are WLHIV from the age of 25 years until the completing the age of 49 years, who are under Anti-Retroviral Treatment (ART). WLHIV aged 50 years and older will be invited at least once for screening. If they have two negative HPV tests in their lifetime, their screening will be discontinued. (Screening before the age of 50 is also counted.) The testing is therefore in a wider age group than screening for the regular population.

Women will be counselled concerning the screening procedure using education materials (annex 2) and possible medical interventions in relation to the screening, emphasising the following:

- Women living with HIV are more likely to be infected by HPV and develop cervical cancer, but can stay healthy with frequent screening and extra care,
- Cervical cancer develops more quickly in women living with HIV than in women who are HIV-negative and therefore preventive treatment may be necessary,
- The best way to prevent cervical cancer is to get screened for cervical cancer regularly and follow up on the instructions for next screening.
- After treatment for precancerous lesions, is important to follow up health care provider's recommendations for post-treatment care.
- Women should seek medical advice of a health care provider if they develop any foul- smelling yellow, or green vaginal discharge or experience any unusual bleeding.

Tests are not taken during menstruation or during an infection with discharge, or when a woman has used vaginal products within 2 days before the test. Testing is postponed until the situation has been normalised. Woman who had a hysterectomy can be excluded from CCS.

Step 2: HPV sample collection

Currently, there are 74 ART sites and 20 ART satellite sites in the country. In principle, WLHIV come at least twice per year to an ART site or satellite site for check-ups concerning HIV care and ART. That is the most convenient moment for offering the test. WLHIV could seek HPV DNA testing in any ART sites, Family Health Clinics (FHC), or at any general CCS services in the country that offer HPV DNA testing to eligible clients when according to the protocol testing is due.

Self-swabbing for HPV test

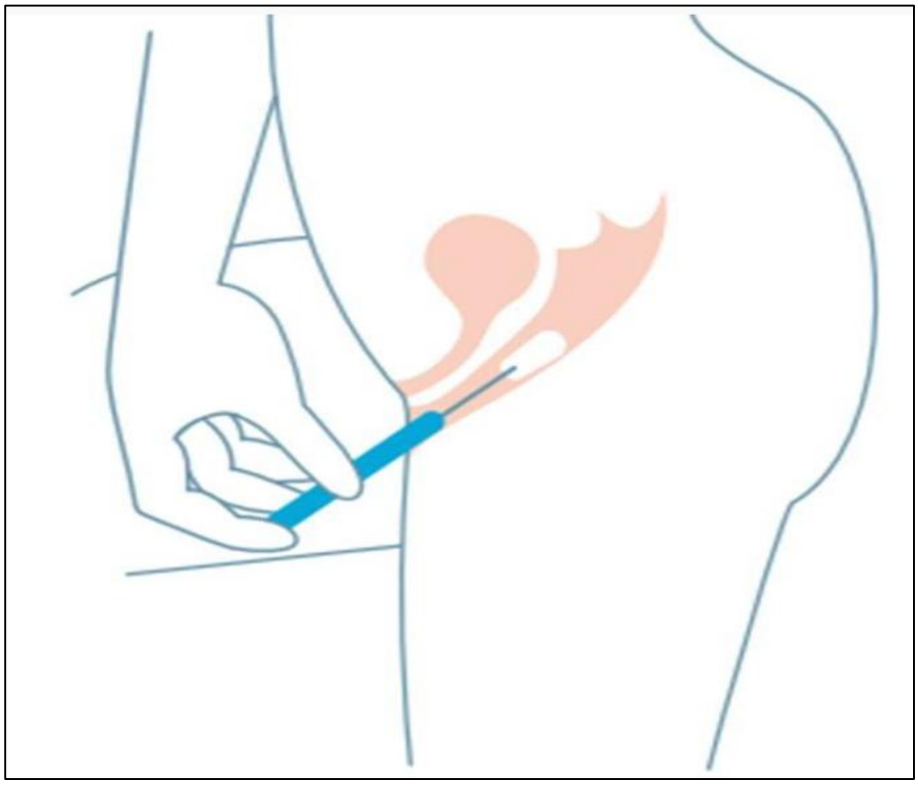


Figure 3 Self-swabbing for HPV test[4] Source WHO-IARC

HPV DNA sampling is done by collection of cervical fluid through an intra-vaginal swab.[5] No gynaecological procedure is needed. In principle, self-collecting of specimens is offered to WLHIV.

The appropriate self-collection test kit could be used (for example, Abbott self-collection test kit will be used if Abbott technology is used in the laboratories to which the specimens are sent). This is a complete set of swab, tube and medium. Test kits (swabs) can be distributed from any ART service point (or FHC, if applicable), when a client comes for ART or other services. The care provider explains the procedure, assisted by visual aids and information materials. Women can take the sample themselves at home or at a private place in the clinic. Alternatively, if needed, a care provider can assist taking the sample (no speculum examination is needed). Staff at relevant ART sites or FHC should be nominated and trained to assist WLHIV in performing self-collection of samples for HPV DNA test, just in case women do not feel confident to use swabs without support. A private space should be made available at the ART sites or FHC for WLHIV to perform the self-collection of samples.
If WLHIV are referred to the general CCS services, the procedures at the general CCS services are to be followed.

Step 3: Transport of Specimens

In principle, no cold chain for transport is needed, unless a long time (more than one week) between collection and transport is expected. To be on the safe side, swabs can be kept in a refrigerator in an ART site or laboratory until transport is planned. After proper labelling, filling in request form and registration, specimens could be transported to:

A. the NCHADS laboratory together with other samples collected in the **context of HIV treatment**. This applies when the ART sites or FHC with CCS services are not collocated within the health facilities where the general care services include CCS using the HPV DNA tests. In this case, the existing specimen transportation system and procedures of NCHADS will be used.

or

B. the selected laboratory together with other samples collected in the **context of general CCS** for the women general population. This applies when the ART sites or FHC without CCS services are collocated within the health facilities where the general care services do include CCS using the HPV DNA tests. In this case, the existing specimen transportation system of general care service will be used.

Step 4: HPV lab testing, communication and counselling

In case A, the NCHADS laboratories perform the HPV DNA test using Abbott technology. In case B, another technology may be applied, e.g., GeneXpert. In the selected laboratory, HPV testing is performed. The test gives a positive or negative result. In case of HPV positive outcome, automatically the partial genotyping is produced. Similarly, the specimen of WLHIV which is sent through the general services system, the corresponding laboratories that perform the HPV DNA test (with any type of technology) will give a positive or negative result; the genotyping for a positive test will be produced as part of the testing.

The results including the genotyping, will be communicated as soon as possible to the ART site sending in the specimen. Results can be communicated as hard copy or electronically.

The ART site is responsible for communication of the result to the concerned WLHIV.

- In case of HPV negative test, a simple telephone text or other message suffices with explanation that a next screening is due in three years' time. Women will receive an invitation for re-testing through their ART sites.
- In case of a positive test an invitation of a follow-up screening is processed and communicated personally to the woman involved, and the WLHIV is counselled about genotyping, VIA to be performed and potential treatment for precancerous lesions or cancer.

Step 5: Partial genotyping

The laboratory results automatically produce genotyping, and the high-risk genotypes of HPV 16 and 18 can be identified. The tests can also identify 12 other relatively high-risk types (HPV31, 33, 35, 39, 45, 51, 52, 56, 58 and 59, which are Group 1 carcinogens, and HPV66 and 68). When HPV 16 and/or 18 are found, the WLHIV must be referred to nearest ART site or the general care services where VIA can be performed.

Step 6 to 9: Referral to visual Inspection with Aceto-acid

Visual Inspection with Acetic acid (VIA) is performed in general health services as next step in CCS for WLHIV, who are HPV-positive. For women who have HPV 16/18 the procedure is described above. For women who have other hr HPV genotypes (not HPV 16/18), VIA follows the same procedure as for HIV-negative women. When the VIA is negative, no treatment is provided, but re-screening after 1 year is proposed. In principle, VIA positive (pre-cancerous lesions) leads to further treatment. For simple lesions the cryotherapy of thermal ablation is used, depending on available equipment available.

In the ART sites collocated with the general CCS services, the WLHIV needing VIA will be referred to the general services providing VIA and simple treatment.

There are different treatment options post-VIA that could be considered depending on the VIA results. Ablative therapy is done through either thermal ablation or cryotherapy. Both methods are equally suitable. The ablative therapy is indicated when pre-cancerous lesions are diagnosed based on VIA. There is no biopsy needed, and no CIN staging done, to simplify the procedure. Certain bigger pre-cancerous lesions are referred to the nearby gynaecological services. These are treated with Loop Electrosurgical Excision Procedure (LEEP), also called Large Loop Excision of the Transformation Zone (LLETZ).

One year after the procedure a re-screening is performed with HPV DNA test.

In any case, the WLHIV undergoing a VIA will be followed up in accordance with the recommended care procedures outlined in the national SOP for implementing CCS services.

Next screening

Rescreening starts with HPV DNA testing as described in paragraph 4.3
The algorithm in chapter 3 shows the interval between screening:

- For WLHIV who are HPV-negative the next screening is after 3 years
- For WLHIV who are HPV-positive and VIA-negative the next screening is after one year
- For WLHIV who undergo an ablative treatment the next screening is after one year
- For WLHIV who are referred, the gynaecologist in the referral centre will explain the interval

5. Locations for CCS for WLHIV

For selecting the locations of CCS for WLHIV, the following criteria apply:

- HPV DNA self-collection tests are offered in ART sites with the necessary supplies, and information systems and where regular transport of samples to laboratories is available, to eligible women who come for counselling and treatment for HIV.
  This service can be offered at any ART site or satellite clinic listed by NCHADS for providing the service.

- HPV DNA health-worker-assisted sample collection is offered in ART sites that have trained personnel and suitable space for sample collection.
  The staff must be qualified for providing this medical service.

The space must provide privacy and conform to women who assist sampling but does not have to be a gynaecological examination room, as not speculum examination is required.[6]

- Women who need VIA will be referred to the general CCS services. However, ART sites already equipped for VIA and ablation, and with staff trained by the MOH, can perform such procedures as well.
- Referral for advanced diagnosis and treatment is done to the nearest centre with gynaecological services licenced by MoH to perform procedures like colposcopy, LEEP, conisation or other treatments.
- The laboratories (managed by NCHADS or other programs, in accordance with all parties' mutual agreement) will perform the HPV DNA testing.
- The ART sites which are collocated within the hospitals that can provide VIA as part of the general CCS services, refer HPV (+) WLHIV there for VIA follow-up
- The ART sites which are NOT collocated within the hospitals that can provide VIA as part of the general CCS services, refer HPV (+) WLHIV for VIA follow-up at the nearest general CCS services or other care providers who could provide VIA
- Private sector might also provide HPV self-sampled test to eligible clients including WLHIV. They could be advised to make informed decision based on their actual needs and contextual settings and resources available at the time. Regardless of their choice, the service providers should ensure follow-up measures according to best practices and recommendations from this document and the national SOP of the DPM, whenever applicable.

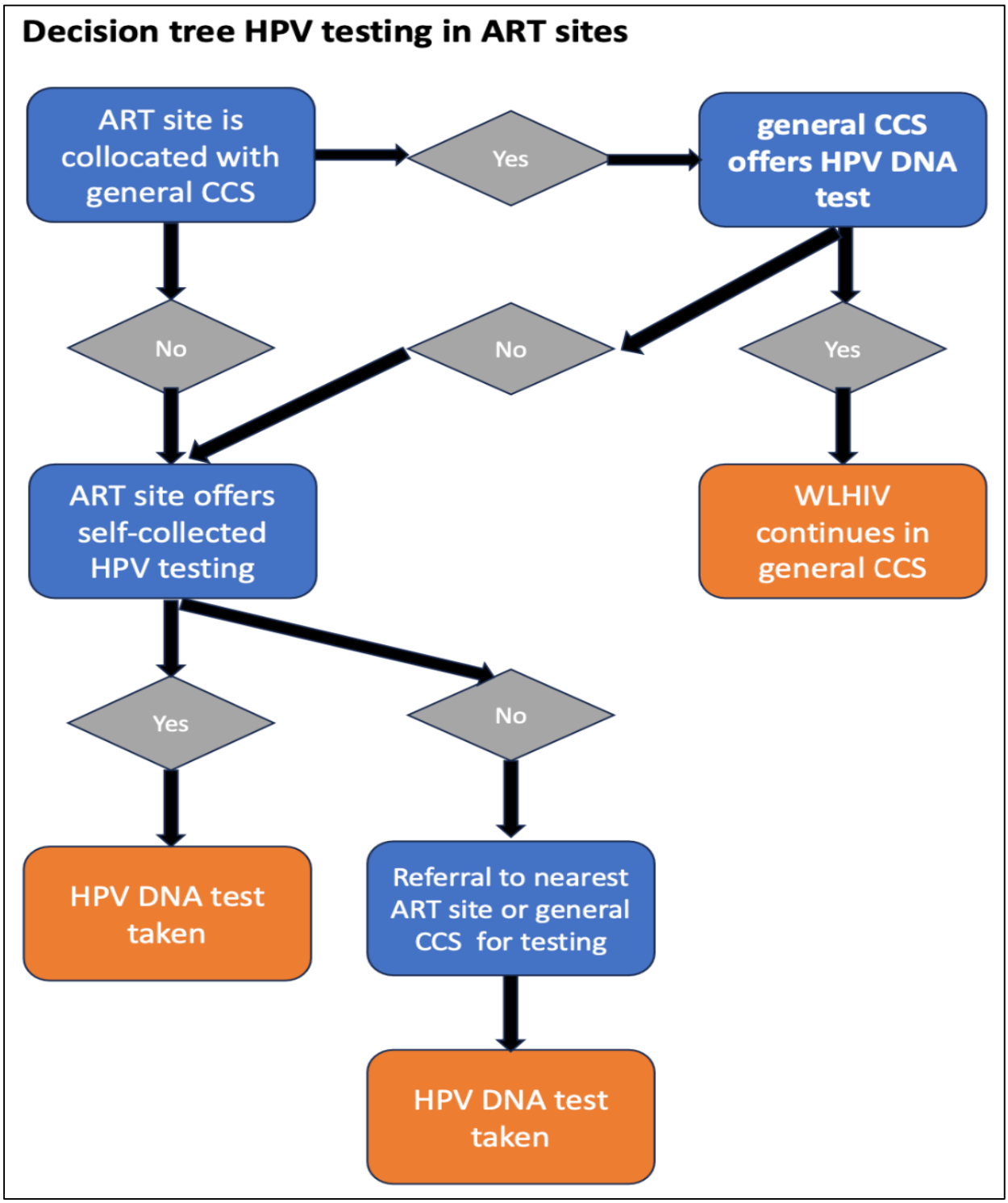


Figure 4. Decision tree for HPV DNA testing for WLHIV

6. Payment for services

CCS services might be charged a certain fee for eligible women including those living with HIV although HPV DNA testing as part of screening has yet to be offered for all women. When there is a medical indication found during screening, treatment of lesions could potentially be covered by insurance schemes. There are two health insurance schemes for people in Cambodia. One is the National Social Security Fund (NSSF) which is for employed workers, self-employed and civil servants. The other is the Health Equity Fund (HEF). Cambodia has developed the HEF system to improve access to health services for the poor and strengthen the health system towards the universal health coverage goal. The Royal Government of Cambodia allowed all PLHIV to be

covered by HEF, and the registration of PLHIV in the HEF system at ART sites has started since 2022. If they have an ID Poor from the Health Equity Fund, they could be entitled to free treatment of comorbidities, if these health issues fall within the eligible-for-reimbursement category. Similarly, it may be funding treatment of LEEP or cervical cancer for women who are referred to one of the national hospitals for WLHIV HEF card holders. For the time being, this option of funding by health insurance schemes does not seem to be feasible for primary screening for HPV.

7. Coordination for the Implementation

The roles and responsibilities of the different stakeholders are described here in general terms and may vary when implementation arrangements are modified. Details of role and responsibilities are also described in the work plan.

7.1 National and Provincial Levels

7.1.1 Technical Working Groups (TWGs)

- The Technical Working Group on Cancer and PMTCT oversees the CCS program in the country for all eligible women and coordinates with all concerned governmental departments and development partners in the implementation of the CCS program in the country.
- NCHADS officers who are members of the national TWG on Cancer and PMTCT are responsible for participating in group discussions or meetings convened by the MoH and DPM to discuss any matters or updates concerning the general CCS services and reporting back to the NCHADS management team for updates or subsequent actions, whichever applicable.
- NCHADS is responsible for convening regular meetings with core members from their existing TWG on AIDS Care and Treatment to discuss any issues brought to attention by CCS implementing in ART sites and share any relevant updates with HIV care providers at the ART sites that offer HPV DNA testing to WLHIV.

7.1.2 National hospitals for referred cervical cancer cases

The national hospitals receive patients from the CCS programme for WLHIV, for advanced diagnosis, expert's opinion or for treatment of cervical cancer, pre-cancerous lesions or other gynaecological conditions referred from other service providers. The experts in the national hospitals could also contribute to capacity building of health workers in CCS. To date, there are two national hospitals with advance treatment capacity for referral cervical cancer cases: Calmette Hospital and Khmer-Soviet Friendship Hospital).

There should be cooperation and coordination between provincial referral hospitals and national hospitals to which the cervical cancer cases had been referred for diagnosis, treatment and follow-up.

7.1.3 Provincial Health Department (PHD) and referral hospitals

- The PHD plays an important role in:
  - Ensuring the implementation of the SOP for CCS for WLHIV in the province, in collaboration with the concerned national programs and departments
  - Identifying facilities (including ART sites or FHC) and staff to be trained to implement the SOP
  - Supporting the facilities implementing the CCS to collect and report CCS data based on MoH/national program's recommendations, including the aggregation of data in the health information system, and information on CCS coverage and services provided for WLHIV who receive CCS services with the general care providers.
- The provincial AIDS and STI program (PASP) team at each PHD has to work with HIV care providers in their respective provinces to oversee the overall implementation of the CCS services according to the actual setting of the ART sites and regularly and timely communicate challenges in the implementation to the NCHADS.
- The Provincial AIDS and STI Program (PASP) team at the PHD is responsible for making sure that the Operational Districts (OD) data (i.e., data from health centres if applicable) are entered into and transferred regularly to the central NCHADS database (Data Management Unit or DMU at NCHADS).
- The existing Provincial Group of Champions (GOC) who generally meets at a regular interval to discuss and review the HIV care cascade indicators with the PASP team can be tasked with communicating and solving any relevant news and challenges related to the CCS service implementation in the ART site.
- A certain number of (provincial) referral hospitals have an ART site (or FHC) on their premises and are therefore closely working with services for WLHIV. All provincial hospitals have CCS services and can perform advanced treatment of pre-cancerous lesions with ablation therapy. Some can perform LEEP or conisation.
- The (provincial) referral hospitals are therefore the first line of referral for VIA. The provincial hospital will decide on referral to one of the national hospitals, if necessary.
- The (provincial) referral hospitals should:
  - Support the eligible/appointed HIV care providers who work at the hospital-collocated ART sites and facilitate administratively, whenever applicable, with regards to CCS-related training sessions and activities.
  - Support the concerned general care providers and facilitate administratively with regards to the training on HIV-related desensitization and discrimination to ensure that WLHIV referred to CCS general services receive the services without feeling discriminated or stigmatized.

- Coordinate with HIV care providers when there is a need for a referral system set up between the general CCS services and WLHIV (who might be referred to the general care providers for CCS service, as applicable).
- Collect the relevant CCS-related laboratory samples and coordinate the logistics for forwarding these samples from ART sites to one of the NCHADS or other laboratories, as applicable (please see section 4.4 on transport of specimens for more details) for lab examination.

7.2 Local level

7.2.1 Operational district hospitals and health centres

- Where the ART sites are closest to health centres or OD hospitals that could perform VIA or when these ART sites are collocated within the OD hospitals that could perform VIA, WLHIV with (+) HPV DNA test will be referred to these hospitals or health centres for VIA, provided that the general care providers are familiar with HIV-HPV protocol and have been properly trained on HIV-related stigma and discrimination.
- The OD hospitals provide ablative treatment, but in general no LEEP or advanced treatment. The OD hospitals refer patients for advanced treatment to (provincial) referral hospitals. The OD hospitals also are part of the logistics chain for sample collection and forwarding, as applicable.
- The administrative support for the general care providers by facilitating their training on HIV-related stigma and discrimination are as described in section 7.1.
- The relevant staff at the ART sites who collect other HIV-related information and complete the NCHADS database are also responsible for making sure that the information on WLHIV and their CCS status are properly completed and collected (regardless of where they receive the CCS services).
- Regardless of where they are, all ART sites provide services to WLHIV.
  - They are responsible for selecting eligible women for CCS and offering them self-collected (or assisted) swabs for HPV DNA tests.
  - The ART sites transport the samples to the assigned lab for further logistics and HPV test.
  - The ART site staff is responsible for communicating results to the involved clients and manage further follow-up diagnosis and treatment if applicable.
  - The care providers (including no-medical personnel, such as outreach and other NGO workers) at ART sites are responsible for helping to share the CCS services offered/available and for recruiting eligible WLHIV for CCS according to protocol.

Currently, there is no ART site at the health centre level. Regardless, around 300 health centres in the country can provide VIA services and ablation therapy to date. The number will increase as the roll-out of national general CCS is ongoing. When applicable, these health centres can also be a referral point for the VIA service for nearby ART sites (as described in earlier sections).

7.2.2 PLHIV networks

Networks of PLHIV contribute to community sensitisation and may provide personal advice to WLHIV eligible for CCS. They may also be instrumental in mobilising women for further diagnosis and treatment, if necessary, or for reminding client of new screening.

8. Health Information System

8.1 Procedures

The description of the Health Information follows the steps in the screening as described in chapter 4. In each step data are recorded. The forms for PLHIV are expanded with relevant information on CCS. In annex 3 forms are shown for WLHIV with additional variables.
In most ART sites, after manual data entry, the data are later transferred to an electronic database, based on DHIS2. Individuals can be identified based on a unique identifier in the Master Patient Index. The information system for PLHIV operates as an electronical medical record system. Modules for CCS with HPV DNA testing, laboratory results are added to the modules of the DHIS2 based information system. The system can also generate alerts when patients are due to come for control. This is very helpful for rescreening of HPV.
The information at the local clinic transfers data to the central database regularly. Quarterly reports can be generated both at clinic and higher levels.

Step 1: From the system personal data of eligible women for CCS are generated. A list per ART site is generated. The clients are informed and receive counselling during the first occasion they come to the ART site for regular contact with the service provider. The counselling is recorded in the information system of the ART site.

Step 2: When (self) sampling is performed, the sample is coded with the QR code (using NCHADS procedures) and the laboratory request form is prepared.

Step 3: The transport registered, and the laboratory records receipt of the sample, based on the laboratory request form.

Step 4: After performing the HPV DNA test, the laboratory records the outcome of the test, positive or negative, and if positive the genotype(s) found.

Step 5: The lab result is communicated via hard copy or electronically to the ART site, and the clinic informs the client as soon as possible, by phone, SMS or otherwise. The lab result is recorded in the EMR, negative or positive and in case of positive test whether genotype 16 and/or 18 was found. In case of HPV negative result, the date for rescreening after 3 year is generated in the automated system. In case of HPV positive test HPV rescreening after 1 year is generated in the automated system.

Step 6: In case the test is HPV positive a referral form is filled in for VIA to nearby clinic. This is recorded in the EMR.

Step 7: VIA is recorded, including outcome, using the MOH system. Kind of treatment (if applicable) or further referral is recorded. Appointment for follow up after treatment (if applicable) is recorded.

Step 8: Feedback from referral health facility is kept in the patient files.

Step 9: Update of register of WLHIV eligible for CCS is updated (automatically generated by the NCHADS health information system).

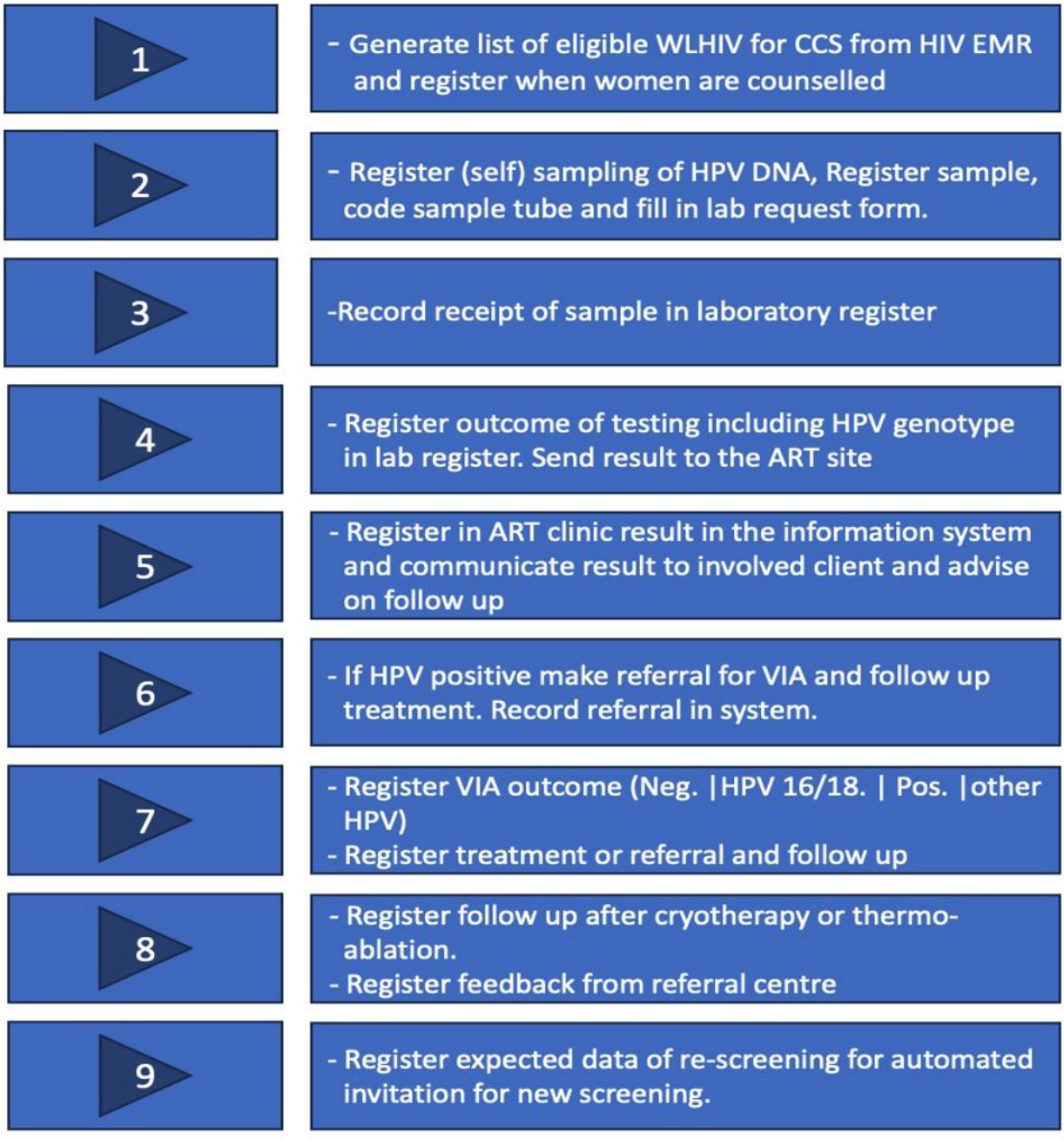


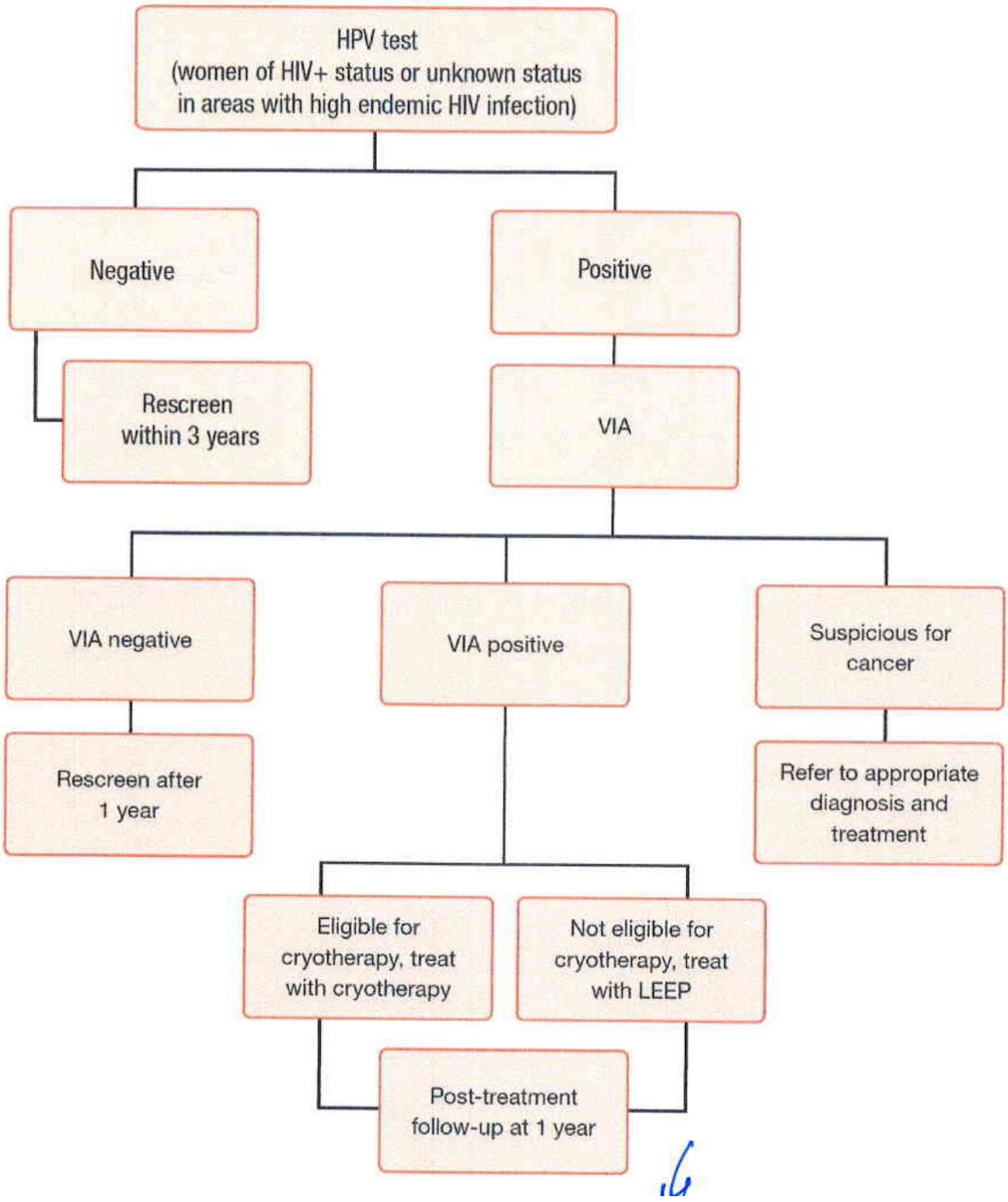
Figure 5 Steps in HIS in CCS for WLHIV

8.2 Data analysis

Relevant key indicators for programmes in cervical cancer prevention and control recommended by WHO are:

- Screening rate of the target population (women aged 25–49 years): percentage of WLHIV aged 25–49 years who have been screened for the first time in the previous 12-month period
    - Numerator: number of women from ART sites who did do HPV DNA (self-swab) test
    - Denominator: number of women receiving ART and who were eligible for HPV DNA test in the previous 12 months
- Positivity rate: percentage of screened WLHIV aged 25–49 years with a positive screening test result in the previous 12-month period
    - Numerator: number of women from ART sites who had a positive HPV DNA test
    - Denominator: number of women from ART sites who did HPV DNA test in the previous 12 months

Annex 1 SOP cervical cancer screening (MOH-2018)



Annex 2 Education materials

Health education and counselling materials for WLHIV who are recruited for HPV DNA testing will include the following components:

- Information regarding cervical cancer
- Factors associated with cervical cancer for WLHIV
- Prevention and treatment options
- Effects of cervical cancer
- Stages of lesions that are easy to treat
- Procedures involved, including VIA, cryotherapy, conisation, or LEEP
- Possible adverse effects and complications

MOH IEC Minimum Package of Activities (MPA)

The MOH- MPA can be adapted for WLHIV and includes:

- List of topics for counselling
- Leaflets for health centres and women in communities that provide information on cervical cancer, VIA, and services
- A checklist for health centre staff used to educate women in one-on-one counselling
- Posters for health centres and referral hospitals
- Information on post-cryotherapy follow-up and management

International education materials

Self-sample collection for HPV

Training materials are available from IARC[1], PAHO[2], AMA[3] and other sources. There is enough experience with this type of self-sampling, to develop relevant materials and instruction sheets. Also, You Tube video instructions are available.[4] There are also instructions for health workers available.[5] It must be relatively simple to edit, translate and use the existing training materials.

Laboratory analysis HPV

The training of laboratory staff for HPV testing on the Abbott platform must be provided by the local supplier. It is not part of the technical support.

Genotype 16/18 interpretation

There is not much information and training materials readily available.

Few explanation and materials are available on HPV and genotypes. No specific instruction on how to perform ablation in HPV 16/18. Training materials need to be developed.

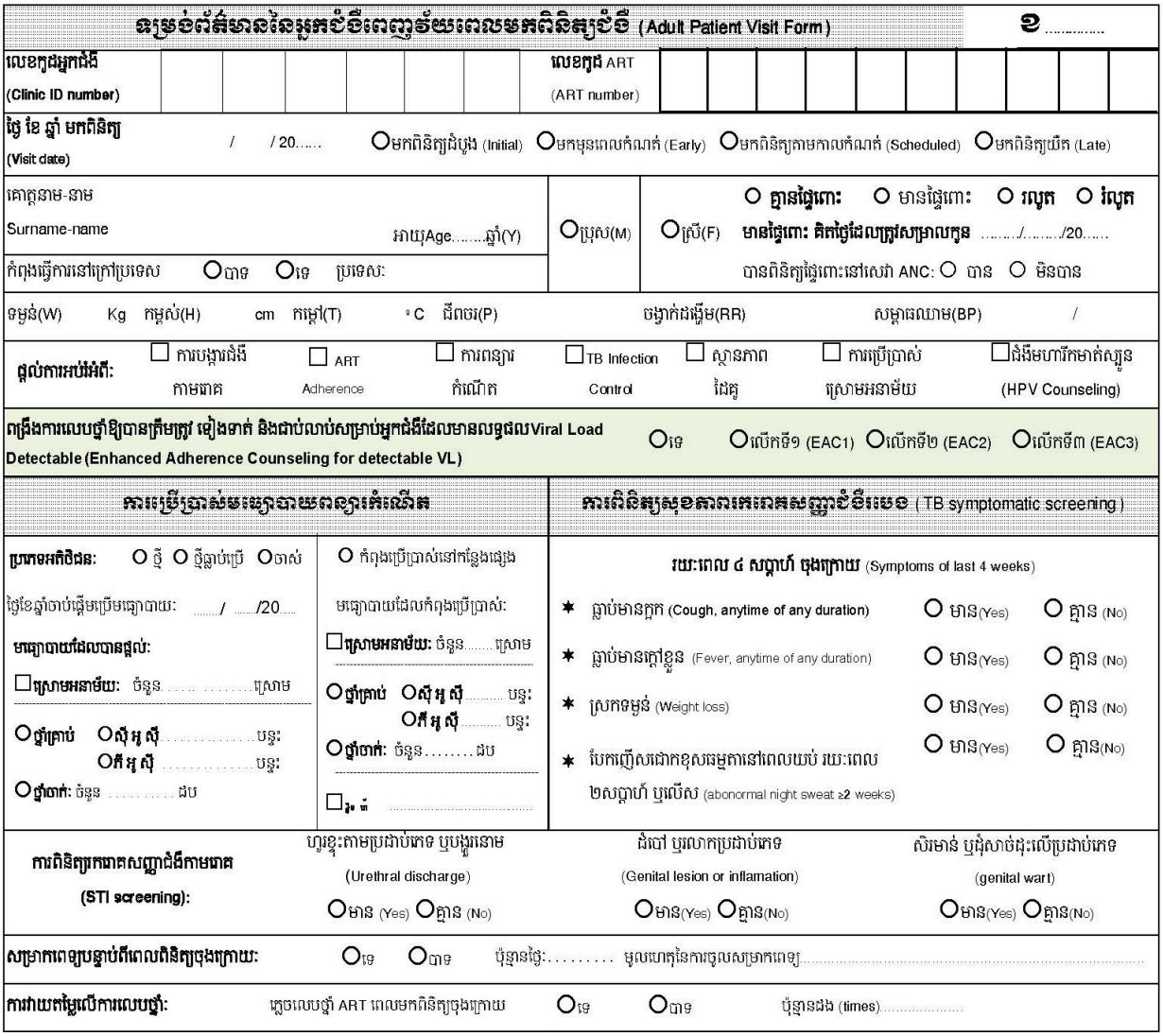
Sensitizing personnel for stigma and discrimination.

NCHADS has developed training materials and encouraged the implementation of SOP for HIV and KP-friendly service. UNAIDS also has developed training materials.[6] [7] Materials can be adapted to specific needs for CCS.

[1] https://screening.iarc.fr/atlasHPVdetail.php?Index=033&e=
[2] https://www.paho.org/hq/dmdocuments/2016/manual-VPH-English-10.pdf
[3] https://journalofethics.ama-assn.org/sites/journalofethics.ama-assn.org/files/2020-02/stas1-2002.pdf
[4] https://www.youtube.com/watch?v=PepX0ahKvj4
[5] https://www1.racgp.org.au/newsgp/gp-opinion/self-collection-of-hpv-samples-a-guide-for-gps
[6] https://drive.google.com/file/d/1IAiXQf6BcjutfN3U-pqblxmcCpDiNSGY/view
[7] https://www.unaids.org/sites/default/files/media_asset/HIV-and-cervical-cancer_en.pdf

Annex 3 HIS forms NCHADS

Adult forms – follow-up visits (for women eligible for CCS)



ទម្រង់ព័ត៌មាននៃអ្នកជំងឺពេញវ័យពេលមកពិនិត្យជំងឺ (Adult Patient Visit Form) ខ .....

លេខកូដអ្នកជំងឺ (Clinic ID number) | លេខកូដ ART (ART number)

ថ្ងៃ ខែ ឆ្នាំ មកពិនិត្យ (Visit date) / / 20..... ○ មកពិនិត្យដំបូង (Initial) ○ មកមុនពេលកំណត់ (Early) ○ មកពិនិត្យតាមកាលកំណត់ (Scheduled) ○ មកពិនិត្យយឺត (Late)

គោត្តនាម-នាម Surname-name អាយុAge.....ឆ្នាំ(Y) ○ ប្រុស(M) ○ ស្រី(F) ○ គ្មានផ្ទៃពោះ ○ មានផ្ទៃពោះ ○ រលូត ○ រំលូត មានផ្ទៃពោះ: គិតថ្ងៃដែលត្រូវសម្រាលកូន ...../...../20..... បានពិនិត្យផ្ទៃពោះនៅសេវា ANC: ○ បាន ○ មិនបាន

កំពុងធ្វើការនៅក្រៅប្រទេស ○ បាទ ○ ទេ ប្រទេស:

ទម្ងន់(W) Kg កម្ពស់(H) cm កម្តៅ(T) °C ជីពចរ(P) ចង្វាក់ដង្ហើម(RR) សម្ពាធឈាម(BP) /

ផ្តល់ការអប់រំអំពី: ☐ ការបង្ការជំងឺកាមរោគ ☐ ART Adherence ☐ ការពន្យារកំណើត ☐ TB Infection Control ☐ ស្ថានភាពដៃគូ ☐ ការប្រើប្រាស់ស្រោមអនាម័យ ☐ ជំងឺមហារីកមាត់ស្បូន (HPV Counseling)

ពង្រឹងការលេបថ្នាំឱ្យបានត្រឹមត្រូវ ជៀងទាត់ និងជាប់លាប់សម្រាប់អ្នកជំងឺដែលមានលទ្ធផលViral Load Detectable (Enhanced Adherence Counseling for detectable VL) ○ ទេ ○ លើកទី១ (EAC1) ○ លើកទី២ (EAC2) ○ លើកទី៣ (EAC3)

ការប្រើប្រាស់មធ្យោបាយពន្យារកំណើត

ប្រភេទអតិថិជន: ○ ថ្មី ○ ថ្មីធ្លាប់ប្រើ ○ចាស់

ថ្ងៃខែឆ្នាំចាប់ផ្តើមប្រើមធ្យោបាយ: ...../...../20.....

មធ្យោបាយដែលបានផ្តល់:

☐ **ស្រោមអនាម័យ:** ចំនួន..... ស្រោម

○ **ថ្នាំគ្រាប់** ○ **ស៊ុំ អូ ស៊ី** ..... បន្ទះ ○ **ភី អូ ស៊ី** ..... បន្ទះ

○ **ថ្នាំចាក់:** ចំនួន..... ដប

○ កំពុងប្រើប្រាស់នៅកន្លែងផ្សេង

មធ្យោបាយដែលកំពុងប្រើប្រាស់:

☐ **ស្រោមអនាម័យ:** ចំនួន..... ស្រោម

○ **ថ្នាំគ្រាប់** ○ **ស៊ុំ អូ ស៊ី** ..... បន្ទះ ○ **ភី អូ ស៊ី** ..... បន្ទះ

○ **ថ្នាំចាក់:** ចំនួន..... ដប

☐ **ផ្សេងៗ** .....

ការពិនិត្យសុខភាពកេរោគសញ្ញាជំងឺរបេង (TB symptomatic screening)

រយៈពេល ៤ សប្តាហ៍ ចុងក្រោយ (Symptoms of last 4 weeks)

- ធ្លាប់មានក្អក (Cough, anytime of any duration) ○ មាន(Yes) ○ គ្មាន (No)
- ធ្លាប់មានក្តៅខ្លួន (Fever, anytime of any duration) ○ មាន(Yes) ○ គ្មាន (No)
- ស្រកទម្ងន់ (Weight loss) ○ មាន(Yes) ○ គ្មាន (No)
- បែកញើសជោកខុសធម្មតានៅពេលយប់ រយៈពេល ២សប្តាហ៍ ឬលើស (abonormal night sweat ≥2 weeks) ○ មាន(Yes) ○ គ្មាន(No)

ការពិនិត្យរកឆាគសញ្ញាជំងឺកាមរោគ (STI screening):

ហូរខ្ទុះតាមប្រដាប់ភេទ ឬបង្ហូរនោម (Urethral discharge) ○ មាន (Yes) ○ គ្មាន (No)

ដំបៅ ឬរលាកប្រដាប់ភេទ (Genital lesion or inflamation) ○ មាន(Yes) ○ គ្មាន(No)

សិរមាន់ ឬដុំសាច់ដុះលើប្រដាប់ភេទ (genital wart) ○ មាន(Yes) ○ គ្មាន(No)

សម្រាកពេទ្យបន្ទាប់ពីពេលពិនិត្យចុងក្រោយ: ○ ទេ ○ បាទ ប៉ុន្មានថ្ងៃ:..... មូលហេតុនៃការចូលសម្រាកពេទ្យ.....

ការវាយតម្លៃលើការលេបថ្នាំ: ភ្ជួចលេបថ្នាំ ART ពេលមកពិនិត្យចុងក្រោយ ○ ទេ ○ បាទ ប៉ុន្មានដង (times).....

ការសន្និដ្ឋាន និងផែនការ Assessment and Plan			
ចំណាត់ថ្នាក់តាម WHO (WHO stage): O 1 O 2 O 3 O 4	ប្រសិនបើកើតរបេង: (If TB) :	O របេងសួត (PTB):	O វិជ្ជមានបេកា (BK +)
ករណីសម្រេចប្រើ ART: O បាទ O ទេ		O របេងក្រៅសួត (EPTB):	O អវិជ្ជមានបេកា/គ្លីនិក (BK - /Clinic)
ស្ថានភាពអ្នកជំងឺ: O ធ្វើការបាន O ដើរមិនបានឆ្ងាយ O សម្រាកមួយកន្លែង	ការព្យាបាលជំងឺរបេង: (TB Treatment)	O ចាប់ផ្តើម O ឈប់ O កំពុងព្យាបាល ថ្ងៃ ខែ ឆ្នាំ ...../...../.....	

ជជួបព្យាធ្វើតេស្តមន្ទីរពិសោធន៍ (Prescribing Laboratory Test)		លទ្ធផល Test result	ថ្ងៃខែឆ្នាំទទួលលទ្ធផល
O ធ្វើតេស្តរកមេរោគអេដស៍សារឡើងវិញ មុនពេលចាប់ផ្តើមការប៊ីថ្មី ARV (HIV retest before starting ART)		O Positive O Negative	/ /20....
O HCV Test		O Positive O Negative	/ /20....
O Screening for Cryptococcol Antigen (CrAG)		O Positive O Negative	/ /20....
O CD4			/ /20....
O HIV Viral Load			/ /20....
O HCV Viral Load	HCV Viral Load (Baseline)		/ /20....
	HCV Viral Load at 12 weeks (១២សប្តាហ៍បន្ទាប់ពីបញ្ចប់ការព្យាបាល)		/ /20....
O HPV DNA Test		O Positive O Negative	/ /20....
	If Positive, Genotype 16 and / or 18	O Yes O No	/ /20....
O Other :			/ /20....

ការសន្និដ្ឋាន និងផែនការ Assessment and Plan
បញ្ជូនទៅ Referred to: O PMTCT O TB O Inpatient O VIA (if HPV +) O Other: .....

References

[1] Ministry of Health, Department of Preventive Medicine, Cambodia, National Standard Operating Procedures for Cervical Cancer Screening, 2018
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https://screening.iarc.fr/atlasHPVdetail.php?Index=033&e=
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https://screening.iarc.fr/atlasHPVdetail.php?Index=001&e=
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https://www.who.int/publications/i/item/WHO-SRH-23.1