

Users' Manual for HIV Care and ART Tracking (DHIS2 Tracker, mHealth and Biometric) System



**Government of Nepal
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National Centre for AIDS and STD Control
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Foreword



The HIV Care and ART Tracking System also known as 'DHIS2 Tracker System' was developed to overcome the technical inadequacies faced by the paper-based recording and the aggregated reporting currently used in the national system. The HIV Care and ART Tracking System is based on the same DHIS2 platform which is also used by the iHIMS under the Management Division, Department of Health Services. This system has three interlinked systems: namely DHIS2 Tracker, mHealth and Biometrics. The function of DHIS2 Tracker is to record the individual level client data including all the treatment history and status, function of mHealth is to push SMS in mobile of registered client for ART management and awareness health messages, and function of biometric is to link the file of client with fingerprint string so as to eliminate the duplication of clients through-out the system. Additionally, this system can generate the monthly ART report, and can be automatically pushed into the National Reporting System i.e. iHMIS/DHIS2. I want to acknowledge with thanks the developers, users, authors, reviewers whose dedication, support and expertise made the improvement in system and this updated manual possible.

This system keeps records of personal information of clients who visit for HIV testing and counselling services, the gateway of the HIV program. The client who receives HIV positive diagnosis from HIV Testing and Counselling services is registered in the system along with all the information related to HIV care, antiretroviral therapy (ART), Prevention of Mother to Child Transmission (PMTCT) and Early Infant Diagnosis (EID) services that they receive. Once the client is registered in the system, all the related information is entered during their treatment process, and it can be retrieved from the system at any time. Additionally, this system also ensures easy transfer of client information and facilitates referral of clients to other sites. This system is inter-linked with Biometric System for scanning the fingerprint of clients, which makes it easier to determine whether the client is new or already registered in the system, and thereby retrieve and add information instantly. The Biometric System also helps avoid the issue of double counting clients in other facilities, and link medical records with biometric (fingerprints) information of the client.

This updated manual covers the series of changes made within the system after user feedback, developers changes, updates of the National Guidelines so that this will help all the technical staff (Clinicians, HIV Focal Person, Medical Recorder, HIV/ART Counselor and Data Capturer) of the HTC and ART centers of various non-government and government organizations to keep records and make reports of HIV-related services based on HMIS recommended format. This system will add a new dimension in the creation of strategic information required for the national HIV program. Therefore, I am hopeful that you will play a significant role in the implementation of this system.


Dr. Sudha Devkota
Director

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Acronyms

ARV	Antiretrovirals
ART	Antiretroviral Therapy
CD4	Cluster of Differentiation 4
CHBC	Community Home Based Care
CPT	Cotrimoxazole Preventive Therapy
cm	Centimetre
DHIS2	District Health Information Software 2
EID	Early Infant Diagnosis
GIS	Geographic Information System
HTC	HIV Testing and Counselling Centres
iHMIS	Integrated Health Management Information System
iHIMS	Integrated Health Information Management Section
HIV	Human Immunodeficiency Virus
IPT	Isoniazid Preventive Therapy
KG	Kilogram
mHealth	Mobile Health
NCASC	National Centre for AIDS and STD Control
OI	Opportunistic Infection
PMTCT	Prevention of Mother-to-Child Transmission
SMS	Short Message Service
TB	Tuberculosis

1. Introduction of HIV Care and ART Tracking System

1.1 What is the HIV Care and ART Tracking System?

HIV Care and ART Tracking System is a system based on the DHIS2 tracker platform developed to record all the information of clients or patients receiving HIV-related services. This system keeps records of personal information of clients who visit for HIV testing and counselling services, the gateway of the HIV program. The client who receives HIV positive diagnosis from HIV Testing and Counselling services is registered in the system along with all the information related to HIV care, antiretroviral therapy (ART), Prevention of Mother to Child Transmission (PMTCT) and Early Infant Diagnosis (EID) services they receive. Once the client is registered in the system, all the related information is entered during their treatment process, and it can be retrieved from the system at any time. The primary purpose of this system is to record all the information of clients in real-time so that the information can be accessed whenever required for their treatment and effective implementation of the HIV related programs. Additionally, this system also ensures easy transfer of client information and facilitates referral of clients to other sites. This system is inter-linked with Biometric System for scanning the fingerprint of clients, which makes it easier to determine whether the client is new or already registered in the system, and thereby retrieve and add information instantly. The Biometric System also helps avoid the issue of double-counting clients in other facilities, and link medical records with biometric (fingerprints) information of the client.

1.2 Who can use HIV Care and ART Tracking System?

The clinicians, medical recorders, counsellors and data capturer working in HIV Testing and Counselling Centers (HTC) and ART centers should use this system to record and report data related to HIV testing and treatment. They need to log in to the system using the given username and password in order to use the system. They can use the system to record information of clients as well as generate and submit routine reports. The system can be used by the focal person at any level (district, province and national) to view data, monitor results and verify reports by logging in to the system with the given username and password.

1.3 Where is HIV Care and ART Tracking System used?

The system is used in HTC and ART centers for client registration, recording related information and generating reports. The system also helps to generate evidence for the development of plans and programs effectively to achieve the goals set by the National HIV Strategic Plan 2016-2021.

1.4 When to use HIV Care and ART Tracking System?

The system is used daily to register clients and record client information when they visit HTC or ART centers for HIV related follow-up services. This system can be used to send text messages (SMS) to the mobile phone of the patient to improve retention in HIV care among people living with HIV (PLHIV). Additionally, this system can also be used to create or submit routine monthly reports and view information of any client as needed.

1.5 How to use HIV Care and ART Tracking System?

This manual contains different levels of information on how to use the system including examples with illustrations. There are nine sections in this manual.

Section 1 contains general information about HIV Care and ART Tracking System.

Section 2 explains steps to be followed by the HTC and ART centers for client registration in the tracker and biometric system in detail. The brief functions of each tool are also explained in this section.

Section 3, the functions of each Program stages of the system is explained in detail.

Section 4 contains step-by-step instructions on how to create referrals, reschedule dates, pivot tables, event reports and standard reports using the features of the HIV Care and ART Tracking System.

Section 5 explains about the support of mHealth to HIV treatment and improve retention in treatment.

Section 6 contains things to consider when using the HIV Care and ART Tracking System.

Section 7 describes the various types of offences and punitive laws against any violation of rules related to electronic data security and privacy.

Section 8, references.

Section 9 contains the list of contributors who played a role in developing this user manual.

The Integrated Health Information Management Section of the Management Division under the Ministry of Health and Population introduced the DHIS2 system in 2013 for efficient management and use of health information. All the health programs implemented under the Department of Health Services are using the DHIS2 system to submit their routine monthly report.

The HIV Care and ART Tracking System is a system based on the DHIS2 platform currently used under the National Integrated Health Management Information System. This system is interlinked with the Biometric System, so the users will have to log into two different systems. The process of taking samples of a client's fingerprint is called **biometric information registration**, and the process of entering clients' personal information of the client is called **client registration**.

The HIV Care and ART Tracking System is developed for using in HTC and ART centers. The HTC centers only need to enter personal information required for client registration in the system and do not require to take biometric information. The ART centers need to register the clients in the biometric system by taking the finger print of left hand's thumb of each clients'information and link the client to the HIV Care and ART Tracking System.

2. Client Registration

In this section, the process of registering a client using the HIV Care and ART Tracking System and Biometric System is explained in detail.

2.1 Logging in on HIV Care and ART Tracking System

1. Go to the address bar of Google Chrome and type www.hivaids.gov.np
2. A page will open as shown below. Enter the username and password provided by NCASC and click on **Sign In** button.

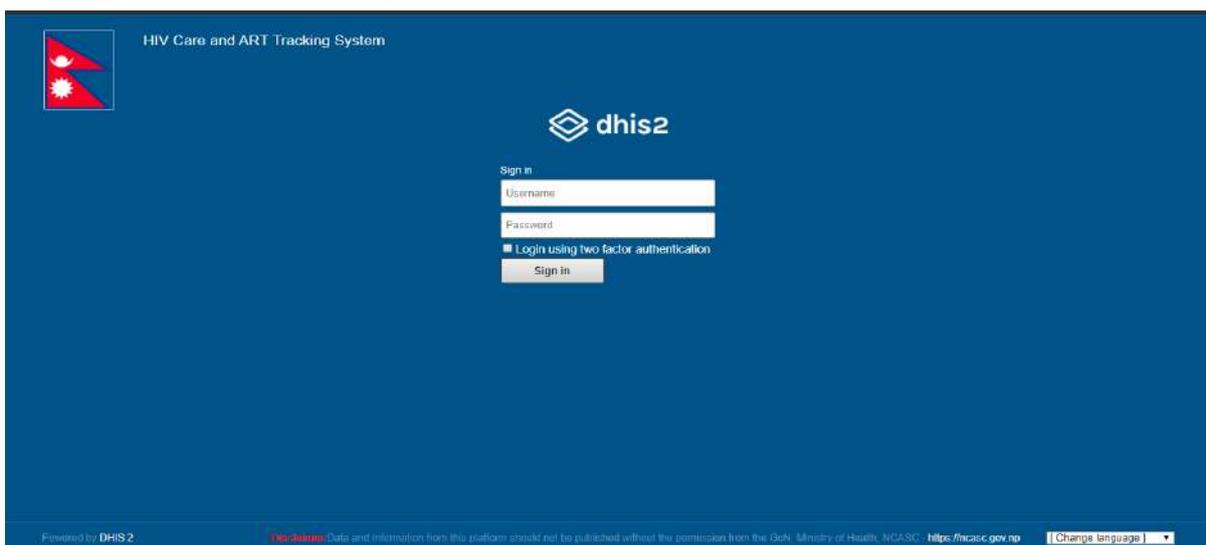


Figure 2. 1 Webpage for logging in on HIV Care and ART Tracking System

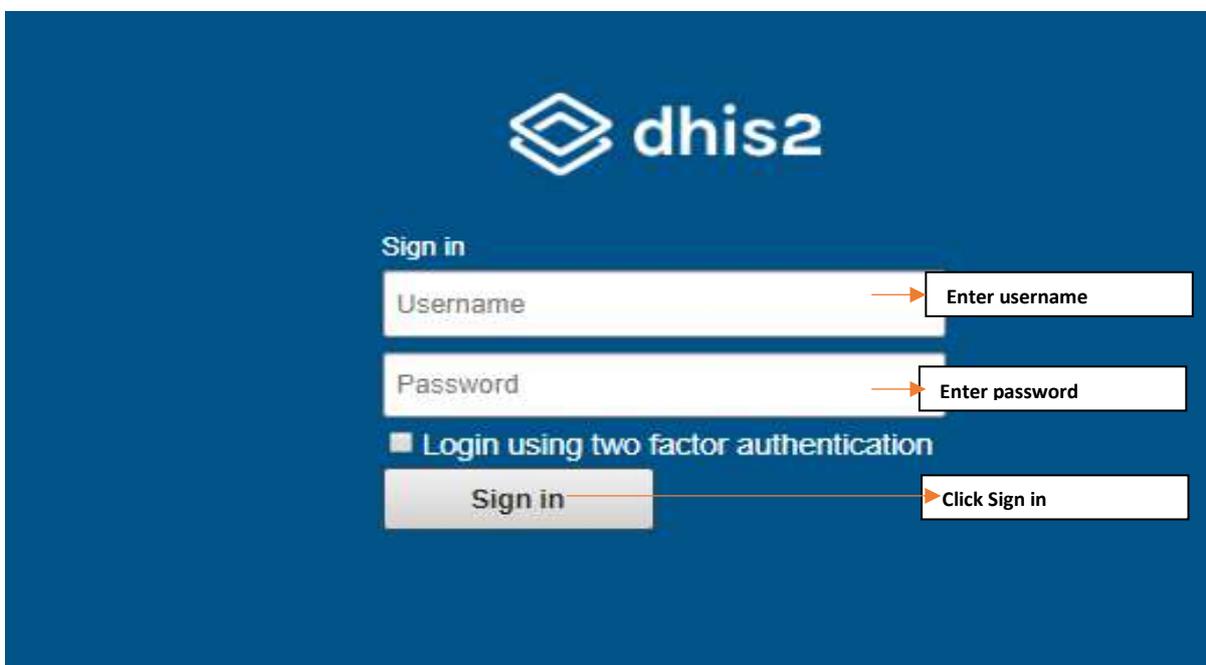


Figure 2. 2 Field to enter username and password for signing in on HIV Care and ART Tracking System

- After logging in, **Dashboard** page will open. The graphical representation of the data can be seen in the Dashboard, and the chart and the information to be displayed can be customized as required.

The picture below shows the different charts and diagrams in the dashboard. The separate tab can be created for separate program component, and the graphical representation of related program can be grouped in the tab. For example, in the below picture, we can see different tab such as ART service and Custom reports are created for the related separate dashboard.

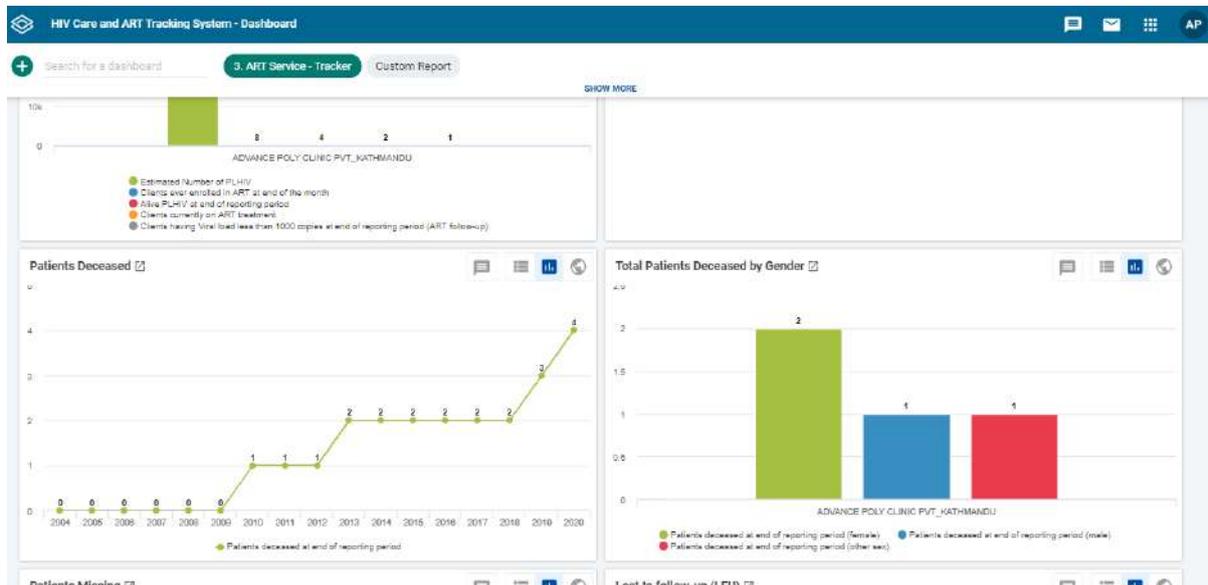


Figure 2. 3 Dashboard of HIV Care and ART Tracking System

Note: In Dashboard, different tabs (options) can be generated as per the required information.

If you click on the  button in the top right corner of the screen, different tabs will appear on the screen (see picture below).

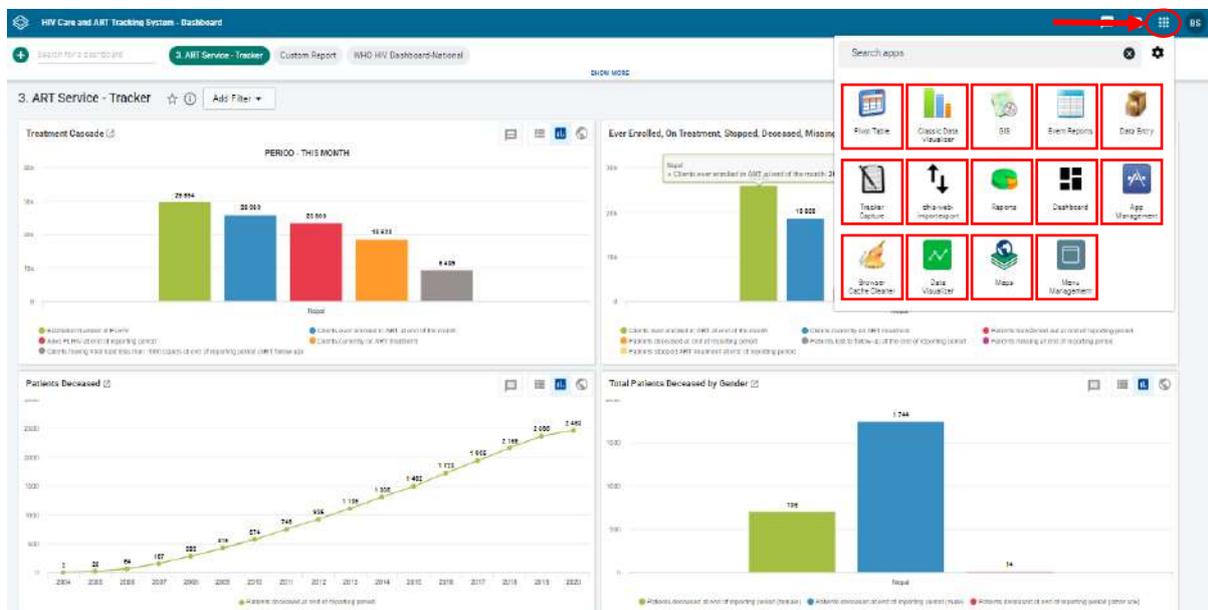


Figure 2. 4 Application tab options in the dashboard

1. **Pivot Table:** Pivot Table helps the user to generate aggregated data in a three-dimensional table. For example, the user can view the number of clients diagnosed with HIV by the site by month or other reporting period.
2. **Classic Data Visualizer:** The data visualizer module enables users to easily create dynamic data analysis and visualizations through charts and data tables.
3. **GIS:** GIS allows the user to generate maps according to the location of clients and service center — for example, the distribution of clients by their treatment status.
4. **Event Reports:** The user can create and view all types of reports of an individual client from this application. For example, if the user needs to see a client's ART adherence report of the past three months, they may use the **Event Reports** application. In aggregated values, the total number of clients having adherence >95% can be generated whereas the event can be used to generate the list of clients having adherence level >95% in each event of ART follow up.
5. **Data Entry:** It is an application to manually enter aggregated data in DHIS2. However, data entry is not used to enter individual data in the DHIS2 Tracker system. For data entry Tracker Capture should be used instead.
6. **Tracker Capture:** Tracker Capture allows the user to register a new client in HIV Care and ART Tracking System. The user can also see the list of clients already registered in the system from this tab and clicking on the client code directs the user to the page for updating/entering the information of that client.
7. **dhis-web-import export:** It is an application to export data from one location (DHIS 2 Tracker) to another location (iHMIS).
8. **Reports:** The user can generate a monthly report (standard report) in HMIS format at the end of the month with the help of this application.
9. **Dashboard:** This tab displays various combined information of all the registered clients which is described in the previous page. Dashboards are intended to provide quick access to different analytical objects (maps, charts, reports, tables, etc) to an individual user. Dashboards can also be shared with user groups.
10. **App Management:** The app management is a core DHIS2 app responsible for managing web apps. It provides the ability to upload and uninstall apps, as well as installing apps directly from the DHIS 2 App Store.
11. **Browser Cache Cleaner:** There might be unnecessary and temporary data created in the HIV Care and ART Tracking System. All those temporary and unnecessary data can be cleared by using the Browser Cache Cleaner. Most importantly, if the admin has changed anything in the system, the users at the ART centers cannot see the change without running Browser Cache Cleaner to clear the stored temporary files. Therefore, it is recommended

to run the cleaner before starting the system for recording the clients' information, or as per special instruction by National Center for AIDS and STD Control (NCASC).

If the central server added any new data elements in any stages, for example, TLD Transition Updates; the user must clean the system using Browser Cache Cleaner before reusing the system to be able to see the updates in the system otherwise the updates will not be displayed.

12. **Data Visualizer:** Data Visualizer allows the user to view the data in two dimensions in chart formats, such as bar diagram, pie chart and line graph.
13. **Maps:** You can create thematic maps of areas and points, view facilities based on classifications, and visualize catchment areas for each facility. Maps can be saved as favorites and shared with other users and groups.
14. **Menu Management:** App that is used for managing the order of the menu items in DHIS2.

2.2 Client Registration

After clicking on the **Tracker Capture Application**, a page opens as shown in the below picture, after which the process of registration starts. Before starting the registration process, confirm that the “HIV Program” should be displayed as in the box below. The “Lists” button can be used to display all the clients list recorded in the system. If the client is registered without displaying HIV program and Name of the site, the client's name will not be displayed in the list, and you might be facing error if you try to register again. In such case, please consult with the Strategic Information unit at NCASC to resolve the problem.

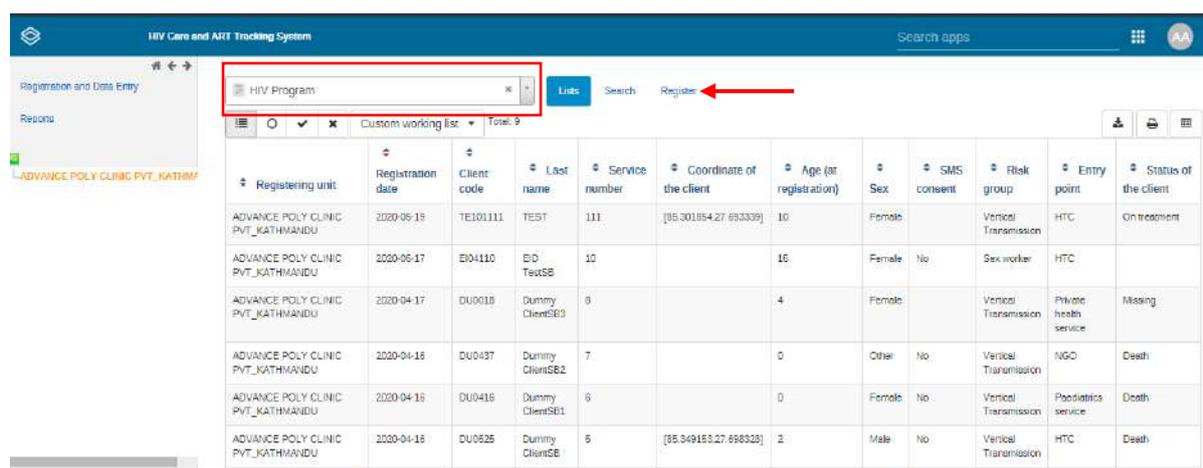


Figure 2. 5 Tracker Capture application with name of the site, HIV Program, client registration tab and list of clients registered in the site

Now, click the **'Register'** option as displayed in the page (pointed with red arrow in the above image). After clicking, the below page will be displayed. Before moving ahead make sure the name of organization is correct and name of your site is selected. For any troubleshoot information consult with the Strategic Information unit at NCASC.

Figure 2. 6 Enrolment page with registration details

Date of Registration refers to the date on which the client had first visited the site for HIV-related services. For the existing (old) clients, registration date must be the date of their first visit to the site for HIV care services, which must be confirmed with their individual paper based file.

You can register either through English Calendar or Nepali Calendar as per your convenience.

Note: In case of existing clients who are already enrolled in the service, do not select the default date while entering their old records from individual client file. Enter the date mentioned in the individual file.

After entering the date of registration, click on 'Coordinate'. Enter and search the address of your health institution on the map. For example, for Teku Hospital, type 'Sukraraj Tropical & Infectious Disease Hospital, Kathmandu', and click on 'Capture' button after finding the location of the institution in the map.

Right click on map to set location



OpenStreetMap Google Maps

Capture Cancel

Figure 2. 7 Map of Nepal to capture coordinates

If you cannot find the location of your facility, please follow the instructions given below:

Step 1: First, zoom in on the map of Nepal and go to the area of your facility. Click on the '+' button to zoom in and '-' button to zoom out of the map, which can be found in the top left corner of the map (see picture above). Then enter and search the address of your facility. For swift action, you may select Google Map to locate the coordinate rather than selecting 'Openstreet' Map as shown in the above picture.

Step 2: If you still cannot find the location of your facility after zooming into the map, then move the cursor of your mouse to the location of your facility, right click on the map, select **Set Coordinate**, and then click on the **Capture** button.

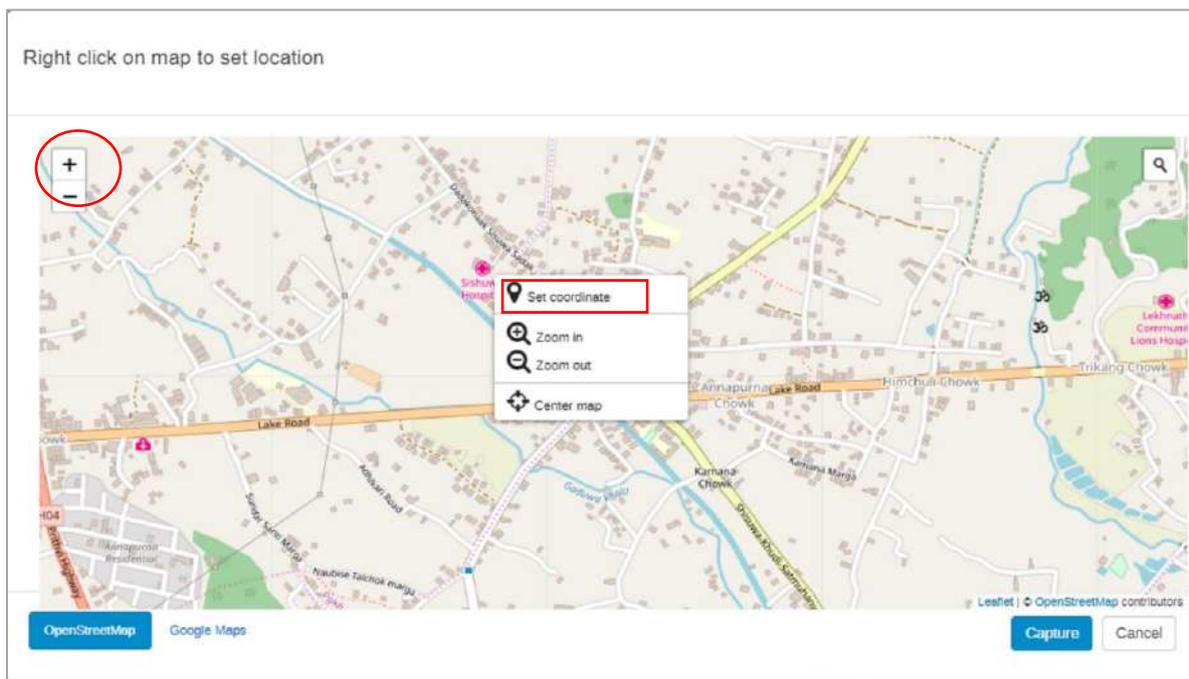


Figure 2. 8 Feature of Zooming in image of Open Street map of Nepal

Note: Nepal's co-ordinate lies between 28°10'N and 84°15'E

After entering the address of the facility, fill in all the details required for client registration. The Date of Birth of the client should be in English date in YYYY-MM-DD format. You can select the date from the calendar. Similarly, sex, marital status, number of children, education and employment status of the client should be filled properly. If the client is employed, then fill the average monthly income in Nepali currency after asking with the clients as shown in the picture below. Do not leave any field empty/blank. The suitable option can be selected from the drop-down list.

Date of birth *	yyyy-MM-dd
Age (at registration)	
Sex *	Select or search from the list
Marital status	Select or search from the list
Number of children (Age less than 15 years)	Select or search from the list
Education status	Select or search from the list
Employment status	Employed
Average monthly income	20000

Figure 2. 9 Employment Status and Average monthly income option in client registration

While entering the information about mobile usage of the client, select ‘Available’ if the client has a mobile number, select ‘Not available’ if the client does not have a mobile number and select ‘Available but do not want to share’ if the client has a mobile number but does not want to share it. Before saving, please ensure that the mobile number has 10 digits. The mobile number must be of Nepal, and do not enter a landline number.

The screenshot shows a registration form with the following fields and options:

- Mobile number: 1234567890 (with a red circle around the number and a yellow error message: "Mobile number should be of 10 digits only")
- SMS consent: Yes No (with a red circle around the "Yes" option)
- Risk group *: Select or search from the list
- Entry point *: Select or search from the list
- Status of the client: Select or search from the list
- Fingerprint Id: [Empty field]
- Fingerprint String: [Empty field]

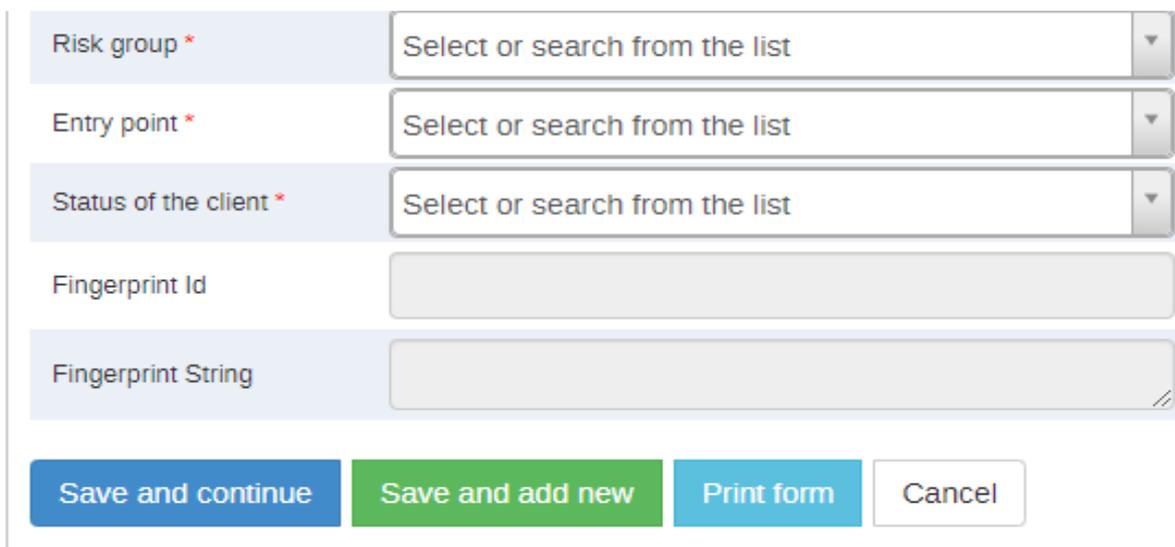
Buttons at the bottom: Save and continue, Save and add new, Print form, Cancel.

Figure 2. 10 Mobile number, SMS consent option in client registration

Various types of SMS or text messages such as reminder, tests and awareness are sent to the mobile number provided by the client through this system (refer to Annex 1). Therefore, it is necessary to

get prior consent from the client regarding the receipt of those messages. Under **SMS Consent**, select **'Yes'** if the client agrees to receive such SMS sent through the system and select **'No'** if the client disagrees to receive such SMS.

Fill about the risk group, entry point and status of the client the suitable option can be selected from the drop-down list. The finger id and fingerprint string will be stored in the space after the clients' registration the Biometric system. When registering a client, make sure to enter all the details required on the page before clicking on **'Save and continue'**. If you click on **'Save and add new'**, it implies that you want to complete the registration of the current entry and start new registration of another client. Please do not use this option until you finished the complete entry of one client with details of Medical History, ART Follow-up and other client details.



The image shows a web form for client registration. It contains five input fields: three dropdown menus and two text boxes. The dropdown menus are labeled 'Risk group *', 'Entry point *', and 'Status of the client *', each with the placeholder text 'Select or search from the list'. The text boxes are labeled 'Fingerprint Id' and 'Fingerprint String'. Below the form are four buttons: 'Save and continue' (blue), 'Save and add new' (green), 'Print form' (light blue), and 'Cancel' (white with a grey border).

Figure 2. 11 Risk Group, Entry Point, Status of Client option in client registration

2.3 Biometric System

The Biometric System is developed to overcome the limitations of the currently used paper-based recording and reporting system. Currently, the Biometric System is used at ART centers only. This system should only be used if the clients are confirmed to be HIV positive or enrolled in HIV care. The Biometric System facilitates the user to manage the information related to clients in the following ways:

1. This system registers new clients in HIV Care and ART Tracking System with a unique identification code (alphanumeric code).
2. It identifies whether the client is registered in another ART center of Nepal. In other words, it helps to solve the issue of client duplication.
3. It helps in easy retrieval of client's records who are already registered in the system, *i.e.* it facilitates the user to search and view old records of clients and helps to facilitate treatment plan.
4. The Biometric System helps the user to find the client's code and file number easily in the system.

2.4 How to use the Biometric System?

Connect the biometric device to the computer and open the system by double-clicking on **'Biometric.jar'** icon in the desktop.

Enter the username and password given to your facility in the fields shown in the below picture. You need to log in into the HIV Care and ART Tracking System first before logging in to this Biometric System.

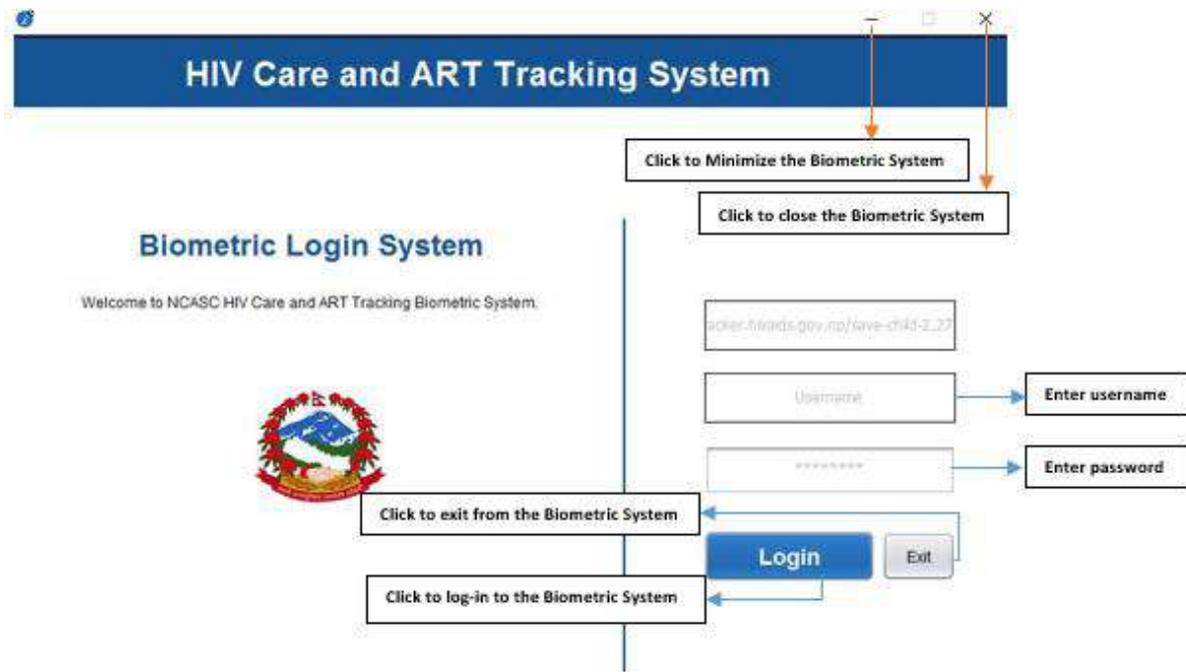


Figure 2. 12 HIV Care and ART Tracking System Biometric System Login Page

After logging in, a page will open as shown in the below picture.

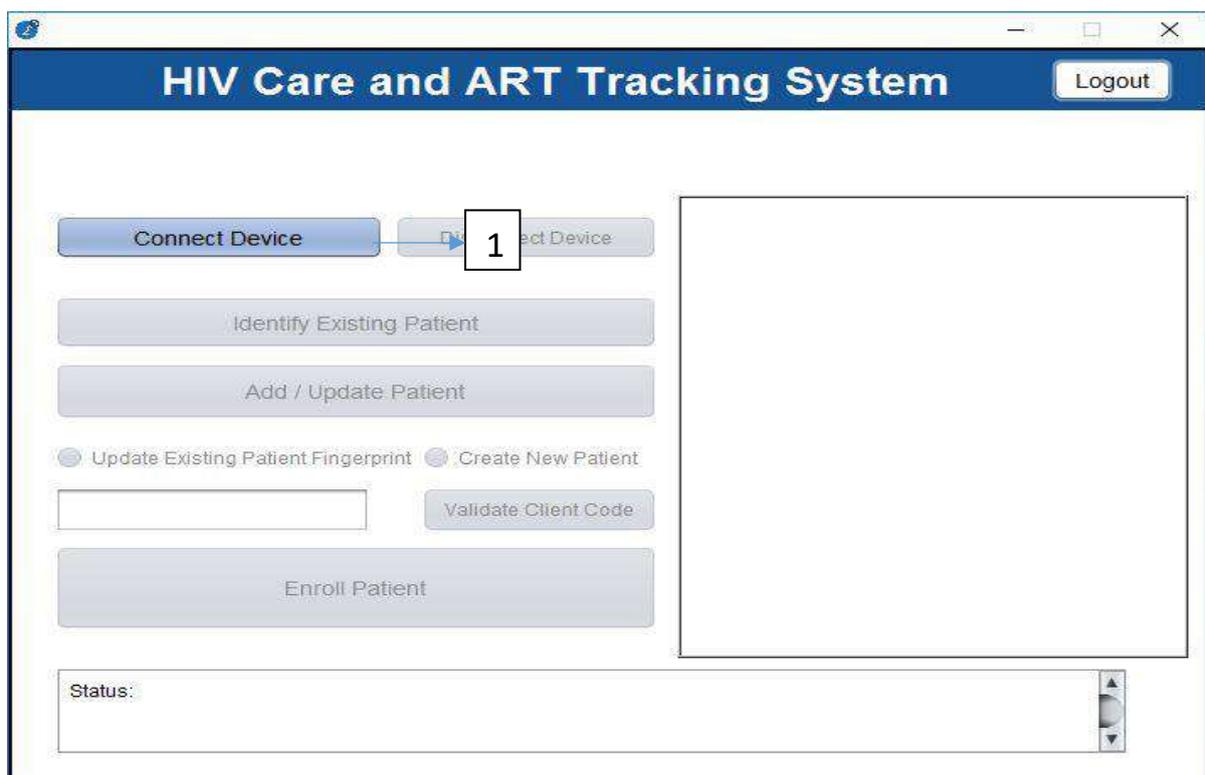


Figure 2. 13 Connecting the biometric device to server in HIV Care and ART Tracking System Biometric System

Click on **Connect Device** button (marked by box 1 in the picture above) to connect the biometric device with the Biometric Application. After the Biometric System connects with the computer, the **Connect Device** button turns grey.

Please check for the message response of the Biometric Application at the bottom of the dialogue box as marked by the red box in the picture below. Do not perform any operation on the Biometric System unless you see the message status '**Device connected successfully**'.



Figure 2. 14 Device connected successfully message displayed in Biometric System

There may be a different message response in the above red-marked field, like **Please place your finger** or **Please place your finger 3 times**. Please wait for the message response before scanning the fingerprint in the biometric device.

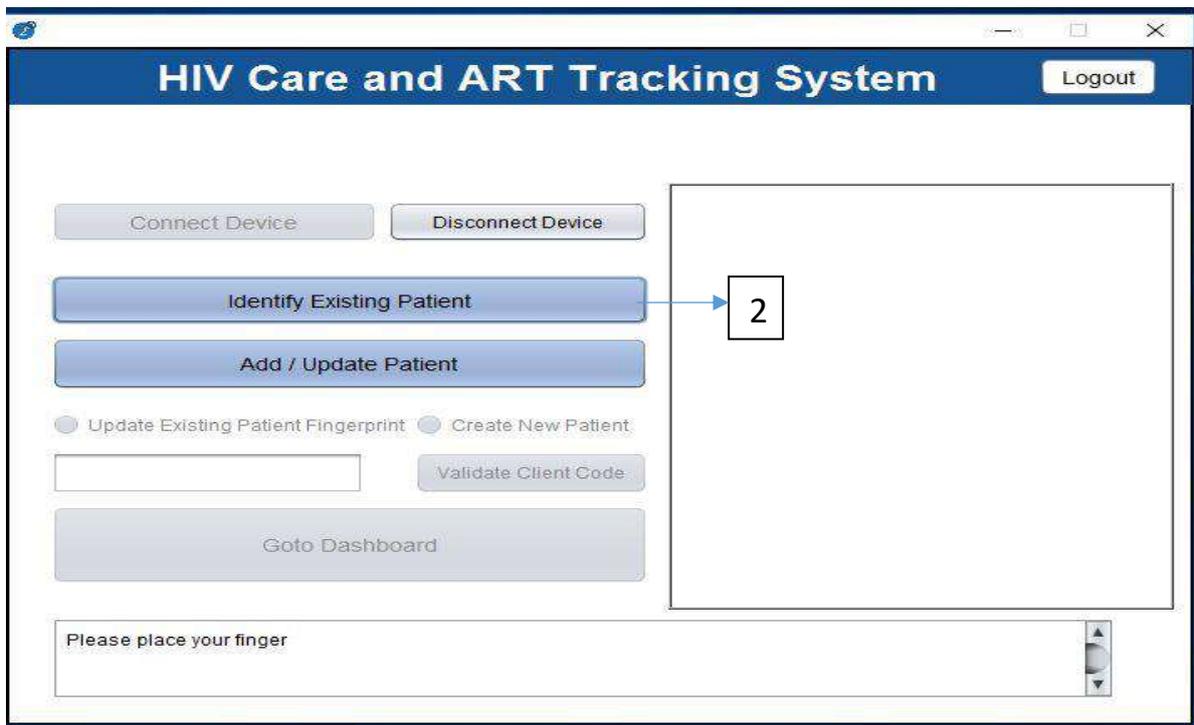


Figure 2. 15 Identify Existing Patient in HIV Care and ART Tracking System Biometric System

When client visits at the facility, first click on the **Identify Existing Patient** button (box 2). This button is used to check if the client is already registered in the system. Ask the client to place their **Left Thumb** on the scanner to check whether the client is already registered in the system.

If the client has already registered in the system, their thumb impression of the client appears in the box, and you will see the message **'Fingerprint Recognised'** at the bottom of the dialogue box as shown in the red rectangle in the below picture. Then, the **'Go to Dashboard'** button turns blue and becomes clickable. After clicking it, the user will be directed to the DHIS2 where records of the services received by that client has been stored. From there, user can see and update the records of that client.

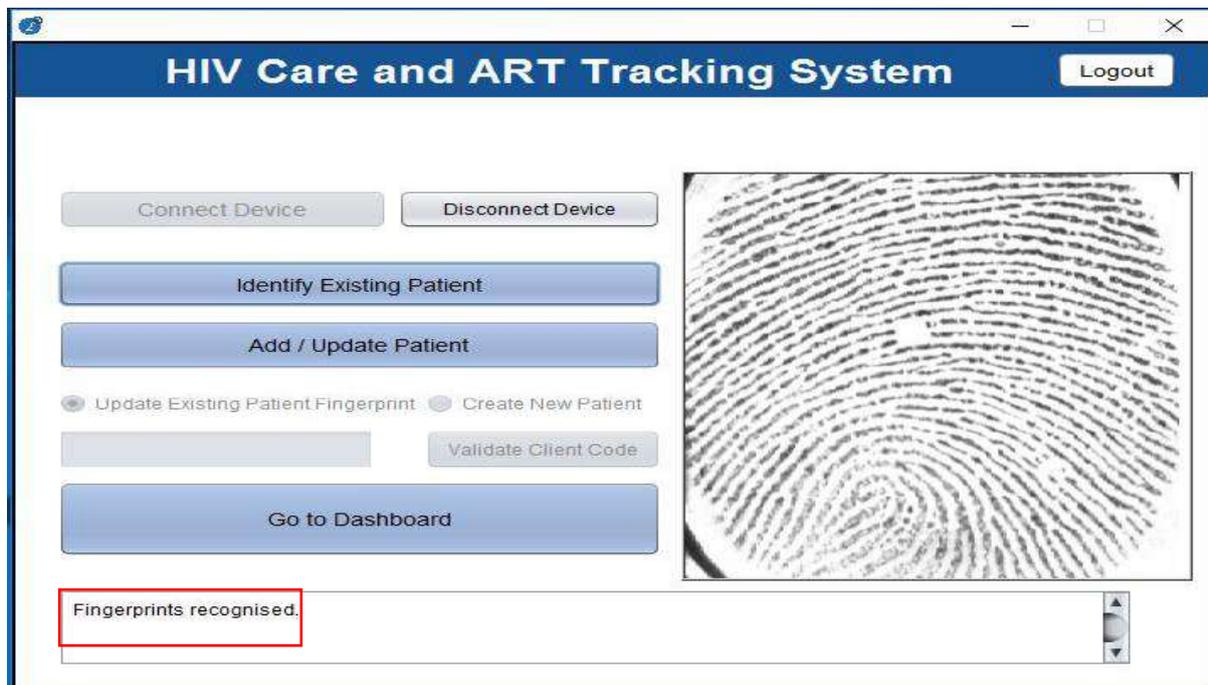


Figure 2. 16 Fingerprints recognised in Biometric System

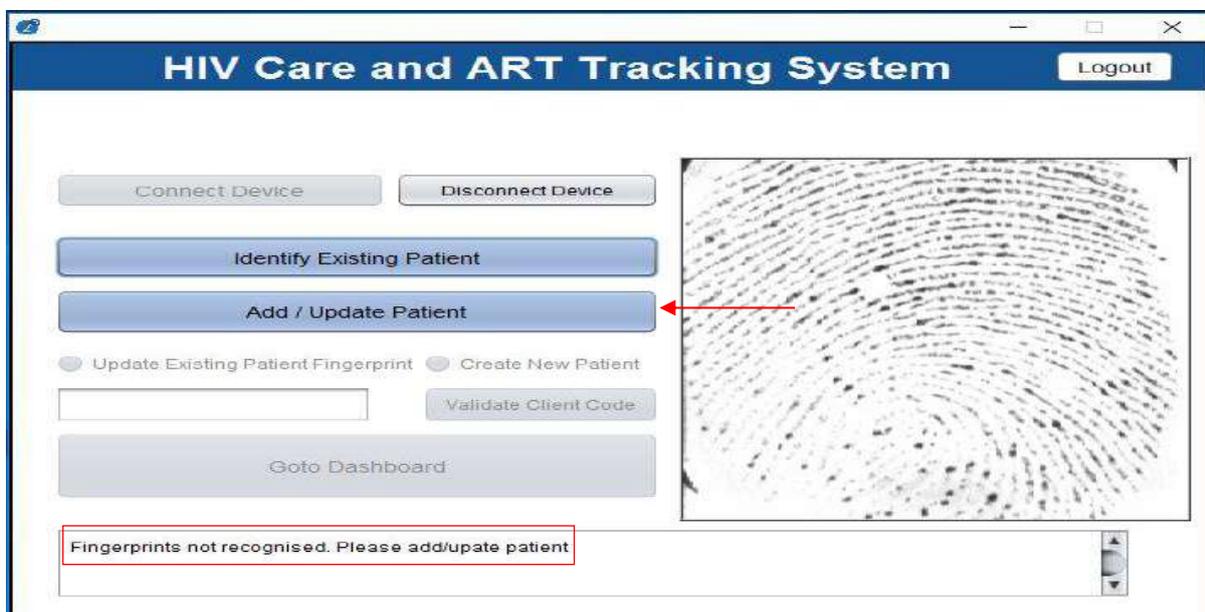


Figure 2. 17 Fingerprints not recognised; add/update the patient in Biometric System

If the client is not registered in the biometric system, you will see the message **'Fingerprints Not Recognized'**. Please **add/update patient** at the bottom of the dialogue box as shown in the above picture. Click on the **Add/Update Patient** button shown by the red arrow in the picture to add the client in the system.

After Clicking on **Add/Update Patient** button, the system will ask you to place the client's finger on the scanner 3 times (message denoted by a red rectangle in the below picture). Then, follow these steps: (a) Place the left thumb of the client on the scanner for 5-6 seconds; (b) Wait for the picture to appear in the preview correctly, and (c) Remove the finger. Repeat these steps 3 times.



Figure 2. 18 Registration of new patient in Biometric System

After three successful scans of the client's fingerprint, the biometric application will respond with the message 'Fingerprint enrolled', and then you must select **Update Existing Patient Fingerprint** for adding the fingerprint of the clients who are already on the HIV Care and ART Tracking System.

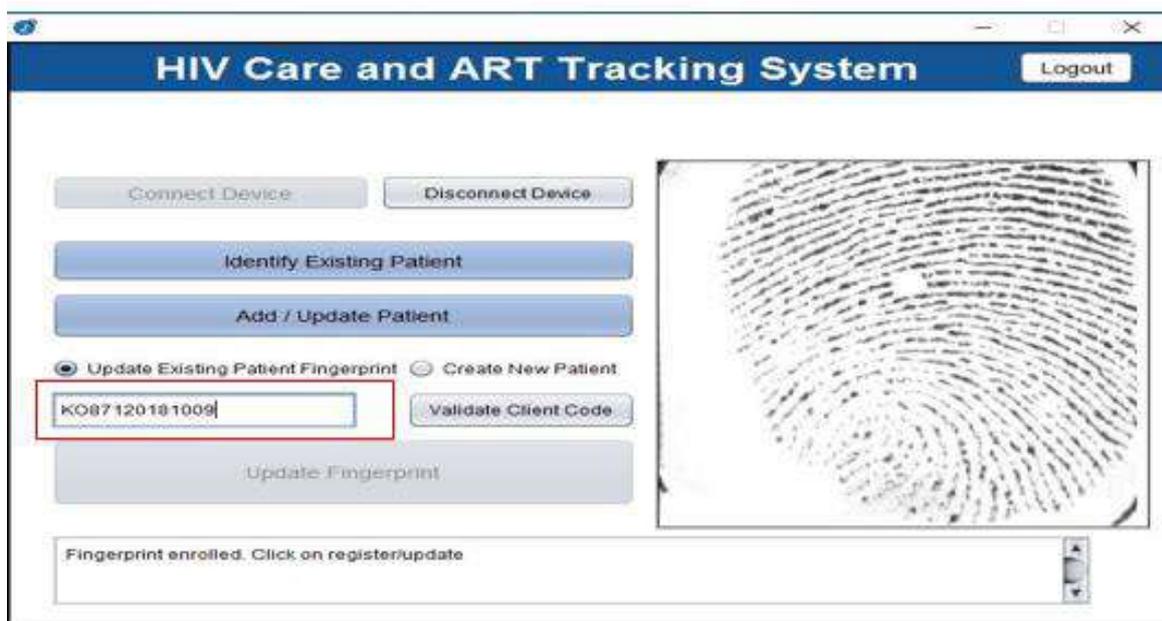


Figure 2. 19 Updating existing patient in Biometric System

Before clicking on **Update Existing Patient Fingerprint** button, you should validate the client code [unique code of the client that is available in your HIV Care and ART Tracking System] to verify that the unique client code exists in your health facility or other facility to link the fingerprint of the client. If the system responds with the message 'Patient found with [Client Code] and was registered at [Health Facility]' then you can click on the **Update Existing Patient Fingerprint** button. It will respond with the message 'Update Success' when everything is done.

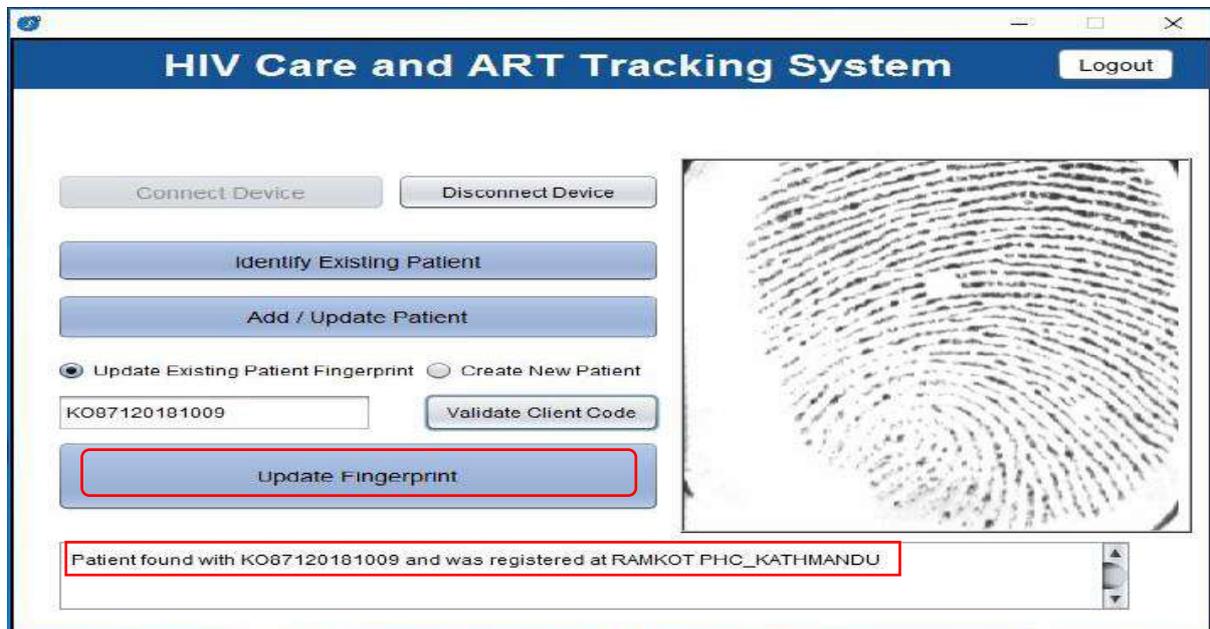


Figure 2. 20 Validating the details before updating patient in Biometric System

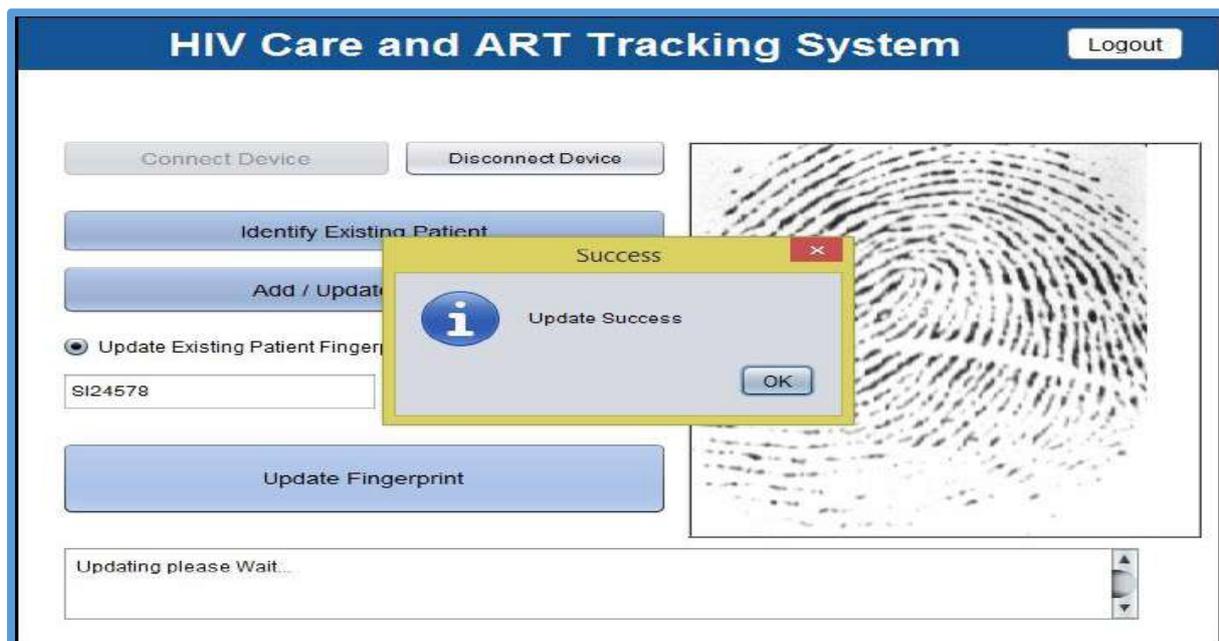


Figure 2. 21 Update Success of patient in Biometric System

Finally, identify the fingerprint of the patient by clicking on **Identify Existing Patient** button in order to confirm that everything is done correctly. When you scan the client's fingerprint on the biometric device, it should respond with the message 'Fingerprint Recognised'.

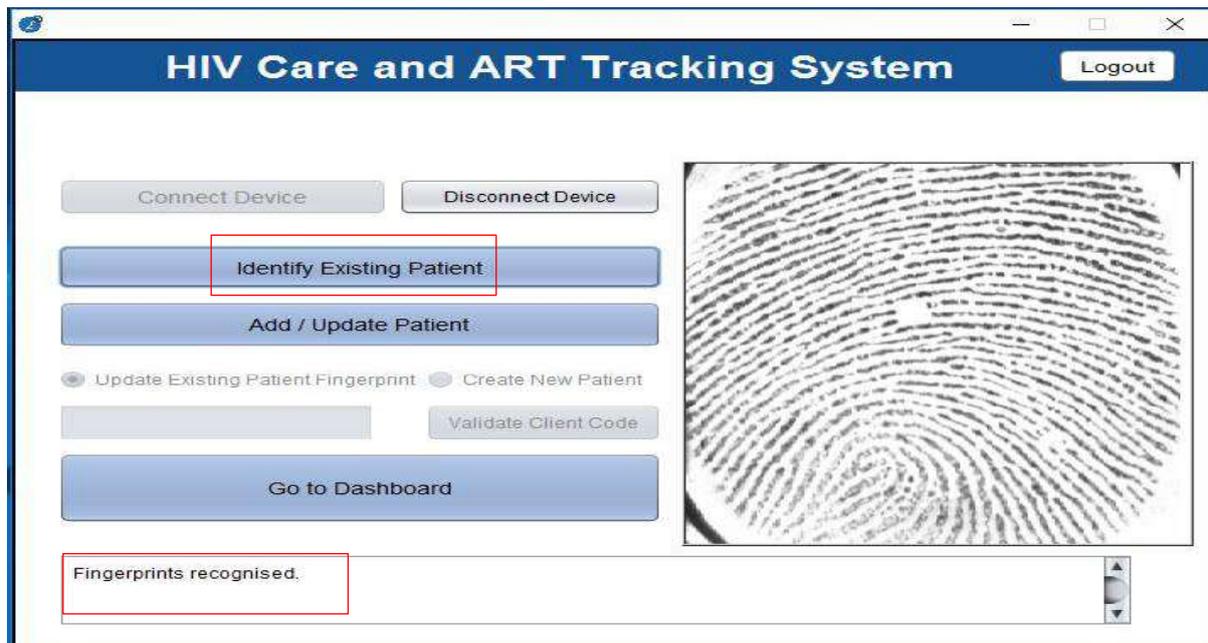


Figure 2. 22 Confirming the update of patient biometrics in Biometric System

Then click on **Go to Dashboard** button to direct towards the client records in the DHIS2 tracker system. You can also verify if the fingerprint has been correctly linked with the client details.

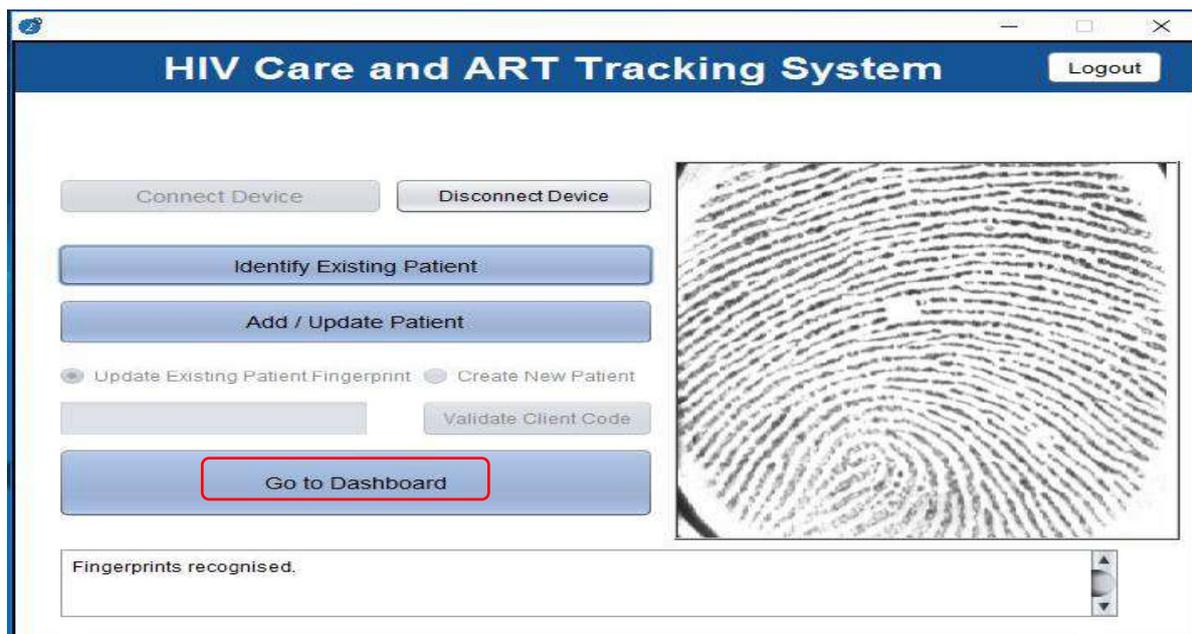


Figure 2. 23 Go to Dashboard of DHIS2 Tracker from Biometric System

When you click on **Go to Dashboard** button, a page opens as shown in the below picture. Verify the Fingerprint ID (marked by red rectangles in the below picture).

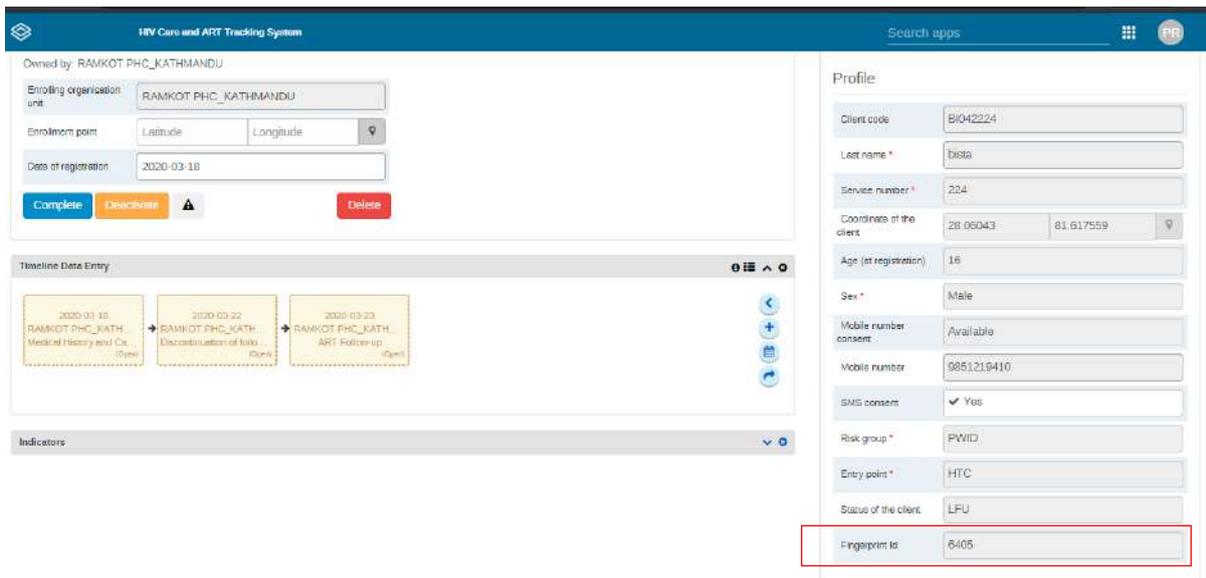


Figure 2. 24 Linkage of fingerprint with ID in client's profile from Biometric System

2.5 Process of registering new clients in the Biometric System

Before registering the client in the Biometric System, you need to identify the client by clicking the 'Identify Existing Patient' button. If the client is recognized, you cannot enrol the client.

For verifying whether the client has been enrolled or not, you can click on the **Go to Dashboard** button to see the name of the health facility in which the client has been enrolled. You can see details of the client from the dashboard (such as, follow up date, medical history, case assessments, etc.). However, with view-only permission, you will not be able to modify anything on the client's stages. You can only update the client's profile after getting permission from the health facility to which the client previously belongs to.

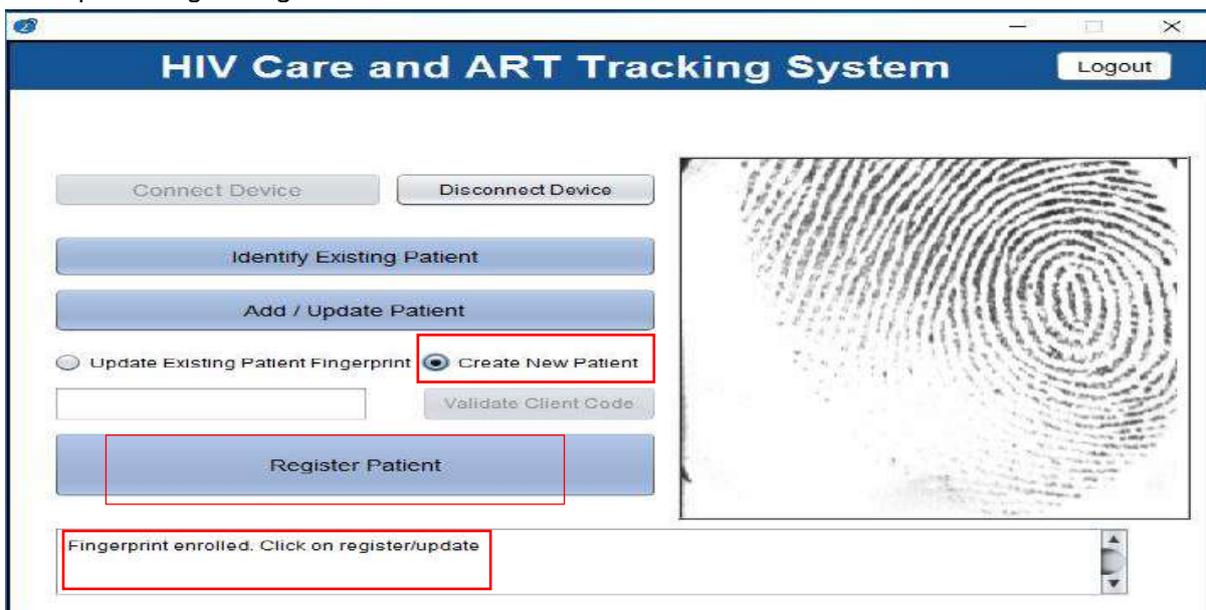


Figure 2. 25 Creating new patient profile from Biometric System

Note: You need to follow the same steps as that of updating the client on the Biometric System for new client registration too. But the difference is that you need to select 'Create New Patient' (marked by a red rectangle in the below picture) instead of 'Update Existing Patient Fingerprint'.

After taking three samples of the left thumb impression, the system shows **Fingerprint enrolled**. **Click register/update**. Then select **Create New Patient** and click on **Register Patient** (marked by red rectangle in the above picture). This completes the process of registering a new client in the Biometric System. The client registration page opens automatically in DHIS2 Tracker after you click on **Register Patient**.

You will see as below on your HIV Care and ART Tracking System, where you must click on the **Register** button (marked by a red rectangle in the below picture).



Figure 2. 26 Registration of client in HIV Care and ART Tracking System linked from Biometric System

After clicking on the **Register** button, the profile registration page will open as shown in the below picture.

The screenshot shows a detailed registration form with the following fields:

- Caste: Select or search from the list
- Province: [Please select]
- District: [Please select]
- Coordinate of the client: Latitude and Longitude
- Date of birth *: yyyy-MM-dd
- Age (at registration):
- Sex *: Select or search from the list
- Marital status: Select or search from the list
- Number of children (Age less than 15 years): Select or search from the list
- Education status: Select or search from the list
- Employment status: Select or search from the list
- Mobile number consent: Select or search from the list
- Mobile number:
- SMS consent: Yes No
- Risk group *: Select or search from the list
- Entry point *: Select or search from the list
- Status of the client *: Select or search from the list
- Fingerprint Id:
- Fingerprint String: SqFTUjlyAAAD4uJFBQUHCc7QAAA043wAAAA03EaI+J8AUIPjQ2gAELtdwFCAEgPMABq4jEPeDjAQYCSOioAQEPeAD... (This field is highlighted with a red rectangle)

 At the bottom of the form, there are four buttons: 'Save and continue' (highlighted with a red rectangle), 'Save and add new', 'Print form', and 'Cancel'.

Verify the alphanumeric code that appears on the Fingerprint String before clicking on **Save and continue** button.

Figure 2. 27 Registration of client in HIV Care and ART Tracking System linked from Biometric System

3. Program Stages

After the process of registering the client in DHIS2 Tracker is continued by clicking on the **Save and Continue** button, a page will open as shown in the picture below.

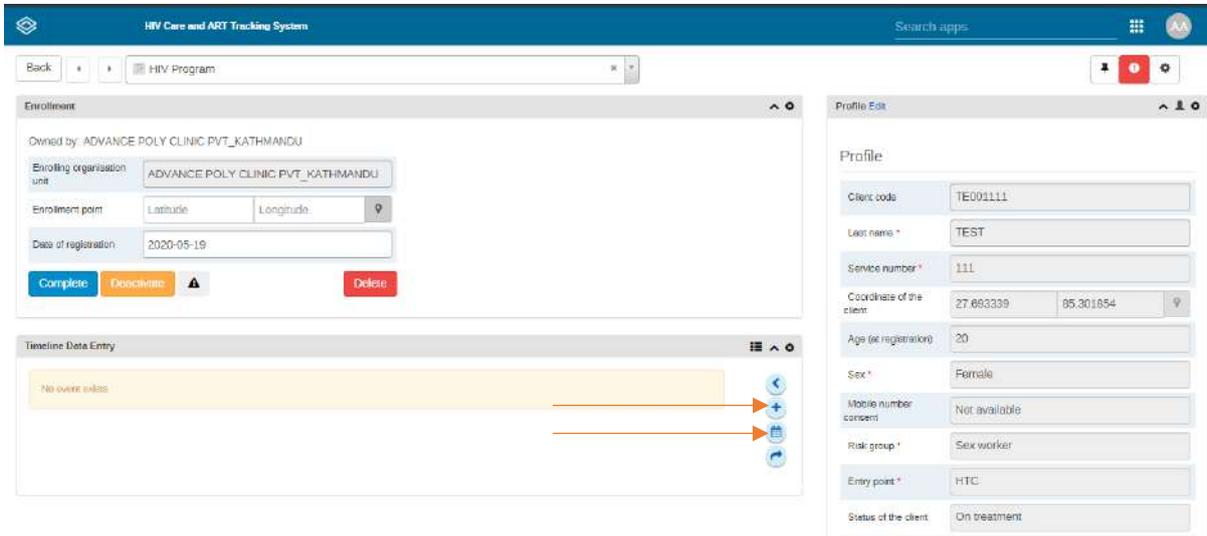


Figure 3. 1 Individual client profile in HIV Care and ART Tracking System

Click on the '+' button to enter the past records of the client from the individual file. The calendar icon needs to be selected to schedule follow-up visit.

When you click on the '+' button under **Timeline Data Entry**, you will see different drop-down list of the Program Stages such as Medical History and Case Assessment, HTC-HIV Counselling and Testing, ART-HIV Counselling and Testing, ART Follow-up, Pregnancy and Delivery, EID and Treatment Details, and Discontinuation of follow up. Select one of the relevant Program Stage from the drop-down list, considering the reason for the client's visit to the facility. Enter the date of the service provided, click on **Save** button and fill in all the required information on the page.

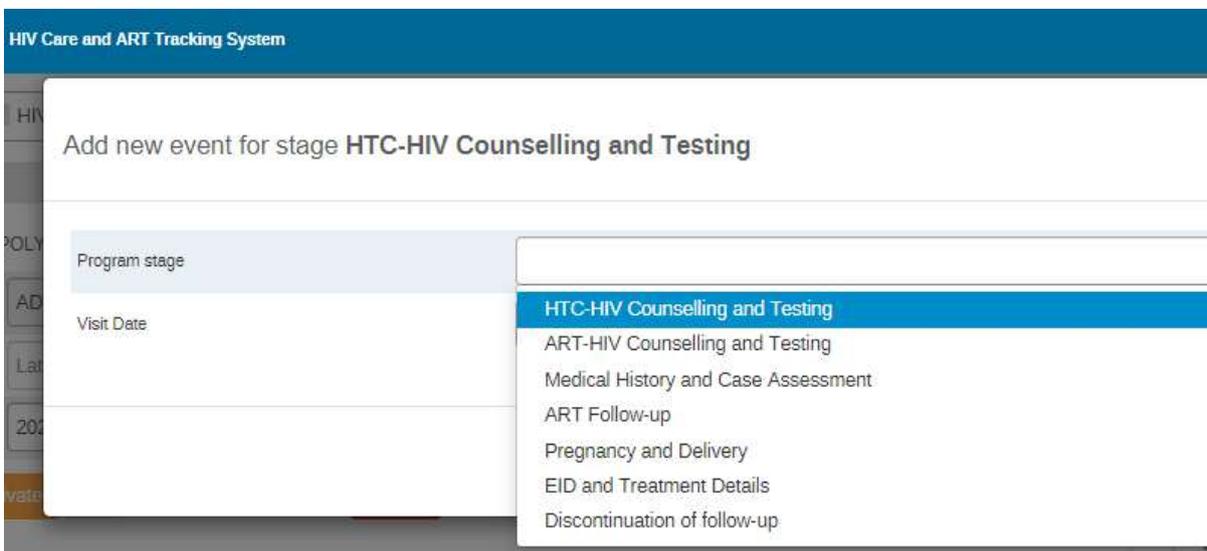


Figure 3. 2 Different stages of HIV Care and ART Tracking System in timeline data entry

HTC–HIV Counselling and Testing

This program stage is applicable to facilities providing HIV Counselling and Testing services. Select this program stage and fill the relevant information of the client who visited the facility for HIV Counselling and Testing services.

ART–HIV Counselling and Testing

This program stage is applicable to ART centers. Select this program stage and fill the required information if the client visited your facility after getting positive HIV test result from other institutions such as NGOs, private hospitals, clinics, etc. and you need to retake the HIV test of the client for further confirmation.

Medical History and Case Assessment

This stage is applicable to ART centers. You must select this program stage when recording information of the client with a positive HIV test result. If the client is available during the data entry, you can log into the Biometric System and take samples of the client's fingerprints. This stage can also be continued without biometric information. Please refer section 2.4 for instructions on how to update the fingerprint of a client already registered in HIV Care and ART Tracking System. This stage is mandatory for every identified HIV positive client, whether newly enrolled in HIV services or already taking ART services.

ART Follow-up

This program stage is applicable when the client visits the ART center for follow-up services on the appointment date given by the ART counselor or clinician. All their follow-up information needs to be updated in each visit by selecting ART Follow-up program stage.

Pregnancy and Delivery

This program stage is only applicable to pregnant women living with HIV. The relevant information on pregnancy and delivery needs to be filled if a woman living with HIV is pregnant or a pregnant woman is confirmed to be HIV positive.

EID and Treatment Details

This program stage is to be used when a child is born to an HIV infected mother. Fill in information related to prophylaxis and early infant diagnosis test and its result in this stage.

Discontinuation of Follow-up

This program stage is selected to fill up the information about the discontinuation of HIV care services because of death. This stage allows to store the date of death and reason of death.

The program stages listed above are explained in detail below:

3.1 HTC–HIV Testing and Counselling

When this program stage is selected, a page opens as shown in the picture below.

Nepali Calendar Visit Date Due date

Event point

Latitude Longitude

HIV Testing History

HIV tests done in the past Yes No

HIV Counselling and Testing at this site

Reason for HIV testing

Pre-test counselling given Yes No

Informed consent taken Yes No

Assay 1 (Rapid Test 1)

Post-test counselling given Yes No

Client test result

HIV test result received by Client Yes No

Partner HIV Counselling and Testing

Partner counselling given at this site Yes No Don't know

Partner tested for HIV at this site Yes No Don't know

Children HIV Testing

Child 1 tested Yes No

Child 2 tested Yes No

Child 3 tested Yes No

Child 4 tested Yes No

Child 5 tested Yes No

Child 6 tested Yes No

Child 7 tested Yes No

Child 8 tested Yes No

Child 9 tested Yes No

Child 10 tested Yes No

Figure 3. 3 HTC-HIV Testing and Counselling page in HIV Care and ART Tracking System

A detailed guide on how to fill all the fields displayed on this page are given below:

Visit Date:

Enter the date on which the client visited at your facility for HIV testing. Select date from the calendar that appears when you click on the date or type the date in YYYY-MM-DD format according to English calendar.

Nepali Calendar:

Similarly, Nepali date can also be selected by clicking on Nepali Calendar. Select date from the Nepali calendar that appears after clicking on the date or type the date in YYYY-MM-DD format according to Nepali calendar.

Due Date:

If the client requires retaking the HIV test for confirmation, enter the date of the scheduled appointment. Select date from the calendar that appears when you click on the date or type the date in YYYY-MM-DD format according to English calendar.

HIV Testing History

Click on 'Yes' if the client has done an HIV test in the past or click on 'No' if the client has not done an HIV test. If the client has done an HIV test in the past, select the total number of tests the client has done from the dropdown list.

Select whether the HIV result of the last test was 'Positive', 'Negative', 'Inconclusive' or 'Don't know'. Then select an option from the dropdown list that best describes the medium through which the client came to your facility for HIV testing.

HIV Testing and Counselling

Reason for HIV testing:

The reason for HIV testing can be recorded in the system with the drop-down list; click on the applicable option among STI, TB, Pregnancy, Surgery, HIV/AIDS Symptoms, None and Others; when selecting 'Others' another open text box will open for recording in alpha-numeric format.

Pre-test Counselling Given:

Click on 'Yes' if the client was provided with counselling services before performing an HIV test or click on 'No' if the client was not given any counselling services.

Informed Consent Taken:

Click on 'Yes' if the client's consent was taken before performing an HIV test and click on 'No' if consent was not taken.

Assay 1 (Rapid Test 1): Select the result shown by the Determine Test Kit the dropdown list. Select whether the test result was 'Reactive' or 'Non-reactive'. If 'Positive' result is selected, Assay 2 (Rapid Test 2) will open, and the user needs to select the result shown by the Unigold Test Kit from the dropdown list. Again, select whether the test result was 'Reactive' or 'Non-reactive'. If the 'Reactive' result is selected, Assay 3 (Rapid Test 3) will open, and the user needs to select 'Reactive' or 'Non-reactive' result shown by the STAT-PAK Test Kit.

A 'Positive' result appears automatically in the **Test Result** field if the test results from all three test kits mentioned above are reactive. If the test results from Determine Test Kit and Unigold Test Kit are 'Positive' but the test result from STAT-PAK Test Kit is 'Negative' then an 'Inconclusive' result appears automatically in the **Client Test Result** field. In case the test results are 'Inconclusive', ask the client to visit the facility after 14 days for another HIV test and enter the date of scheduled appointment in **Due Date** field as mentioned above.

Post-test Counselling Given:

Click on 'Yes' if the client was provided with HIV-related counselling services after performing HIV test and click on 'No' if the client was not provided with such counselling services.

Client Test Result:

As mentioned above, the final result of the HIV test will appear automatically in the **Test Result** field after you enter the results obtained from the three test kits.

HIV Test Result Received by Client:

Click on 'Yes' if the client received the result of the HIV test and click on 'No' if the client did not receive the test result.

Partner HIV Counselling and Testing:

You need to record information whether the partner of the client has received counselling and testing service from your ART center.

Partner Counselling Given at this Site:

Click on 'Yes' if counselling service was provided, click on 'No' if counselling service was not provided, and click on 'Don't Know' if you do not know whether counselling service was provided to the partner of the client at your ART center.

Partner Tested for HIV at this Site:

Click on 'Yes' if the partner of the client was tested for HIV at your ART center, click on 'No' if the partner was not tested for HIV at your ART center, and click on 'Don't Know' if you do not know whether the partner was tested for HIV at your ART center. If the partner had tested for HIV, select the result of the last test in 'Partner test result'.

Children HIV Testing:

If the client has children, you need to record information about whether the children have been tested for HIV.

Child 1 Tested:

Click on 'Yes' if the client's child had been tested for HIV. Once you click on 'Yes', **Child 1 tested** button appears on the screen. Enter the final result of the child's HIV test in **Child 1 tested result** which can be of three types: Positive, Negative and Inconclusive. Select 'Don't know' option, if the test result of HIV was unknown.

The field to enter the result of a child’s test appears based on number of children of the client entered at the time of registration. If he/she has one child, only one field will appear, and if he/she has two children, two fields will appear and so on. Currently, up to 10 children details can be entered inside this stage.

3.2 ART–HIV Testing and Counselling

Select this stage and fill the relevant information if a client is visiting your facility after getting positive HIV test result from other HIV testing facilities such as NGOs, Private Hospitals, Clinic and the clinician of your health facility prefers to reconfirm the client’s HIV status.

The process of filling this program stage is similar as described above in section 3.1.

Nepali Calendar Visit date * Due date

२०७७-२-१३ 2020-05-26 yyyy-MM-dd

Event point

Latitude Longitude 📍

HIV Testing History

Result of last HIV test Select or search from the list ▼

HIV tests done in the past Yes No

HIV Counselling and Testing at this site

Reason for HIV testing Select or search from the list ▼

Pre-test counselling given Yes No

Informed consent taken Yes No

Assay 1 (Rapid Test 1) Select or search from the list ▼

Post-test counselling given Yes No

Client test result Select or search from the list ▼

HIV test result received by Client Yes No

Partner HIV Counselling and Testing

Partner counselling given at this site Yes
 No
 Don't know

Partner tested for HIV at this site Yes
 No
 Don't know

Children HIV Testing

Child 1 tested Yes No

Child 2 tested Yes No

Complete
Delete
Print form

Figure 3. 4 ART-HIV Testing and Counselling page in HIV Care and ART Tracking System

3.3 Medical History and Case Assessment

Select this program stage and fill the appropriate information when enrolling a client for HIV treatment services after confirmation that the client is HIV positive.

Nepali Calendar	Visit date *	Due date
२०७७-२-६	2020-05-19	2020-05-19
Event point		
27.693339	85.301854	
HIV care history		
HIV positive identification date	yyyy-MM-dd	
WHO stage	Select or search from the list	
ART treatment initiated (Before)	<input type="radio"/> Yes <input type="radio"/> No	
CPT (Co-trimoxazole preventive therapy) eligibility at date of registration	<input type="radio"/> Yes <input type="radio"/> No	
Tuberculosis history before visiting this site	<input type="radio"/> Yes <input type="radio"/> No	
Case assessment-Patient Vitals		
Weight (in kgs)		
Height (in cm)		
TB Status		
TB status at date of registration	<input type="radio"/> Yes <input type="radio"/> No	
Case Assessment-Tuberculosis		
Tuberculosis screening done at the date of registration	<input type="radio"/> Yes <input type="radio"/> No	
IPT initiated at the date of registration	<input type="radio"/> Yes <input type="radio"/> No	
Case Assessment-Opportunistic Disease		
Known opportunistic infections	<input type="radio"/> Yes <input type="radio"/> No	
Any chronic disease	<input type="radio"/> Yes <input type="radio"/> No	
Case Assessment-Baseline Examinations		
Initial CD4 Test	yyyy-MM-dd	
ART Initiation		
Is ART started at this site? *	<input type="radio"/> Yes <input type="radio"/> No	
ART non initiation reason (At this site)	Select or search from the list	
Calculated value		
Age at visit (in years)	10	

Complete

Delete

Print form

Figure 3. 5 Medical History and Case Assessment page in HIV Care and ART Tracking System

This stage must be mandatorily filled up, for all the clients. All the information under this stage must be filled-up completely. A detailed guide to fill the information is given below:

Visit Date:

Enter the date when the client visited the ART center for treatment service. Select date from the calendar that appears after clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

Nepali Calendar:

Similarly, Nepali date can also be selected by clicking on Nepali Calendar. Select date from the Nepali calendar that appears after clicking on the date or type the date in YYYY-MM-DD format according to Nepali calendar.

Note: For existing or old client who are already taking the services from the site, enter the date mentioned in their personal record.

HIV Care History:

HIV Positive Identification Date:

Enter the date of HIV test mentioned in the record. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar. *For existing or old client, enter the date mentioned in their personal record.*

WHO Stage

Select the WHO stage as per the WHO staging guidelines from the dropdown list. For data entry of old clients, select the same WHO stage from the dropdown list corresponding to the one mentioned in their record when the clients first visited the facility to receive treatment services.

Note: WHO clinical staging of HIV should not be less than the previous stage. For example, once the client has WHO stage 2, the stage will not degrade to stage 1. However, it may be changed to stage 3 or 4 as per client condition as mentioned in the WHO staging definition.

ART Treatment Initiated (Before):

Click on 'Yes' if the client had already been enrolled on ART service from another facility before visiting your facility and click on 'No' if the client has not started ART service yet. If you select 'Yes', fields to enter date and ART regimen will open, and if you select 'No', field to enter the 'ART non-initiation reason' will open. Select date from the calendar that appears after clicking on the date, or type the date in YYYY-MM-DD format according to English calendar.

Name of the previous ART site:

This field is to record the name of previous ART site from where the client started ART treatment in the past. It appears only when the user selects 'Yes' under 'ART treatment initiated (before)'. Type the name of the previous ART site from which the client has already started ART.

ART Regimen Given by Another Site:

From the dropdown list, select the ART regimen of the client which had been provided from another site.

Cotrimoxazole Preventive Therapy (CPT) eligibility at the date of registration:

When the client visits the facility for ART service for the first time with the CD4 count less than 350, they are eligible for Cotrimoxazole Preventive Therapy. Click on 'Yes' if the client is eligible for CPT

and click on 'No' if the client is not eligible for CPT. For existing or old client, enter the information mentioned in their personal record.

CPT Initiated:

Click on 'Yes' if the client had already started CPT when they first visited the facility for ART services and click on 'No' if they have not started CPT. For existing or old client, enter the information mentioned in their personal record.

CPT Start Date:

Enter the date the client started taking Cotrimoxazole. Select date from the calendar that appears after clicking on the date or type the date in YYYY-MM-DD format according to English calendar. For existing or old client, enter the date mentioned in their personal record.

Tuberculosis history before visiting this site:

Ask the client if they have been infected with tuberculosis (TB) in the past. Click on 'Yes' if they have been infected and click on 'No' if they have never been infected. For existing or old client, enter the date mentioned in their personal record.

Tuberculosis screening date

Enter the date the of TB screening of client. Select date from the calendar that appears after clicking on the date or type the date in YYYY-MM-DD format according to English calendar. For existing or old client, enter the date mentioned in their personal record.

Type of TB

If the client has been infected with tuberculosis in the past, select the type of TB from the dropdown list.

Treatment Outcome

If the client has received treatment for TB in the past, select the outcome of the treatment from the dropdown list.

Case assessment-Patient Vitals:

Weight (in kg)

Enter the weight (in kg) of the client during their first visit or when recording their medical history. When entering the data of existing or old clients, enter the weight (at the time of visit) mentioned in their personal record.

Height (in cm)

The height data field is only applicable to those clients who are under 14 years of age. Enter the height (in cm) of the client during their first visit or when recording their medical history. When entering the data of existing or old clients, enter the height (at the time of visit) mentioned in their personal record.

TB Status

Based on TB status of client at the time of visit at the ART center, click on 'Yes' if client has TB and click on 'No' if client doesn't have TB. When you click on 'Yes', Anti-tuberculosis Therapy (ATT) will appear. Click on the appropriate status of TB from the drop-down list.

Case Assessment - Tuberculosis

A TB screening is performed by asking the client about the presence of TB related symptoms at the time of visit at the ART center. Click on 'Yes' if TB screening has been done and click on 'No' if TB screening has not been done. When you click on 'Yes', various symptoms related to TB appear on the screen. For each symptom, ask the client if they have that symptom and click on 'Yes' or 'No' accordingly.

Refer to confirmatory tuberculosis diagnosis

If any of the TB symptoms is selected as 'yes' then following question of 'Refer to confirmatory tuberculosis diagnosis' will open. Click 'Yes' if client is further referred for TB diagnosis and click 'No' if referral is not done. When you click on 'Yes' Date of TB Confirmation will open, select date from the calendar that appears after clicking on the date or type the date in YYYY-MM-DD format according to English calendar. Select the result of confirmatory TB diagnosis from the drop-down list, as positive, negative or not available yet.

Isoniazid Preventive Therapy (IPT) Initiated at the date of registration

Click on 'Yes' if the client has started taking Isoniazid and click on 'No' if they have not started taking medicine for IPT.

Date of IPT Initiation

If the client has already started taking Isoniazid, enter the date the client started taking that medicine from the personal record. Select date from the calendar that appears when clicking on date or type the date in YYYY-MM-DD format according to English calendar.

Reason for IPT not Initiated

If the client has not already started taking Isoniazid, enter the reason in box which opens after selecting no in the previous question.

Case Assessment - Opportunistic Infection

The client is checked for opportunistic infections when they visit the ART center for related services. Click on 'Yes' if the client has any opportunistic infections and click on 'No' if the client does not have any opportunistic infections. If you click on 'Yes', choose the type of opportunistic infections from the dropdown list as diagnosed by the medical doctor or trained service provider. When selecting Bacterial Pneumonia and Tuberculosis, further section will be released to enter the lab tests details and treatment outcomes; select the appropriate options and complete the details.

Opportunistic Infection Diagnosis Date

Enter the date of diagnosis of opportunistic infections by selecting the date from the calendar that appears when clicking on data field or typing the date in YYYY-MM-DD format according to the English calendar.

Opportunistic Infection Treatment Received

Click on 'Yes' if the client has received appropriate medications after diagnosis of opportunistic infections by the service provider and click on 'No' if the client has not received any medications.

Any other type of Opportunistic Infection

If the client has multiple opportunistic infections in the above field of opportunistic infections, click on 'Yes' and select the opportunistic infections from the list. Click on 'No' if the client does not have any other opportunistic infections.

Any Chronic Disease

Click on 'Yes' if the client has a chronic disease and click on 'No' if the client does not have any diseases. If you click on 'Yes', select the type of chronic disease from the displayed list. If the name of the chronic disease is not in the list, then type the name of the disease in the data field.

Case Assessment – Baseline Examination

Initial CD4 Test

Enter the date of the first CD4 test of the client by selecting a date from the calendar that appears when clicking on the date or typing the date in YYYY-MM-DD format according to the English calendar.

Initial CD4 Result

Enter the result (number only) of the client's first CD4 test.

ART Initiation:

Is ART started at this site?

This section is displayed if the client has not started ART before. Select 'Yes' if the client has started ART at this site, and 'No' if not. If you select 'Yes', fields to enter date and regimen will open, and if you select 'No', then 'Reason of not starting ART' will open to mention the reason for not starting ART at this site.

ART Treatment Initiated Date at this Site

Enter the date of the client started ARV medications from your ART center. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

ART Regimen Given at this Site

Select the ART regimen started by the client at your ART center from the dropdown list.

Calculated Value

In this field, you do not need to fill any data; the system automatically calculates the current age of the client at the date of the visit.

3.4 ART Follow-up

Select this program stage in each follow-up visits of client once the client is enrolled in HIV care program.

The below section describes the sections and detailed guide to fill the information.

Nepali Calendar

२०७७-५-१०

Visit date *

2020-08-26

Due date

2020-08-26

Event point

Latitude

Longitude



Case assessment-Patient vitals

Weight (in kgs)

Height (in cm)

WHO stage

Select or search from the list



TB Status

TB status

Yes No

Case assessment-TB Screening

Tuberculosis screening done

Yes No

IPT initiated

Yes No

Case assessment-Opportunistic Infections

Suspected opportunistic infections

Yes No

Any chronic disease

Yes No

Assessment for COVID -19

COVID -19 Lab Screening Done ?

Yes No

Case assessment-Lab tests

Lab tests done

Yes No

ART I treatment

ART treatment substituted

Yes No

ART treatment switched

Yes No

ART treatment status *

Select or search from the list



Pills to be taken by client in last month

Pills taken in last month

Any side effects of ARV

Select or search from the list



Family planning methods

Condoms used at the last intercourse

Yes

No

Don't know

No response

Exposure to mHealth Intervention

Text messages received from health center in the past month

Yes No

Cotrimoxazole status

CPT (Co-trimoxazole preventive therapy) initiated

Yes No

HIV/HCV Treatment Card	
HCV antibody test done	<input type="radio"/> Yes <input type="radio"/> No
HCV RNA test done	<input type="radio"/> Yes <input type="radio"/> No
Hepatitis C Core Antigen (HCVcAg) test done	<input type="radio"/> Yes <input type="radio"/> No
Aspartate Aminotransferase (AST) test done	<input type="radio"/> Yes <input type="radio"/> No
Platelets test done	<input type="radio"/> Yes <input type="radio"/> No
Pregnancy test done	<input type="radio"/> Yes <input type="radio"/> No
Date of Pregnancy test performed	yyyy-MM-dd
Pregnancy test positive	<input type="radio"/> Yes <input type="radio"/> No
Diagnosis of HCV infection	Select or search from the list
Treatment Started	<input type="radio"/> Yes <input type="radio"/> No

Calculated fields	
Age at visit (in years)	25
ART treatment duration (in months)	13
ART treatment adherence	
ART treatment adherence (Latest event)	100

Your note here

Figure 3. 6 ART Follow-up page in HIV Care and ART Tracking System

Visit Date

This is the date of the ART follow-up visit made by the client. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

Nepali Calendar:

Similarly, Nepali date can also be selected by clicking on Nepali Calendar. Select date from the Nepali calendar that appears after clicking on the date or type the date in YYYY-MM-DD format according to Nepali calendar.

Due Date

If the client is scheduled for an appointment for follow up service, enter the date of the scheduled appointment. Select date from the calendar that appears when you click on the date or type the

date in YYYY-MM-DD format according to English calendar. The given Due Date will also help the system to send text messages for appointment reminders.

Case Assessment – Client’s Vital

Weight (in kg):

Enter the current weight of the client (in kg) at the visit date. For existing or old client, enter the weight mentioned in their personal record.

Height (in cm):

Enter the client’s height (in cm) if the client is below 18 years. For existing or old client, enter the height mentioned in their personal record.

WHO Stage

Select the WHO stage as per the WHO staging guidelines from the dropdown list. For data entry of old clients, select the same WHO stage from the dropdown list corresponding to the one mentioned in their record when the client first visited the facility to receive treatment service.

Note: WHO clinical staging of HIV should not be less than the previous stage. For example, once the client has WHO stage 2, the stage will not degrade to stage 1. However, it may be changed to stage 3 or 4 as per client condition as mentioned in the WHO staging definition.

TB Status

Select ‘Yes’ if the client has active TB and select the Anti-tuberculosis Therapy (ATT) from one of the options of drop-down list. Select ‘No’ if the client does not have current TB.

Case Assessment-TB Screening

A TB screening is performed on the client based on their symptoms of TB when the clients visit the ART center for related service. Click on ‘Yes’ if TB screening has been performed on the client and click on ‘No’ if TB screening has not been performed. When you click on ‘Yes’, various symptoms related to TB appear on the screen. For each symptom, you must ask the clients if they have those symptoms and click on ‘Yes’ or ‘No’ accordingly.

Refer to confirmatory tuberculosis diagnosis

If any of the TB symptoms is selected as ‘yes’ then following question of ‘Refer to confirmatory tuberculosis diagnosis’ will open. Click ‘Yes’ if client is further referred for TB diagnosis and click ‘No’ if referral is not done. When you click on ‘Yes’ Date of TB Confirmation will open, select date from the calendar that appears after clicking on the date or type the date in YYYY-MM-DD format according to English calendar. Select the result of confirmatory TB diagnosis from the drop-down list, as positive, negative or not available yet.

IPT Initiated

Click on ‘Yes’ if the client has started taking Isoniazid and click on ‘No’ if the client has not started taking Isoniazid medicine.

Date of IPT Initiation

If the client has already started taking Isoniazid, enter the date the client started taking that medicine from the personal record. Select date from the calendar that appears when clicking on date or type the date in YYYY-MM-DD format according to English calendar.

Case Assessment - Opportunistic Infections:

Suspected Opportunistic Infections

The client is checked for opportunistic infections when they visit the ART center for related service. Click on 'Yes' if the client has any opportunistic infections and click on 'No' if the client does not have opportunistic infections. If you click on 'Yes', choose the type of opportunistic infections from the dropdown list as diagnosed by the medical doctor or trained service provider. When selecting Bacterial Pneumonia and Tuberculosis, further section will be released to enter the lab tests details and treatment outcomes; select the appropriate options and complete the details.

Opportunistic Infection Diagnosed Date

Enter the date of diagnosis of opportunistic infections by selecting a date from the calendar that appears when clicking on the date or typing the date in YYYY-MM-DD format according to the English calendar.

Opportunistic Infection Treatment Received

Click on 'Yes' if the client has received appropriate medications after diagnosis of opportunistic infections by the service provider and click on 'No' if the client has not received such medications.

Any other type of Opportunistic Infection

If the client has multiple opportunistic infections in the above field of opportunistic infection, click on 'Yes' and select the opportunistic infections from the list. Click on 'No' if the client does not have any other opportunistic infections.

Any Chronic Disease

Click on 'Yes' if the client has a chronic disease and click on 'No' if the client does not have any such diseases. If you click on 'Yes', select the type of chronic disease from the displayed list. If the name of the chronic disease is not in the dropdown list, then type the name of the disease in the data field.

Assessment for COVID-19

Click on 'Yes' if the client is assessed for COVID-19; and further options will be released and click on 'No' if the client is not assessed. The details of COVID-19 assessment is described in section 3.4.3.

Case Assessment – Lab Tests

Lab Tests Done

Click on 'Yes' if the client has done a CD4 count test or viral load test and click on 'No' if the lab test has not been done. If you select 'Yes', fill in information about CD4 or viral load test.

CD4 Sample Collection Date

Enter the date of the CD4 sample collection during the follow-up visit. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

CD4 Test Date

Enter the date of the CD4 test performed during the follow-up visit. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

CD4 Test Result

Enter the result of the CD4 test of the client.

Viral Load Sample Collection Date

Enter the date of the Viral Load sample collection during the follow-up visit. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

Viral Load Date

Enter the date of the viral load test performed. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

Viral Load Result

Enter the result (in number) of the viral load test of the client.

ART Treatment:**ART Treatment Substituted**

'ART Treatment Substituted' means that one of the medicines included in the ongoing ART regimen of the client was changed due to its side effects. Click on 'Yes' if any medicines of the previous ART regimen was changed and click on 'No' if none of the medicines of that regimen were changed. If you select 'Yes', enter the date, new ART regimen and reason for substitution in the corresponding data field.

ART Treatment Switched

'ART Treatment Switched' means that the ongoing ART regimen of the client was changed due to treatment failure. Click on 'Yes' if the ART regimen was switched and click on 'No' if the regimen was not switched. If you select 'Yes', enter the date, new ART regimen and reason for switching in the corresponding data field.

Patient Transferred In

Check the box if the client is transferred in from another ART center for follow up ART services. This option will not be applicable for client who have started ART from the same site.

ART Treatment Status

Select the treatment status of the client from the dropdown list (Select 'On treatment' if the client is on ART; select 'Stop treatment' if the client has stopped taking ART in consultation with a doctor; select 'Treatment restarted' if the client has restarted ART; select 'Transfer out' if the client has been transferred out to another site for ART services; select 'Lost to Follow Up' if the client has missed ART follow-up for more than 90 days and select 'Missing' if the client has missed follow-up for up-to 90 days).The ART Treatment status must be mandatorily filled-up to at least one status.

Reason for Lost to Follow-up:

If the treatment status of client is 'Lost to Follow-up' then fill up the reason in text box, which will display after selecting the 'Lost to Follow-up' status in 'ART Treatment Status'.

Pills to be taken by Client in Last Month

Enter the number of ARV pills to be taken by the client or given to the client each month. If the client was provided ARV pills for less than or more than one month, then enter the corresponding number of pills.

Pills Taken by the Client

Enter the number of ARV pills actually taken by the client. If the client was provided ARV pills for less than or more than one month, then enter the corresponding number of pills taken by the client.

Any side-effects of ARV:

If any side-effect of ARV is experienced by the client last follow-up duration; it must be recorded in this section. There are lists of side-effects in the drop-down list; if none of the option fits the reported side-effects then 'Others' option will release another section to record the 'Other side-effects of ARV medicines'.

Family Planning Methods:

Click on 'Yes' if the client uses condoms and click on 'No' if the client does not use condoms. Click on 'No Response' if the client does not want to tell about the use of condoms, click on 'Do not know' if the client does not know and click on 'Not Applicable' if the client does not have a sexual partner or is not sexually active.

Exposure to Mobile Health (mHealth) Intervention:

Ask the client if they have received any service information and notices about tests in their mobile phone. If they have received SMS on their mobile, click on 'Yes' and choose the types of information received by the client from the dropdown list. Currently, three types of messages can be recorded as response inside the system. Click on 'No' if the client has not received such information about services and tests through their mobile phone.

Cotrimoxazole Status

Co-trimoxazole Preventive Therapy (CPT) Initiated:

Click on 'Yes' if the client has started CPT to prevent opportunistic infections and click on 'No' if the client has not started CPT.

If the client has already started CPT, enter the date of initiation of CPT in YYYY-MM-DD format according to the English calendar. Select the status of the client's Cotrimoxazole intake from the dropdown list. Select 'Ongoing' if the client is taking Cotrimoxazole regularly and select 'Stopped' if the client has stopped taking Cotrimoxazole due to some reason, and in that case, select the date and reason for stopping the medicine from the dropdown list under 'Reason for Stopping CPT' and select 'Not Applicable' if the client's current condition does not require taking Cotrimoxazole.

HIV/HCV Treatment Card

Section to record the HIV/HCV treatment is added in this section.

HCV antibody test done

Select 'Yes' if HCV antibody test is done, and 'No' if it is not done. When selecting 'Yes' further section to enter the date and result of test will be displayed on the screen.

HCV RNA test done

Select 'Yes' if HCV RNA test is done, and 'No' if it is not done. When selecting 'Yes' further section to enter the date and result of test will be displayed on the screen.

Hepatitis C Core Antigen (HCVcAg) test done

Select 'Yes' if Hepatitis C Core Antigen test is done, and 'No' if it is not done. When selecting 'Yes' further section to enter the date and result of test will be displayed on the screen.

Aspartate Aminotransferase (AST) test done

Select 'Yes' if Aspartate Aminotransferase test is done, and 'No' if it is not done. When selecting 'Yes' further section to enter the Upper limit of normal (ULN) and Result of AST (IU/L) UMN(IU/L) will be displayed on the screen.

Platelets test done

Select 'Yes' if platelets test is done, and 'No' if it is not done. When selecting 'Yes' further section to enter the date, result of test and AST to Platelet Ratio Index (APRI) Score will be displayed on the screen.

Pregnancy test done

This is applicable for female client only. Select 'Yes' if pregnancy test is done, and 'No' if it is not done. When selecting 'Yes' further section to enter the date and result of test will be displayed on the screen.

Diagnosis of HCV infection

Select the appropriate option for the drop-down as displayed in the screen; select one from 'Chronic hepatitis', 'Compensated Cirrhosis', 'Decompensated Cirrhosis' and 'Hepatocellular Carcinoma'.

Treatment Started

Select 'Yes' if treatment is started, and 'No' if it is not started. When selecting 'Yes' further section to enter the Directly Acting Antiretroviral (DAA) treatment start date and If DAA started, then provided treatment needs to be selected from the drop-down list displayed on the screen.

Calculated Field

Age at Visit:

The system automatically calculates the age of the client in this field at the visit date.

ART Treatment Duration (in months):

The system automatically calculates the duration of the client's treatment in this field at the visit date.

ART Treatment Adherence:

The system automatically determines the status of ART Treatment Adherence based on the total number of pills given and taken by the client.

ART Treatment Adherence (Latest Event):

This section generates the latest status of ART Treatment Adherence based on the number of pills given and taken by the client in last follow-up.

Note: If a client visits ART center for next ART follow up, this stage should be selected again to fill in the necessary information. It can be selected by clicking on the '+' button on the Timeline Data Entry, and then selecting ART Follow-up.

3.4.1 Steps to Update the Data for TLE to TLD Transition

Step One: In the stage 'ART Follow-up'; there is a section of 'ART Treatment' which has a field to update ART Treatment Switched (highlighted with the red box below).

ART Treatment	
ART treatment substituted	<input type="radio"/> Yes <input type="radio"/> No
ART treatment switched	<input type="radio"/> Yes <input type="radio"/> No
ART treatment status *	Select or search from the list
Pills to be taken by client in last month	
Pills taken in last month	

Figure 3. 7 Selection of ART Treatment Switched for TLD Transition data entry

Step Two: For TLD transition, select 'Yes' in 'ART Treatment Switched'. And select the date of 'ART Treatment Switching Date' from the calendar in YYYY-MM-DD format.

The screenshot shows a form titled "ART Treatment" with several fields. The "ART treatment substituted" field has radio buttons for "Yes" and "No", with "No" selected. The "ART treatment switched" field has radio buttons for "Yes" and "No", with "Yes" selected and a blue arrow pointing to it. The "ART treatment switching date" field contains the placeholder text "yyyy-MM-dd". A calendar widget is open, showing the month of May 2020. The date 22 is highlighted in yellow. The calendar has navigation buttons for "<Prev", "Today", and "Next>". Below the calendar are "Clear" and "Close" buttons.

Figure 3. 8 Selection of TLD Transition date in ART Follow-up Stage in HIV Care and ART Tracking System

Step Three: Search for the provided regimen, for example, TDF/3TC/DTG; you can type either 'tdf' or '3tc' or 'dtg' in the search box (highlighted with red box below) and select provided regimen or select provided regimen from the dropdown list; an example is displayed below:

The screenshot shows the "ART treatment switching date" field with the value "2020-05-05" highlighted in green. Below it is the "New ART regimen (switched)" field with the text "Select or search from the list". The "ART regimen switching reason" field contains the text "tdf/3tc" and is highlighted with a red box. Below this field is a list of regimens: "TDF/3TC + DRV/r", "TDF/3TC + DTG", "TDF/3TC/DTG", and "TDF/3TC/EFV".

Figure 3. 9 Feature to search the new regimen in ART Follow-up Stage in HIV Care and ART Tracking System

Step Four: Now, select the 'ART Regimen Switching Reason' from the dropdown list as 'Switching from TLE to TLD' (highlighted with red box below):

ART treatment switching date	2020-05-05
New ART regimen (switched)	TDF/3TC/DTG
ART regimen switching reason	Select or search from the list
Other reason for ART treatment switching	Search...
ART treatment status *	Clinical Failure
Pills to be taken by client in last month	Immunological Failure
Pills taken in last month	Virological Failure
	Switching from TLE to TLD
	Other

Figure 3. 10 Selection of 'Switching from TLE to TLD' as ART regimen switching reason for TLD Transition data entry

Step Five: When the reason for ART treatment switching is selected as 'Switching from TLE to TLD'; another response for 'ART Category' will open.

ART regimen switching reason	Switching from TLE to TLD
ART Category	Select or search from the list
Other reason for ART treatment switching	Search...
ART treatment status *	First- line ART regimen
Pills to be taken by client in last month	Second-line ART regimen
	Third-line ART regimen

Figure 3. 11 Option of ART Category for newly started TLD ARV regimen

Select the correct option; if the new regimen falls under First-line, Second-line or Third-line ART regimen.

Step Six: As the client is 'On Treatment' in this follow-up visit; select the 'ART Treatment Status' as 'On Treatment' from the dropdown list.

ART treatment status *	On treatment
Pills to be taken by client in last month	22
Pills taken in last month	22

Figure 3. 12 ART Treatment Status during data entry of TLE to TLD Transition in HIV Care and ART Tracking System

Note: To assess adherence level for 'pills to be taken by client in last month' and 'pills taken in last month', fill up the information of adherence level before switching to TLD, i.e., adherence level of the last follow-up duration. It can be any number of days since the last follow-up to current follow-up.

Step Seven: After recording the pills details; fill up the upcoming section of ‘Any Side Effects of ARV’ based on the reporting from client. There are various options in drop-down list; and if none of the option fits, there is option for ‘Others’ which will release the section to record the side-effect in free text box.

Pills to be taken by client in last month	20
Pills taken in last month	20
Any side effects of ARV	Select or search from the list
Family planning methods	Search...
	No Side Effects
	Vomiting
	Nausea

Figure 3. 13 Section to record any side effects of ARV during ART Follow-up in HIV Care and ART Tracking System

Step Eight: Lastly, as per current practice, do not forget to ‘Complete’ the ‘ART Follow-up’ stage.

Calculated fields	
Age at visit (in years)	15
ART treatment duration (in months)	13
ART treatment adherence	100
ART treatment adherence (Latest event)	100

Complete ← Delete Print form

Figure 3. 14 Completing the data entry of TLE to TLD Transition in HIV Care and ART Tracking System

Now, the information of TLD transition is updated in DHIS 2 Tracker.

3.4.2 Steps to Update the Data for Transferred-Out to other countries

Step One: In the stage 'ART Follow-up'; there is a section of 'ART Treatment' which has a field to update ART Treatment Status (highlighted with the red box below).

ART Treatment	
ART treatment substituted	<input type="radio"/> Yes <input type="radio"/> No
ART treatment switched	<input type="radio"/> Yes <input type="radio"/> No
ART treatment status *	Select or search from the list
Pills to be taken by client in last month	
Pills taken in last month	

Figure 3. 15 Selection of ART Treatment Status for data entry of clients transferred to other countries

Step Two: Select the 'Transfer Out' from the drop-down option of ART Treatment Status (highlighted with the red box below).

ART treatment status *	Select or search from the list
Pills to be taken by client in last month	Search...
Pills taken in last month	On treatment
Family planning methods	Stop treatment
	Treatment restarted
	Transfer out
	Lost to Follow Up
	Missing

Figure 3. 16 Selecting Transfer Out as ART Treatment Status in ART Follow-up Stage

Step Three: When the reason for ART treatment status is selected as 'Transfer Out'; another response for 'Transferred Out Within the Country?' will open. Select 'No' when the client is transferred outside the country. And write down the name of country in the text box (highlighted with the red box below).

ART treatment status *	Transfer out
Transferred Out Within the Country?	<input type="radio"/> Yes <input checked="" type="radio"/> No
Name of the Country Transferred Out	

Figure 3. 17 Entry of Name of the Country where client is transferred-out

Step Four: Now continue with other process of ART Follow-up Stage data entry and complete the stage.

Calculated fields	
Age at visit (in years)	15
ART treatment duration (in months)	13
ART treatment adherence	100
ART treatment adherence (Latest event)	100

Complete ← **Delete** **Print form**

Figure 3. 18 Completing the data entry of transfer-out outside the country in HIV Care and ART Tracking System

Now, the information of transfer-out details of clients outside the country in HIV Care and ART Tracking System is updated.

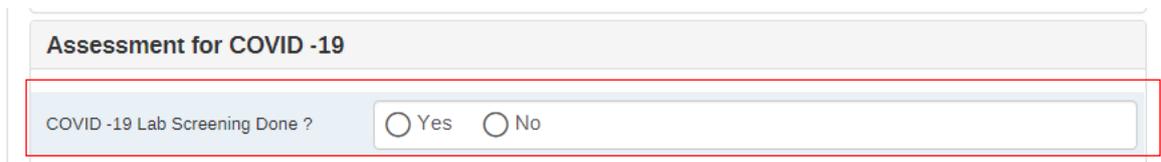
Note:

For clients who have started ART from India and have come for follow-up to your site; register the client in HIV Care and ART Tracking System and in 'Medical History and Case Assessment' select 'yes' for ART started before and write 'Name of Previous ART site' as 'India' and continue with ART follow-up stage.

3.4.3 Steps to Update the Client's Details for COVID-19 Response

After logging in to DHIS 2 Tracker System; and selecting the profile of client for follow-up entry; follow the below mentioned process to update the data.

Step One: In the stage 'ART Follow-up'; there is section of 'Assessment of COVID -19' which has field to update COVID-19 (highlighted with red box below).

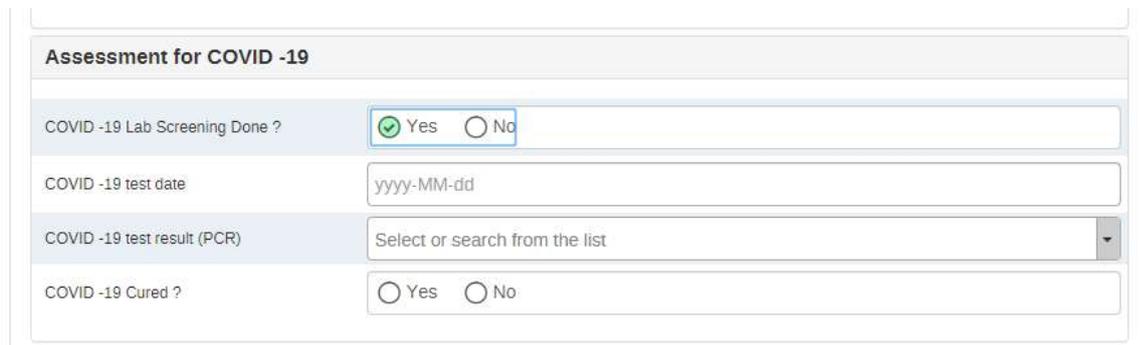


Assessment for COVID -19

COVID -19 Lab Screening Done ? Yes No

Figure 3. 19 Section of Assessment for COVID-19 in ART Follow-up Stage of DHIS2 Tracker

Step Two: Select 'Yes' in 'COVID-19 Lab Screening Done and select the date of 'COVID -19 test date' from the calendar in YYYY-MM-DD format.



Assessment for COVID -19

COVID -19 Lab Screening Done ? Yes No

COVID -19 test date yyyy-MM-dd

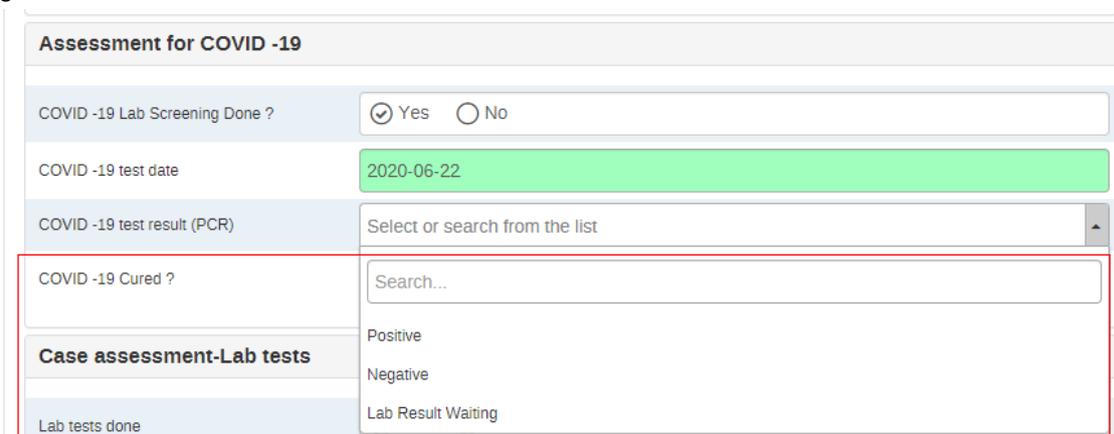
COVID -19 test result (PCR) Select or search from the list

COVID -19 Cured ? Yes No

Figure 3. 20 Fields to enter test details of COVID-19 in DHIS2 Tracker

Step Three: Select the COVID-19 Test result (PCR) from the dropdown list which is **Positive, Negative or Lab Result Waiting** (highlighted with red box below); example is displayed below:

Figure 3. 21 Field to enter the result of COVID-19 test result in DHIS2 Tracker



Assessment for COVID -19

COVID -19 Lab Screening Done ? Yes No

COVID -19 test date 2020-06-22

COVID -19 test result (PCR) Select or search from the list

COVID -19 Cured ? Search...

Case assessment-Lab tests

Lab tests done Positive
Negative
Lab Result Waiting

Step Four: Now, select Yes or No for the 'COVID-19 Cured' (highlighted with red box below):

Assessment for COVID -19	
COVID -19 Lab Screening Done ?	<input checked="" type="radio"/> Yes <input type="radio"/> No
COVID -19 test date	2020-06-22
COVID -19 test result (PCR)	Positive ✕ ▾
COVID -19 Cured ?	<input type="radio"/> Yes <input checked="" type="radio"/> No

Figure 3. 22 Field to select the COVID-19 treatment status in DHIS2 Tracker

Step Five: Lastly, as per current practice, do not forget to ‘Complete’ the ‘ART Follow-up’ stage.

Calculated fields	
Age at visit (in years)	15
ART treatment duration (in months)	13
ART treatment adherence	100
ART treatment adherence (Latest event)	100

Complete
←
Delete
Print form

Figure 3. 23 Completing the data entry of client’s details for COVID-19 response in HIV Care and ART Tracking System

Now, the information of COVID-19 Response is updated inside the DHIS2 Tracker.

Note: This appears in every ART follow up, so you can update this COVID-19 response form in any follow ups.

3.5 Pregnancy and Delivery

The purpose of the **Pregnancy and Delivery** stage is to record information about pregnancy details of pregnant HIV positive women. A page, as shown in the picture below, opens when you select the **Pregnancy and Delivery** stage and then click on the **Save** button to continue adding the information.

The screenshot shows the 'Timeline Data Entry' interface. At the top, there is a navigation bar with a search icon, a menu icon, a user icon, and a refresh icon. Below the navigation bar, there is a timeline of events. The current event is highlighted in yellow and is labeled '2017-12-13 BIR HOSPITAL_KATH... Pregnancy and Delivery (open)'. Other events in the timeline include '2017-12-12 BIR HOSPITAL_KATH... HTC-HIV Counselling a... (open)' and '2017-12-13 BIR HOSPITAL_KATH... ART-HIV Counselling a... (open)'. Below the timeline, there is a form for the 'Pregnancy and Delivery' stage. The form has two main sections: 'Pregnancy' and 'Delivery'. The 'Pregnancy' section has a 'Pregnancy status' field with radio buttons for 'Yes' (selected) and 'No', and an 'Expected Date of Delivery' field with a date input format 'yyyy-MM-dd'. The 'Delivery' section has a 'Delivery' field with radio buttons for 'Yes' (selected) and 'No', a 'Status of infant' dropdown menu with 'Alive' selected, and a 'Live births' dropdown menu with 'Select or search from the list' selected. Below the 'Live births' dropdown, there is a search input field with 'Search...' text, and a list of options: 'Single' and 'Twins'. At the bottom of the form, there is a 'Your note here' text area, an 'Add' button, and a 'Clear' button.

Figure 3. 24 Pregnancy and Delivery Stage in HIV Care and ART Tracking System

Pregnancy Status:

Confirm the pregnancy status of the female client and click on 'Yes' or 'No' accordingly.

Expected Date of Delivery:

If the client reports that she is pregnant, enter her expected date of delivery. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

Delivery:

Record the delivery status of the client's baby. Click on 'Yes' if the baby is already born and click on 'No' if the baby is not yet born.

Status of Infant:

Record the status of the client's baby. Select alive if the baby was born alive and select 'Stillbirth' if the baby was stillborn.

Live Births:

Select the number of live birth either as single or twins. The Number of EID tests are linked with the number of live births.

Note: Click on 'No' under **Delivery** if the female client is pregnant, but the baby is yet to be born. After clicking on 'No', a stage is created in the **Timeline Data Entry** as shown in the below picture. Keep the stage open, however, if the same female client visits for ART services after delivery of her baby, then go to the **Pregnancy and delivery** box in the **Timeline Data Entry**, click on 'Yes' under **Delivery** and record 'Status of an infant' and complete the stage by clicking in 'complete' button.

3.6 EID and Treatment Details

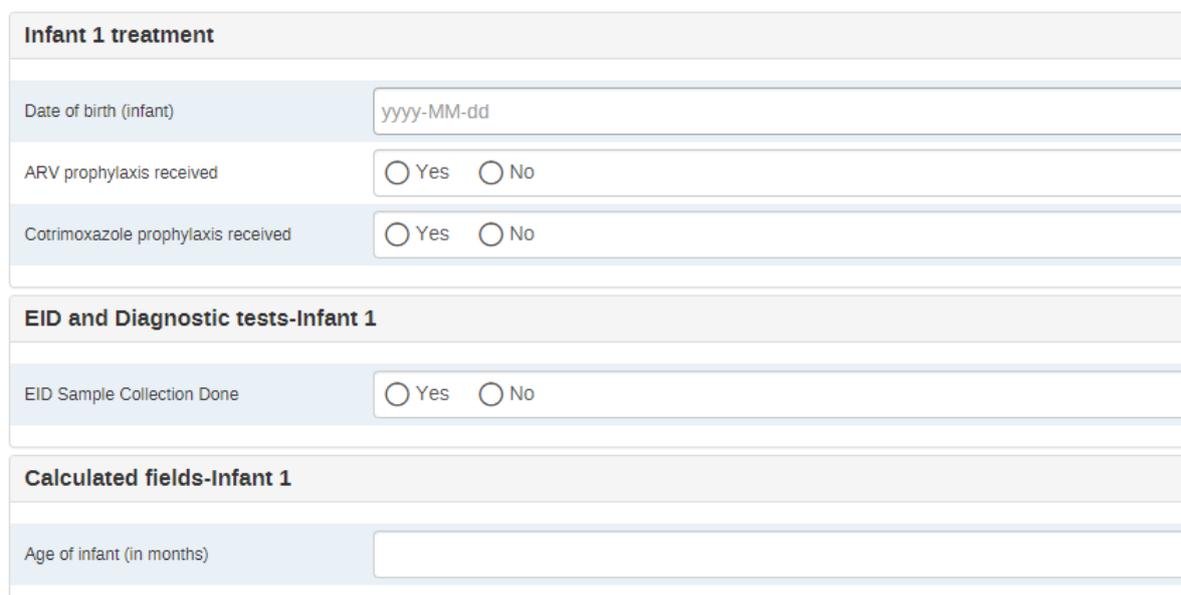
EID and Treatment Details:



The screenshot shows the 'Timeline Data Entry' interface. At the top, there is a search bar and user profile icons. Below that, a horizontal timeline displays five stages: '2020-05-19 ADVANCE POLY CLINI... Medical History and Ca... (Open)', '2020-05-19 ADVANCE POLY CLINI... ART Follow-up (Open)', '2020-05-20 ADVANCE POLY CLINI... Pregnancy and Delivery (Open)', '2020-05-20 ADVANCE POLY CLINI... EID and Treatment De... (Open)', and 'Next'. The 'EID and Treatment De...' stage is highlighted in yellow. To the right of the timeline are navigation icons: back, forward, add, calendar, and refresh. Below the timeline, there are input fields for 'Nepali Calendar' (2079-2-5), 'Visit date *' (2020-05-20), and 'Due date' (2020-05-20). At the bottom, there are 'Event point' fields with values 27.693339 and 85.301854.

Figure 3. 25 EID and Treatment Details in Timeline Data Entry of HIV Care and ART Tracking System

The purpose of this stage is to record information of babies born from HIV infected mothers. In this section, details of EID test of single or twin child can be recorded at once; the number of test and details is linked with number of live births recorded at 'Pregnancy and Delivery' stage. If single live birth is selected 'Infant 1 Treatment' will be released, similarly if twin live births is selected 'Infant 1 Treatment' and 'Infant 2 Treatment' both will be released.



The screenshot shows the 'EID and Treatment Details' form for 'Infant 1'. It is divided into three main sections: 'Infant 1 treatment', 'EID and Diagnostic tests-Infant 1', and 'Calculated fields-Infant 1'. The 'Infant 1 treatment' section includes 'Date of birth (infant)' with a 'yyyy-MM-dd' placeholder, 'ARV prophylaxis received' with 'Yes' and 'No' radio buttons, and 'Cotrimoxazole prophylaxis received' with 'Yes' and 'No' radio buttons. The 'EID and Diagnostic tests-Infant 1' section includes 'EID Sample Collection Done' with 'Yes' and 'No' radio buttons. The 'Calculated fields-Infant 1' section includes 'Age of infant (in months)' with an empty input field.

Figure 3. 26 EID and Treatment Details of Infant 1 in HIV Care and ART Tracking System

Infant 2 treatment	
Date of birth (infant)	<input type="text" value="yyyy-MM-dd"/>
ARV prophylaxis received	<input type="radio"/> Yes <input type="radio"/> No
Cotrimoxazole prophylaxis received	<input type="radio"/> Yes <input type="radio"/> No
EID and Diagnostic tests-Infant 2	
EID Sample Collection Done	<input type="radio"/> Yes <input type="radio"/> No
Calculated fields-Infant 2	
Age of infant (in months)	<input type="text"/>

Figure 3. 27 EID and Treatment Details of Infant 2 in HIV Care and ART Tracking System

Date of Birth (Infant):

Enter the date of birth of the child. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

ARV Prophylaxis Received:

Click on 'Yes' if the child received ARV Prophylaxis and click on 'No' if the child has not received the prophylaxis.

ARV Prophylaxis Initiation Date:

Enter the date the child started taking ARV Prophylaxis. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

Type of ARV Prophylaxis:

If the child has received ARV Prophylaxis, select the type of ARV Prophylaxis from the available option in the drop-down list.

Status of ARV Prophylaxis:

If the child has received ARV Prophylaxis, you need to record the child's status of medication. Click on 'Continue' if the child is still taking ARV Prophylaxis, click on 'Complete' if the child has completed a 6-weeks or 12-weeks course of medication, and click on 'Discontinue' if the child discontinued taking ARV Prophylaxis. Low-risk infants must follow 6-week, and high-risk infants must follow the 12-week course of medication (Source: National HIV Testing and Treatment Guidelines 2017).

ARV Prophylaxis Discontinuation Date:

Enter the date of discontinuation if the child has discontinued taking ARV Prophylaxis. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

Cotrimoxazole Prophylaxis Received:

Record the information whether the child received Cotrimoxazole Prophylaxis after 6 weeks from the date of birth. Click on 'Yes' if the child received Cotrimoxazole Prophylaxis, click on 'No' if the child did not receive the medicine.

Cotrimoxazole Prophylaxis Initiation Date:

If a child received the prophylaxis, enter the date the child started taking Cotrimoxazole Prophylaxis. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

Status of Cotrimoxazole Prophylaxis:

If the child has received Cotrimoxazole Prophylaxis, you need to record the child's status of medication. Click on 'Continue' if the child is still taking Cotrimoxazole Prophylaxis, click on 'Complete' if the child has completed a 6-week or 12-week course of medication, and click on 'Discontinue' if the child discontinued taking Cotrimoxazole Prophylaxis. Click on 'Start' if the child just started the prophylaxis and select 'Not applicable' if the child is HIV positive but more than 5 years old with WHO staging 1 or 2, or CD4 count more than 350 cell/mm³.

Cotrimoxazole Prophylaxis Discontinuation Date:

Enter the date of discontinuation if the child has discontinued taking Cotrimoxazole Prophylaxis. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

EID and Diagnostic tests**EID Sample Collection Done:**

If the EID sample of the baby is collected for DNA PCR HIV test, click on 'Yes' and click on 'No' if the sample is not collected.

EID Sample Collection Date:

Enter EID sample Collection date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

DNA PCR Test Result:

Record the information of DNA PCR test result done on infants of up to 18 months. Click on 'Positive' if the test result is positive and click on 'Negative' if the test result is negative.

Date of DNA PCR Test Done:

Record the date of DNA PCR test by selecting a date from the calendar that appears when clicking on the date, or type the date in YYYY-MM-DD format according to the English calendar.

ART Treatment Initiated:

This field opens if the result of the DNA PCR test is positive. Record information about initiation of ART of the child by clicking on 'Yes' if the child has started ART treatment and 'No' if the child has not started ART treatment.

ART Treatment Initiation Date:

Enter the ART treatment initiation date if the child is HIV positive. Select date from the calendar that appears when clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

ARV Regimen:

Select the ART treatment regimen of the child from the dropdown list that appears after clicking on the box.

Child Enrolment Status

Child Enrolled in HIV Program:

Click on 'Yes' if the HIV positive identified child is separately registered in the system as a new client and click on 'No' if the child is not yet registered separately.

Calculated Fields

Age of Infant (in months):

The system automatically calculates the age of the child based on the date of birth.

Relationships

The profile of HIV positive mother and her HIV infected child can be linked within the system under the heading 'relationship' displayed in the dashboard of the client. For linking profile of mother and child, they must be registered separately in the tracker with different client code.

The option as displayed in the picture below is available in the client's dashboard with heading 'Relationships'.

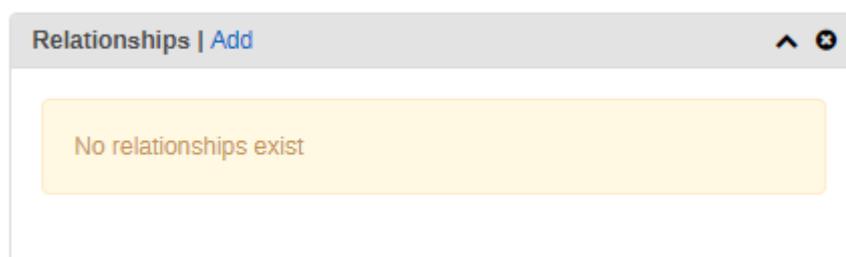


Figure 3. 28 Option of 'Relationships' inside client profile in HIV Care and ART Tracking System

After clicking in the 'add' button, you need to select the relationship you want to link. Currently, only the mother and child relationship can be linked in the system, displayed in image below with arrow sign.

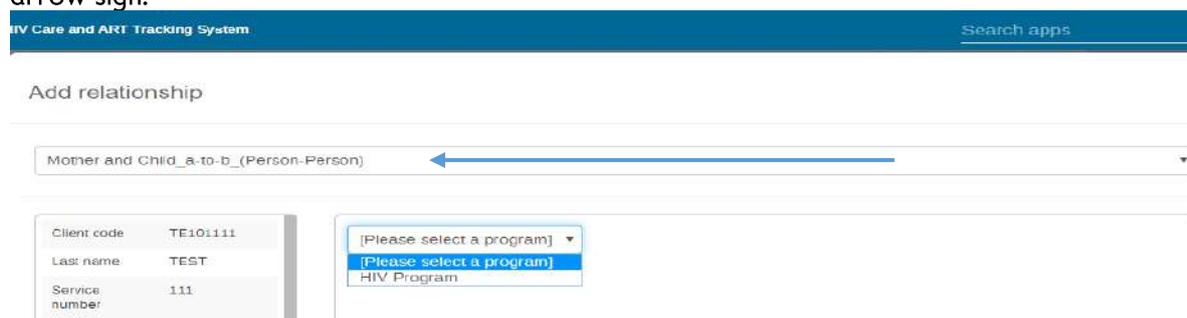


Figure 3. 29 Selection of Mother and Child option to link relationship in HIV Care and ART Tracking System

After selecting the relationship, select HIV Program which will display all the available list of clients registered inside the system. Go to search button, displayed with arrow sign in below image and select the profile of baby/mother which you want to link with each-other.

Figure 3. 30 Search option for client to link relationship in HIV Care and ART Tracking System

Search can be done with either client code, last name of client or service number with which client is registered in the system. When the system displays the search result of client, click on the result, check the details to confirm the information are correct or not, and then click on the 'save' button and complete the procedure.

Add relationship

Figure 3. 31 Linking the profile for relationships in HIV Care and ART Tracking System

When the relationship is saved, the page is redirected to the dashboard of the client.

Once the relationship is saved in the system, the mother's profile and child's profile is displayed in the 'Relationships' tab in the profile. The dashboard of the client can be entered directly by clicking on it. An example is displayed in the picture below:



Figure 3. 32 Linked profile displayed in 'Relationship' tab in the client profile of HIV Care and ART Tracking System

3.7 Discontinuation of Follow up

Fill this program stage if the client discontinues ART services due to death. Previously, this stage used to record information of missing and lost to follow-up; which is now shifted at ART Follow-up stage; under 'ART Treatment Status'.

Nepali Calendar Report date * Due date

Event point

Latitude Longitude

Reason for discontinuation *

HIV related death? Yes No

Cause of Non-HIV related death

Age at visit (in years)

Figure 3. 33 Discontinuation of Follow-up stage in HIV Care and ART Tracking System

Report Date:

Enter the date when you found out about death of the client. Select date from the English calendar that appears after clicking on the date or type the date in YYYY-MM-DD format according to English calendar.

Nepali Calendar:

Similarly, Nepali date can also be selected by clicking on Nepali Calendar. Select date from the Nepali calendar that appears after clicking on the date or type the date in YYYY-MM-DD format according to Nepali calendar.

Reason for Discontinuation:

Select 'death' as the reason for discontinuation of ART services from the dropdown list.

Date of Death:

Enter the date on which the client visited at your facility for HIV testing. Select date from the calendar that appears when you click on the date or type the date in YYYY-MM-DD format according to English calendar.

HIV related death?

Select 'yes' if death of client is related to HIV; and select the reason from drop-down list. And similarly select 'no' if the death is not related to HIV and input the Cause of Non-HIV related death in open text box.

Age at Visit (in years):

The system automatically calculates the age of the client in this field at the visit date.

4. Features of HIV Care and ART Tracking System

4.1 Referral

This feature is used to refer a client to another facility for any HIV services. A client can be referred to another facility by clicking on the arrow button shown by a red arrow in the picture below.

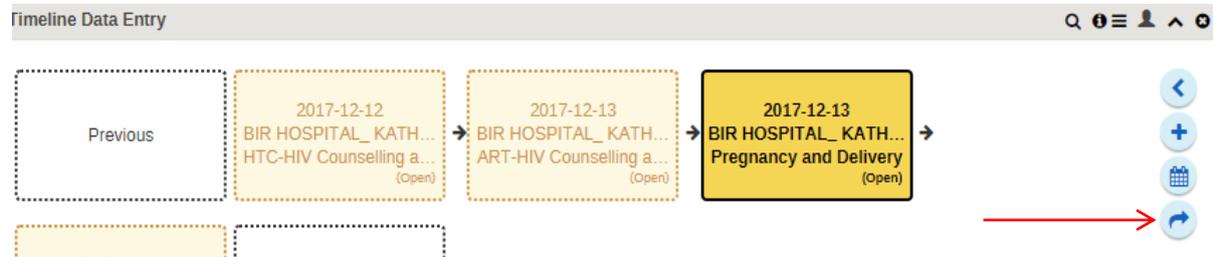


Figure 4. 1 Option of referral in timeline data entry in HIV Care and ART Tracking System

A page, as shown in the picture below, opens after you click on the button. In this page, choose the service for which referral is being made from the dropdown list under Program Stage, and then under Organization Unit, click on the name of the facility where the client is being referred.

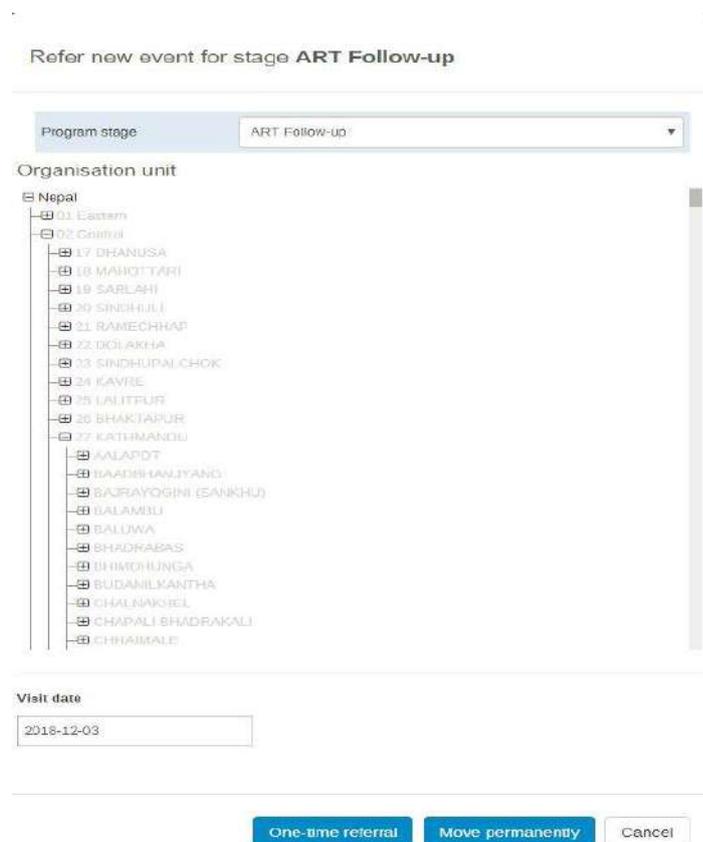
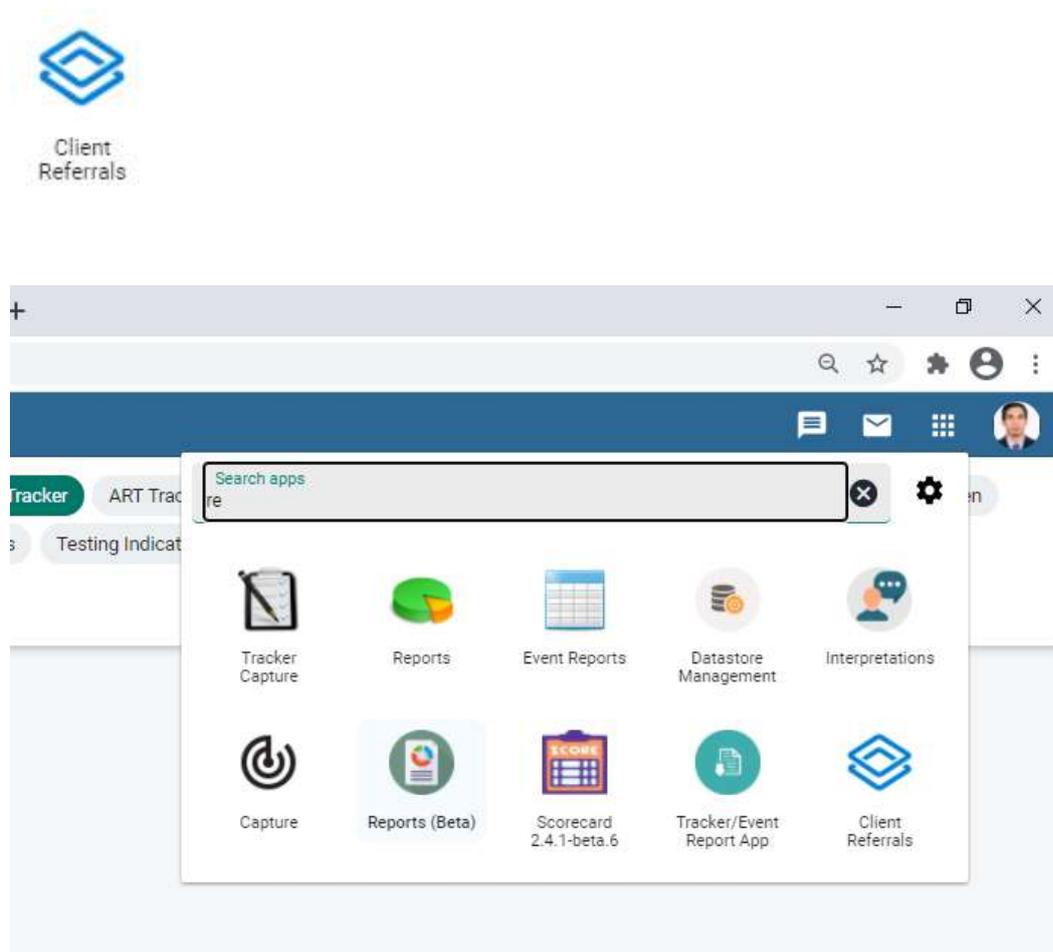


Figure 4. 2 Selection of organization unit for referral in HIV Care and ART Tracking System

The referral can be made permanently, or for one time only. Select 'Move permanently' if the client wants to receive HIV service from the referred site from that point onwards. Select 'One-time referral' if the client is being referred for some specific HIV-related services such as OI diagnosis and treatment, and the client will return to the same site to continue their regular HIV-related services.

4.1.1 Client Referral

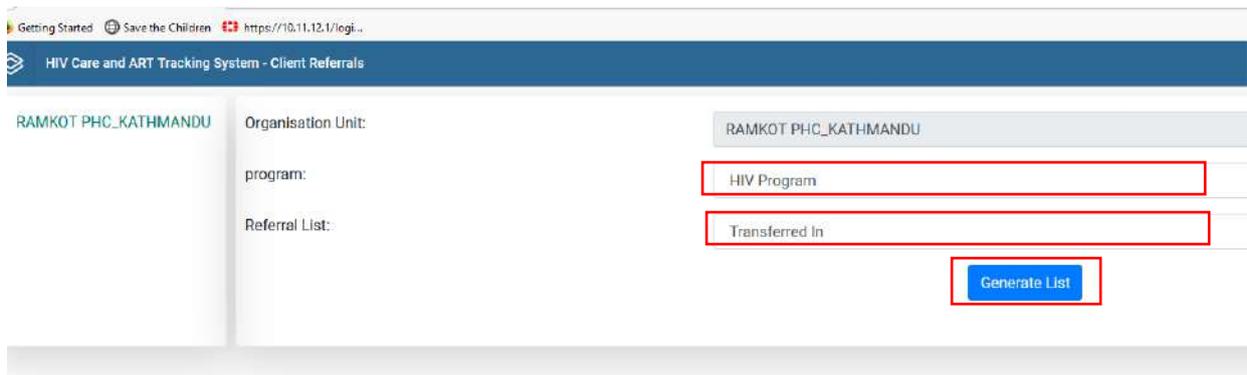
In order to check the referral clients, either incoming or out going, you can search as below and click on Client Referrals app icons shown below



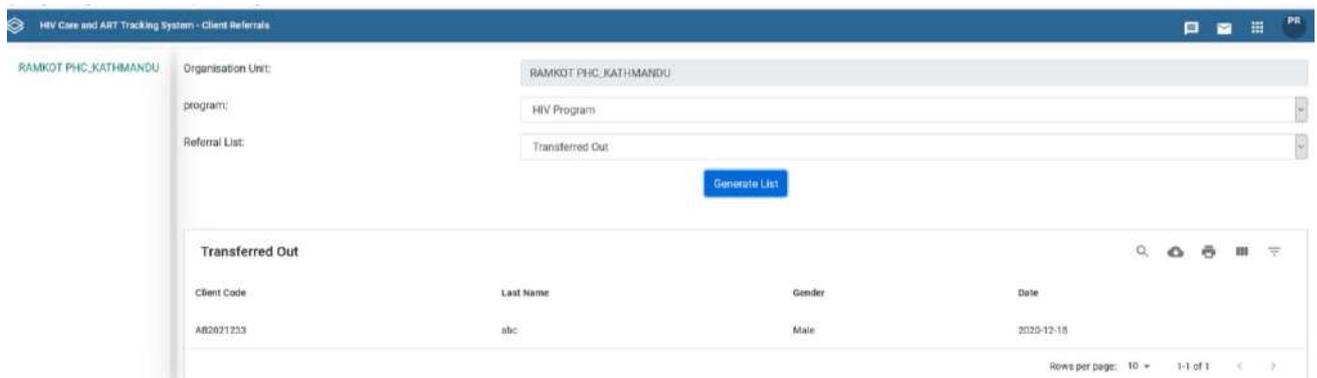
After clicking the Clients Referrals following window appears.



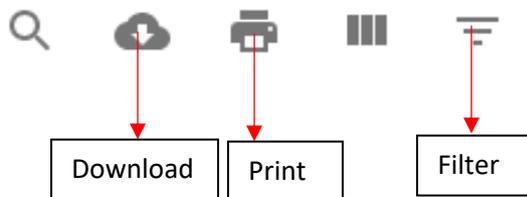
Select the HIV from Program List and select Transferred in or Transferred out from Referral list and Push Generate List



After successful generation of transfer out list following screen appears with the list of transfer out with client code.



Use the following options to Download Print and Search the clients and click on client code to see the details of individual clients.



4.2 Schedule and Reschedule Date for Follow-up Visits

4.2.1 Schedule

The follow-up visit can be scheduled clicking the calendar button as shown in below table. After clicking it, a list of program stages will display, and it needs to be selected the program for which the client is scheduled to visit the site. The scheduled date is useful to manage the daily flow of client in the ART site. The expected list of clients to be visited at the site can be generated from the system itself once the date of the visit is scheduled. Necessary follow up could be done using the list of clients to be visited at the site as scheduled. The following Steps need to follow to generate a list of clients.

Step 1: From the apps, click “Tracker Capture” and then “Reports”

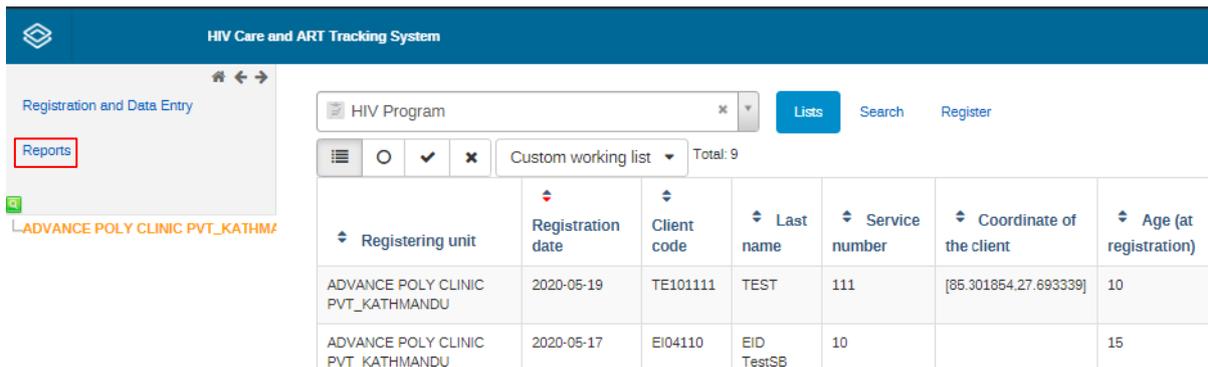


Figure 4. 3 Selection of ‘Reports’ tab for Schedule and Reschedule of client in HIV Care and ART Tracking System

Step 2: Click on “Upcoming Events”

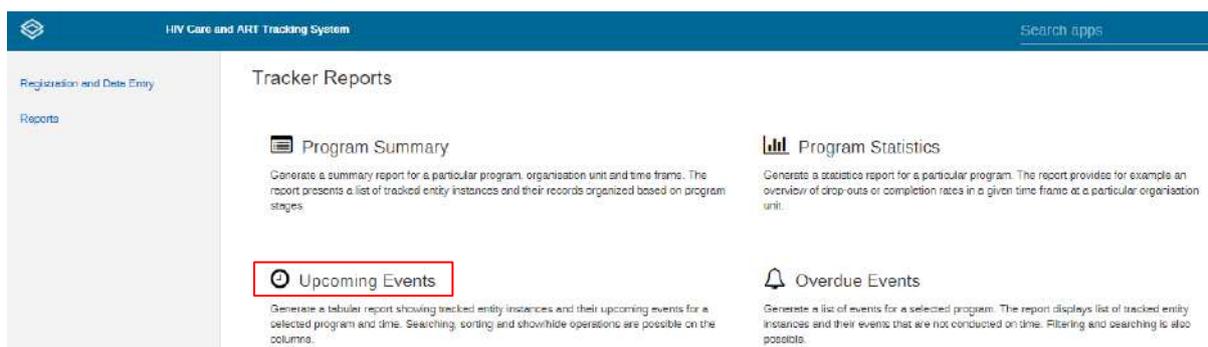


Figure 4. 4 Selection of ‘Upcoming Events’ for Schedule of client in HIV Care and ART Tracking System

Step 3: The organization is selected for the default organization unit. The program should be selected as an HIV program. The filter can be used to sort out the types of clients. Dates can be selected as per the requirements.

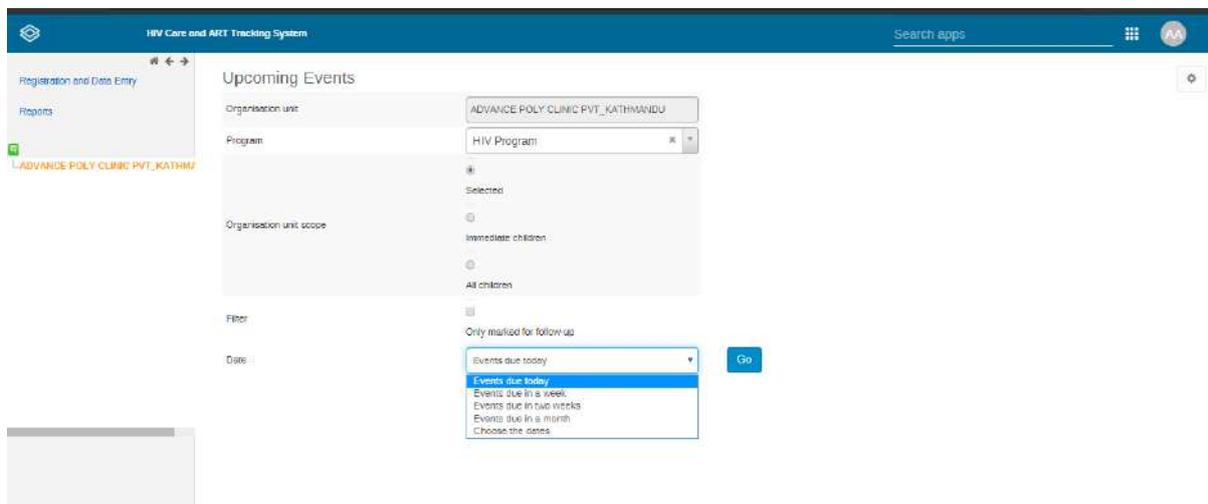


Figure 4. 5 Selection of “Events for Today’ tab for list of scheduled of client in HIV Care and ART Tracking System

4.2.2 Reschedule

Select the date of next visit (follow-up visit) that the client is expected to visit the referred/transferred site by clicking on the button shown in the picture below (marked by the red box).

Select the date of another visit from the calendar, then select the relevant service and click **Save**. This process is shown in the picture below.

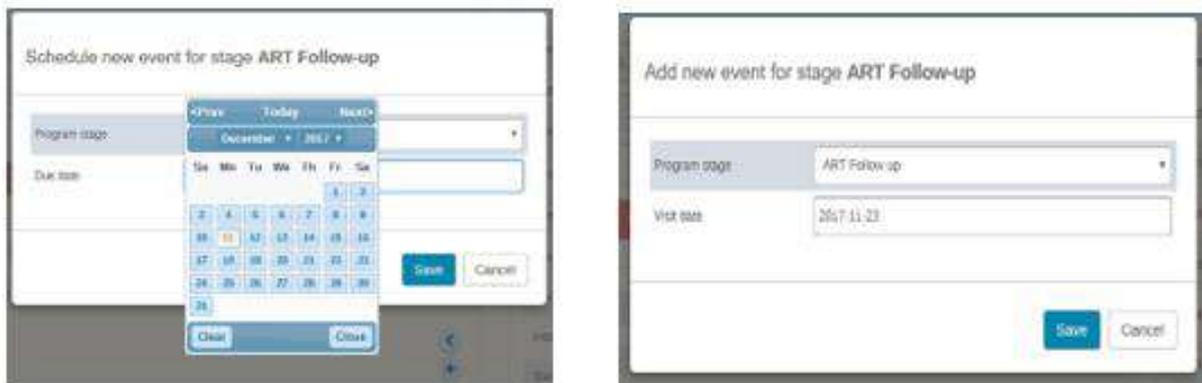


Figure 4. 6 Reschedule of client’s follow-up in ART follow-up stage in HIV Care and ART Tracking System

If the client is unable to attend their follow-up visit on the scheduled date, it can also be rescheduled again and pick the expected date from the calendar.

4.3 Pivot Table

Pivot Table app allows users to create a three-dimensional table (what: data element or indicator; when: time; and, where: organization unit). Pivot Table helps users to generate a table from the raw data that has been entered into the system for interpretation and analysis of the data. For example, HTC users can view the number of clients diagnosed with HIV out of the total number of people who received HIV testing and counselling services from their center by month or other reporting period. The process of creating a Pivot Table is shown below:

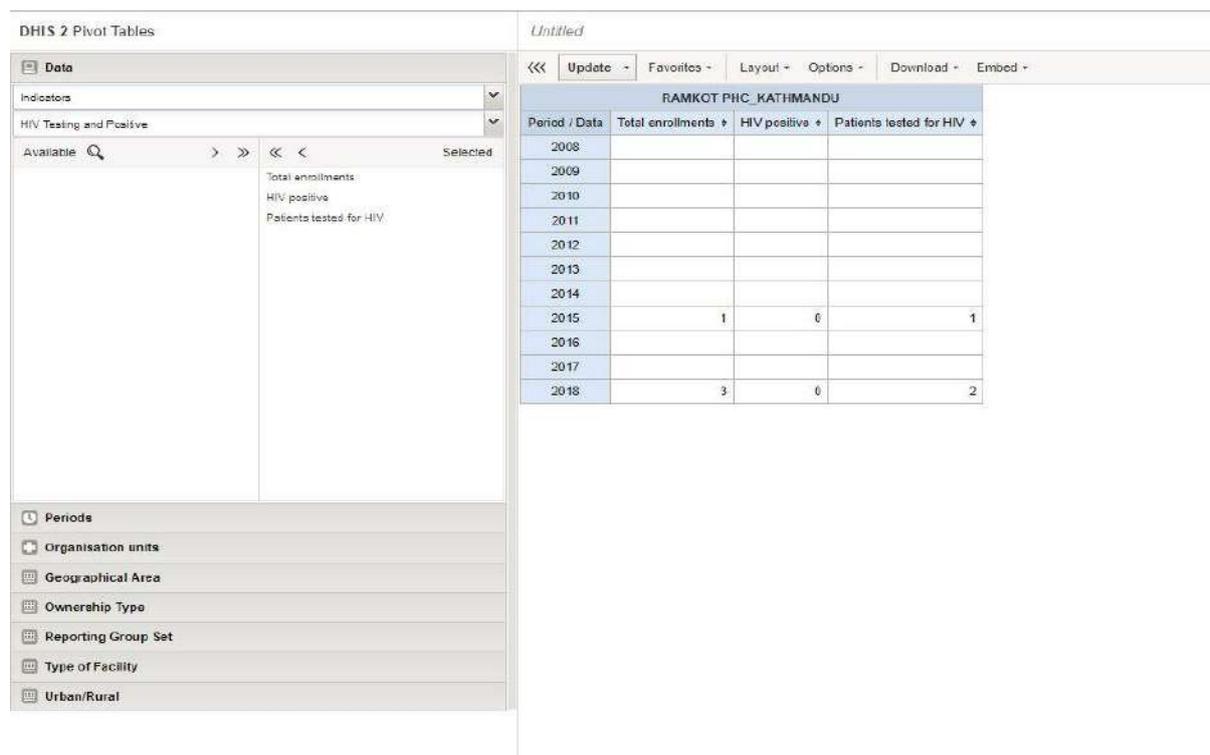


Figure 4. 7 DHIS 2 Pivot Table features in HIV Care and ART Tracking System

- First, select **Program Indicator**, and then select the **HIV Program**. After that, choose variables according to the need, like HIV Positive (0-14 years).
- Click on **Period** and select the required period, and then choose month and year. Click on **Update**.
- There is flexibility to modify the table by interchanging the variable in row and column using the '**Layout**' option.

4.4 Event Reports

The Event Reports app allows the user to analyse two types of reports: Aggregated Values and Events. In Event Reports, one can generate, and view reports of services received from the ART center. For example, users can view a client's ART adherence report of the past 6 months from Event Reports. Please follow the instructions from Step 1 to 6 as shown in the picture below when generating event reports.

The screenshot shows the DHIS 2 Event Reports interface. At the top, there are two tabs: 'Aggregated values Show aggregated event report' and 'Events Show individual event overview'. The 'Events' tab is selected. Below the tabs, there are two dropdown menus: 'Program' (set to 'HIV Program') and 'Stage' (set to 'Medical History and Case Assessment'). Below these, there is a text input field for 'Client code' containing 'client c'. Below the input field, there is a 'Selected data items' section with a dropdown menu set to 'Contains'. Below this, there is a 'Periods' section with a dropdown menu. At the bottom, there is a list of dimensions: 'Organisation units', 'Geographical Area', 'Ownership Type', 'Reporting Group Set', 'Type of Facility', and 'Urban/Rural'. On the right side, there is a toolbar with buttons: '<<< Update Favorites Layout Options Download Embed >>>'. Below the toolbar, there is a 'Creating an event report' section with instructions: '- Select items from any of the dimensions in the left menu', '- Click Layout to arrange your dimensions on table rows and columns', '- Click Update to create your table'. Below this, there is a 'Working with an event report' section with instructions: '- Click Options to hide sub-totals or empty rows adjust font size and more', '- Click Favorites to save your table for later use', '- Click Download to save table data to your computer'. Numbered steps 1-6 are overlaid on the interface: 1 points to the 'Events' tab, 2 points to the 'Program' dropdown, 3 points to the 'Stage' dropdown, 4 points to the 'Client code' input field, 5 points to the 'Periods' dropdown, and 6 points to the 'Update' button.

Figure 4. 8 Steps to generate Event Report in HIV Care and ART Tracking System

1. **Events:** By selecting Events, we can generate events based on a flexible set of criteria. A generated report includes a table with one row per event.
2. **Program:** There will be several programs like HIV, TB, Malaria, but since our scope is concerned only with HIV Program, we have selected the HIV Program as default.
3. **Stage:** There are different stages in our program, so we will have to select the stage from where we want to retrieve the record.
4. **Data Element:** Here we have selected the client code so that we can retrieve the client code in the record.
5. **Periods:** We need to select the period to retrieve the records.
6. **Update:** Click to generate a report based on the selected criteria.

4.5 GIS

This app allows the user to generate a map using the coordinates of the address of the client and facility. It is helpful to portray the client distribution by their treatment status, viral load results etc.

4.6 Show/Hide Widgets

The user can add or remove the features in the interface of the individual client as needed in the HIV Care and ART Tracking System as shown below:

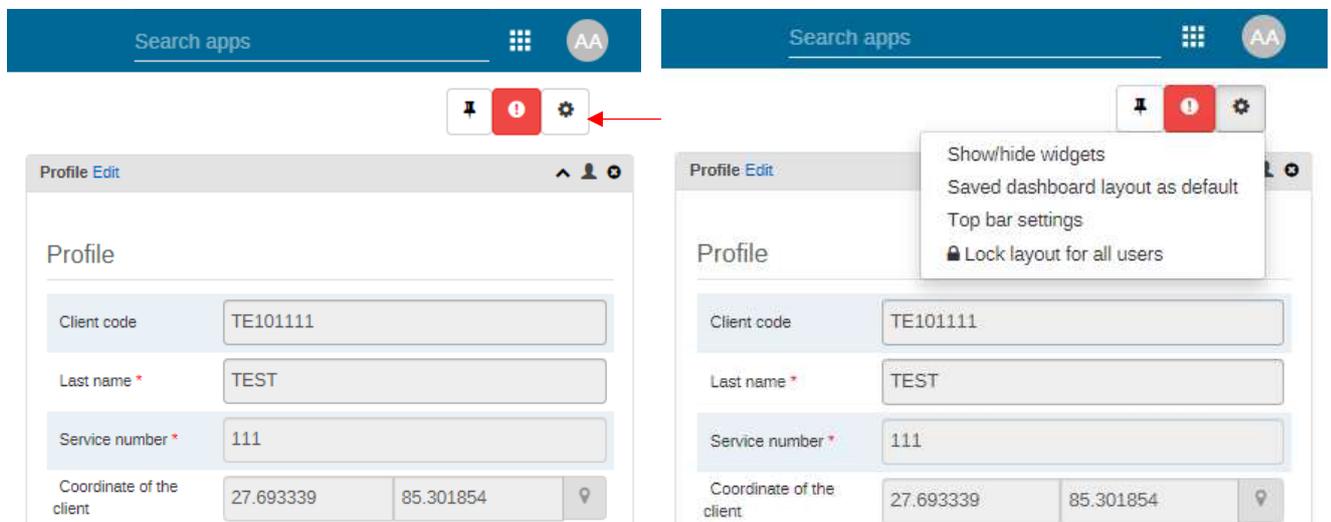


Figure 4. 9 Show/Hide Widgets HIV Care and ART Tracking System

After clicking on the button shown by a red arrow in the left picture above, the user can customize the details as needed in the page using the **Show/hide widgets** option. It is shown in the right picture above.

After clicking on **Show/hide widgets**, the user can select the items to show/hide in the page. An illustration is given in the picture below.

Select widgets to show

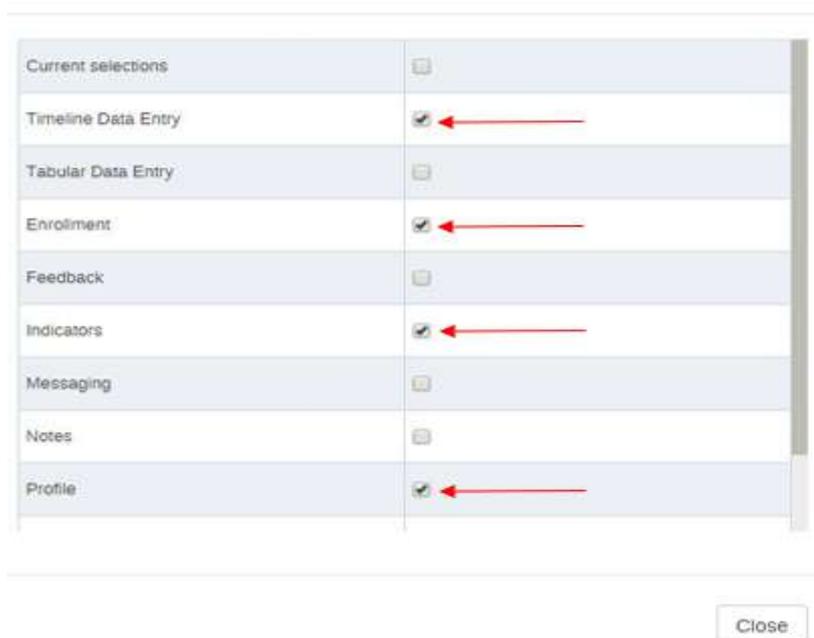


Figure 4. 10 Steps to show/hide items in client page in HIV Care and ART Tracking System

By putting a check mark (✓) on the box corresponding to **Timeline Data Entry** as shown in the above picture, the user can add **Timeline Data Entry** in the page, where they can add various stages. It is shown in the picture below.

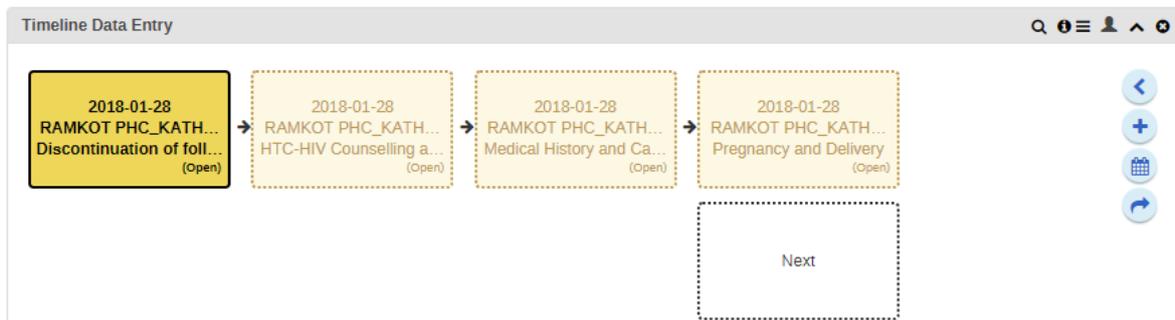


Figure 4. 11 Timeline Data Entry in HIV Care and ART Tracking System

4.7 Standard Reports

Standard Reports allows the ART center to generate a monthly report of ART treatment service in the standard HMIS templates. Click on **Reports** (shown by a red box in the below picture) and then select **Standard Report** to generate a report. Go to search app and click 'Reports' which is highlighted with red box in below image.

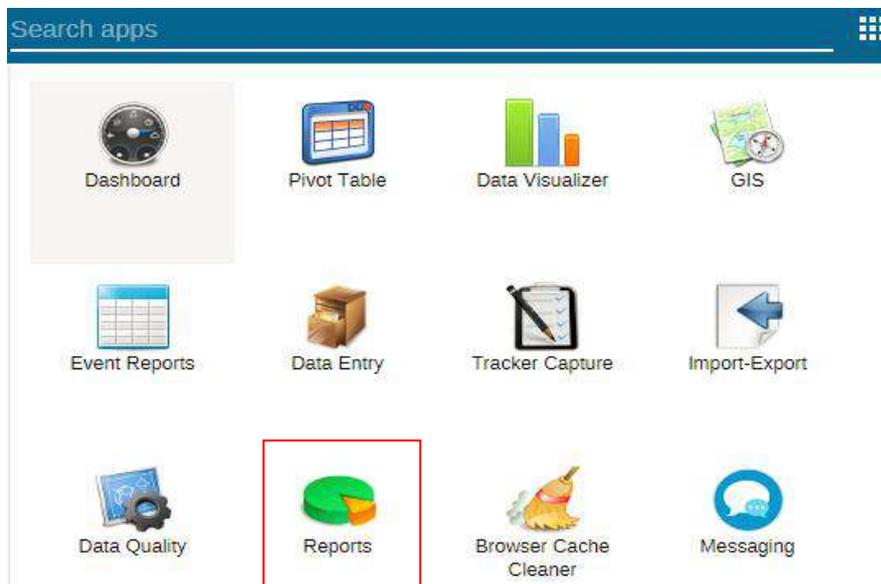


Figure 4. 12 Search apps in HIV Care and ART Tracking System selecting 'Reports' for Standard Report generation

The page will load as shown in the picture below.

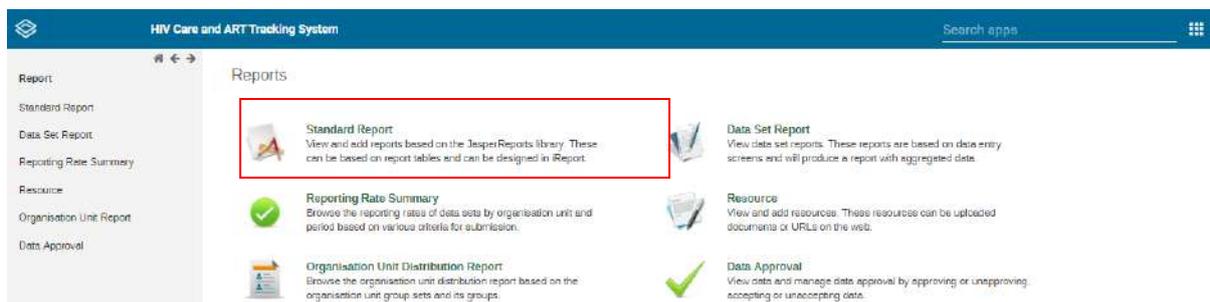


Figure 4. 13 Selection of 'Standard Reports' option under 'Reports' section in HIV Care and ART Tracking System

After clicking on the **Standard Report**, click on **ART Report [Nepali Year]** which is highlighted with red box in the below image. Click on the respective year of which you want to generate report.

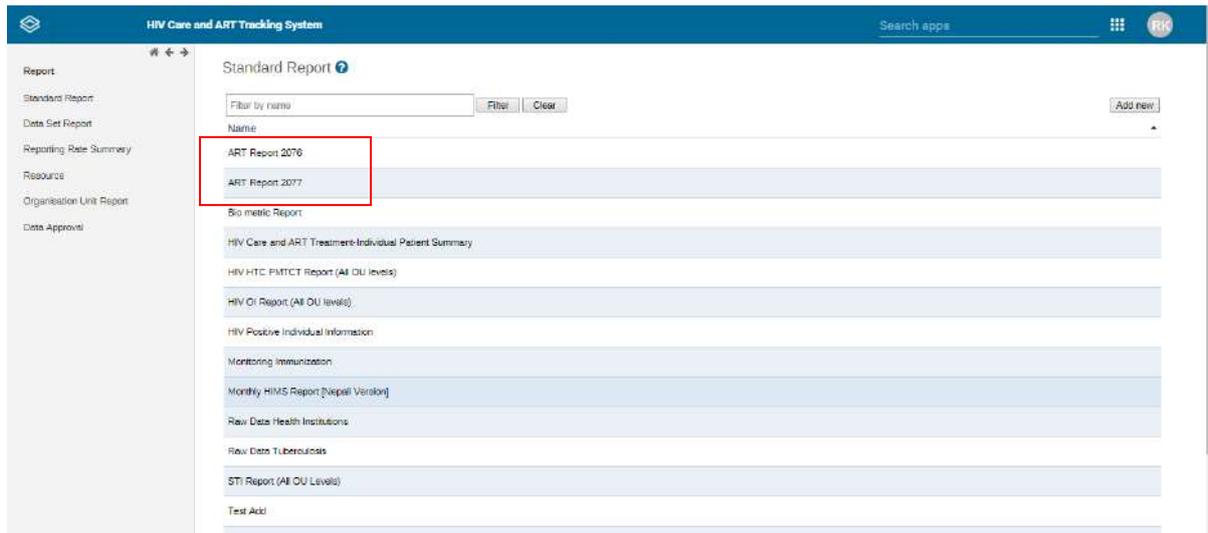


Figure 4. 14 Selection of relevant year and months to generate 'Standard Report' in HIV Care and ART Tracking System

After clicking on the **ART Report**, a page opens as shown below. Click on the name of organization unit which will turn into orange colour and click on get report.

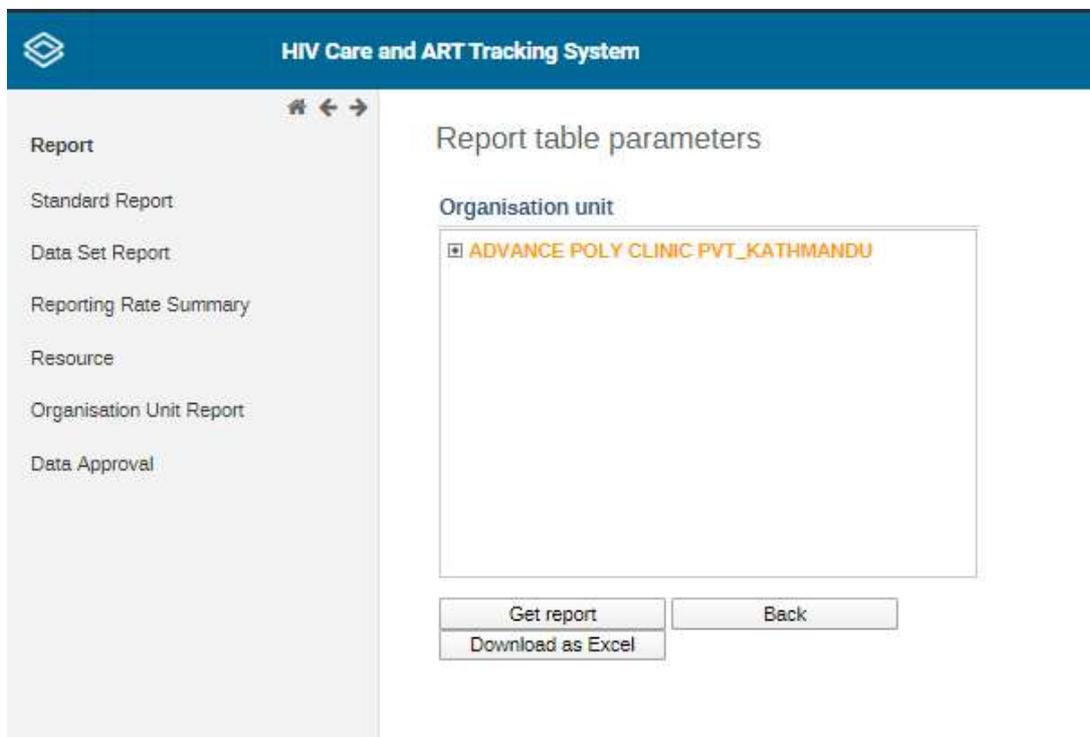


Figure 4. 15 Selection of Organization Unit to generate 'Standard Report' in HIV Care and ART Tracking System

Specify the period of the report to be generated by entering relevant dates in as Nepali Year and Month on first and second Select box (marked by red arrows), and then click on the **Submit** button (red box).

Figure 4. 16 Selection of Year, month and submitting for 'Standard Report' generation in HIV Care and ART Tracking System

After clicking on **Submit** button, please wait for some time until the following loading response appears as below:

You might see the following screen while loading your report, depending upon your internet speed the following screen may appear. Please click **“Wait”** as shown with red arrow until the report fully loads on screen, it may show multiple times too, do the same until report is fully loaded.

Figure 4. 17 Message of 'Loading' in report generation in HIV Care and ART Tracking System

When the report is fully loaded you can see the following format as shown below:

12. HIV/AIDS Program																			
Name of the Facility: ADVANCE POLY CLINIC PVT. KATHMANDU		Baisakh 2076		Period from: 2019-04-14			Period to: 2019-05-14												
Antiretroviral Treatment: Status of HIV Care		of This Month		Age Group in Years						Total		By Target population					Total		
				Adult		Child (Female)		Child (Male)				FSW	PNVID	MSM	MS-grant	others			
				F	M	TG	<1Years	1-4years	5-14Years	<1Years	1-4years	5-14Years	13	14	15	16	17	18	
1		2		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Enrollment on ART	Clients ever enrolled in ART at the end of last month	Beginning (1a)		0	0	1	0	2	3	0	1	0	7	0	0	0	0	7	7
	New clients started ART	New (1b)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Clients on ART transferred in	New (1c)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clients ever enrolled in ART at end of this month		Cumulative (2)= 1a+1b-1c		0	0	1	0	2	3	0	1	0	7	0	0	0	0	7	7
Deduction	Total Clients on ART transfer out	New		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 4. 18 Option to print, download in excel, csv format in HIV Care and ART Tracking System

The user can print the report by clicking on the **Print** button (yellow box). The user can also save the report in the computer in Excel format by clicking on **Export to Excel** button (blue box), Click CSV Export (Mark with red Rectangle) to download the Reporting format to import to HMIS.

The CSV file will be downloaded on your browser as shown figure below with red arrow, Copy the file to your pen drive or send it via mail to respective focal person to upload in IHMIS for reflecting the report in IHMIS Aggregate entry on national System.

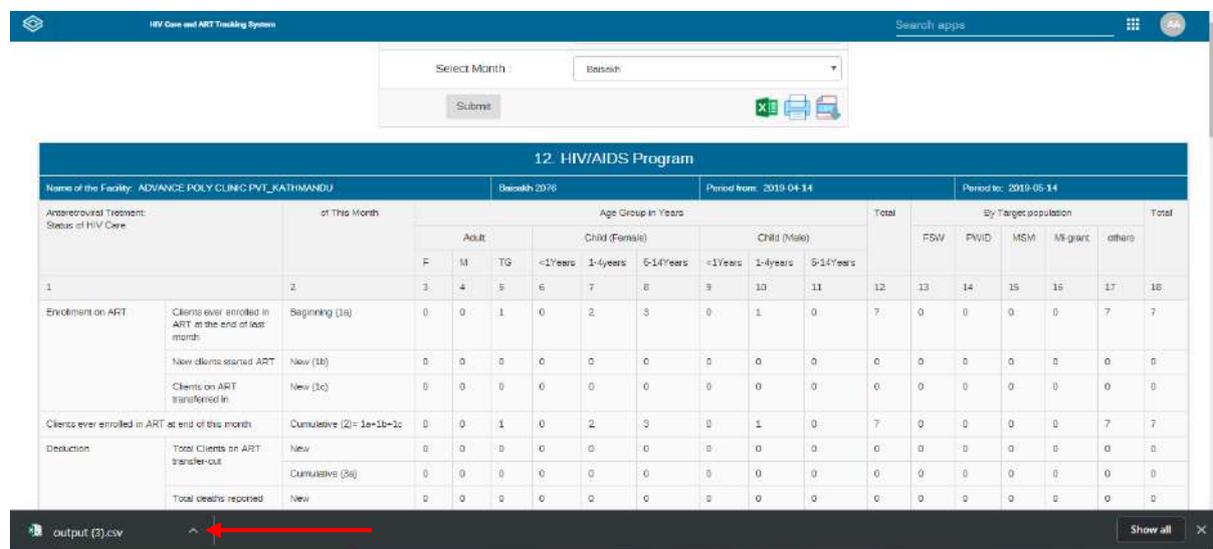


Figure 4. 19 Downloading the standard report in HIV Care and ART Tracking System

The further process for uploading is mentioned on section interoperability with HMIS.

4.8 Interoperability with IHMIS with Import/Export Application

As one of the main objectives of HIV Care and ART Tracking System (DHIS2 Tracker) is to enable the inter-operability between DHIS2 Tacker and National iHMIS system; the report generated through this system can be uploaded directly into iHMIS system.

To use the import export apps, you need to have the login access of DHIS2 Tracker from where you will export the monthly report and iHMIS login where you will export your file (monthly report of ART). Both the system must have import/export DHIS2 Apps enabled. To upload the report; you must download report in CSV format; for detailed steps of report generation and download, go through section 4.7.

STEP-1: log-in to iHMIS using web address <http://hmis.gov.np/hmis/> which opens the page like below figure:

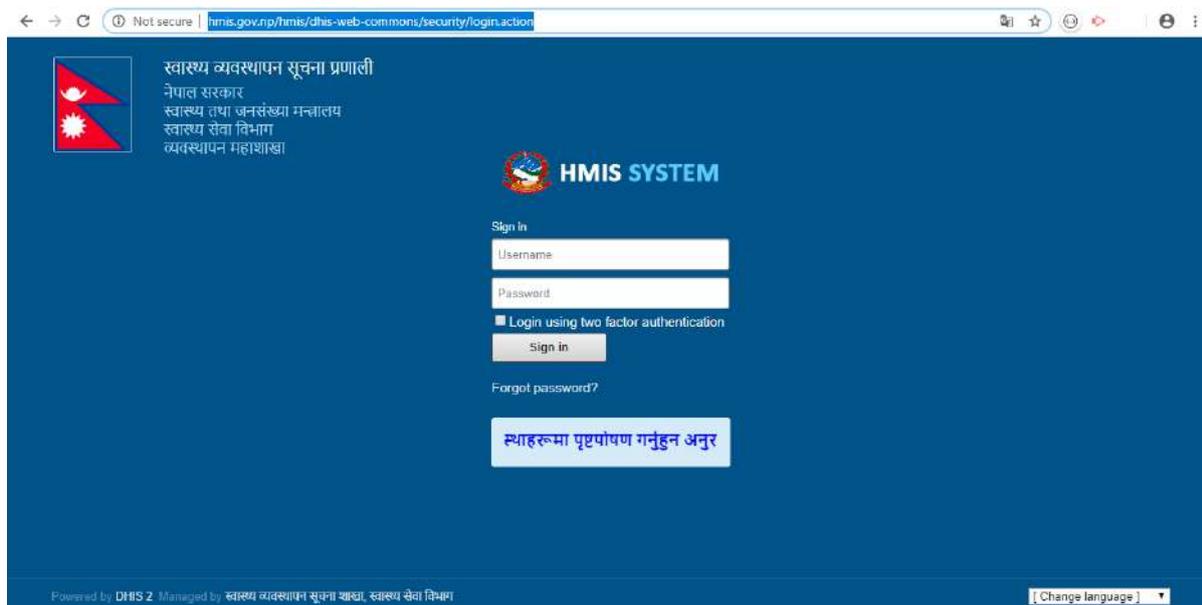


Figure 4. 20 Login page of iHMIS

STEP-2: Click on search application and select for dhis-web-importexport as figure below

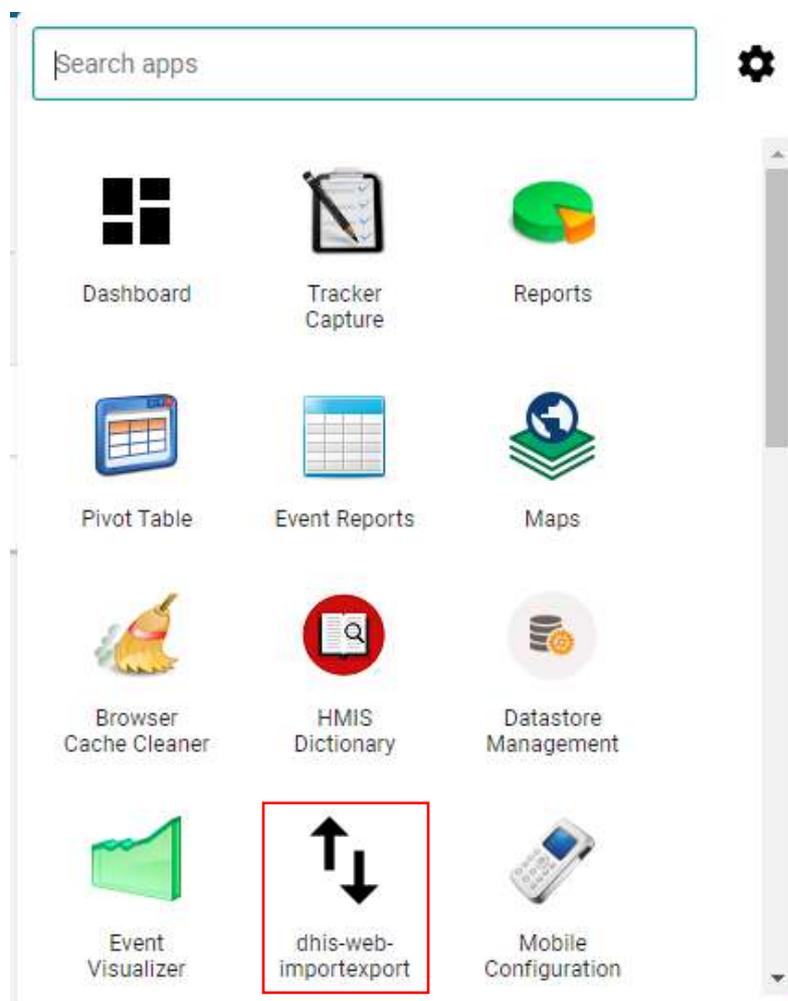


Figure 4. 21 Search apps in HIV Care and ART Tracking System selecting 'dhis-web-importexport' for import and export feature

STEP-3: After clicking on dhis-web-importexport following page will appear, please click Data Import

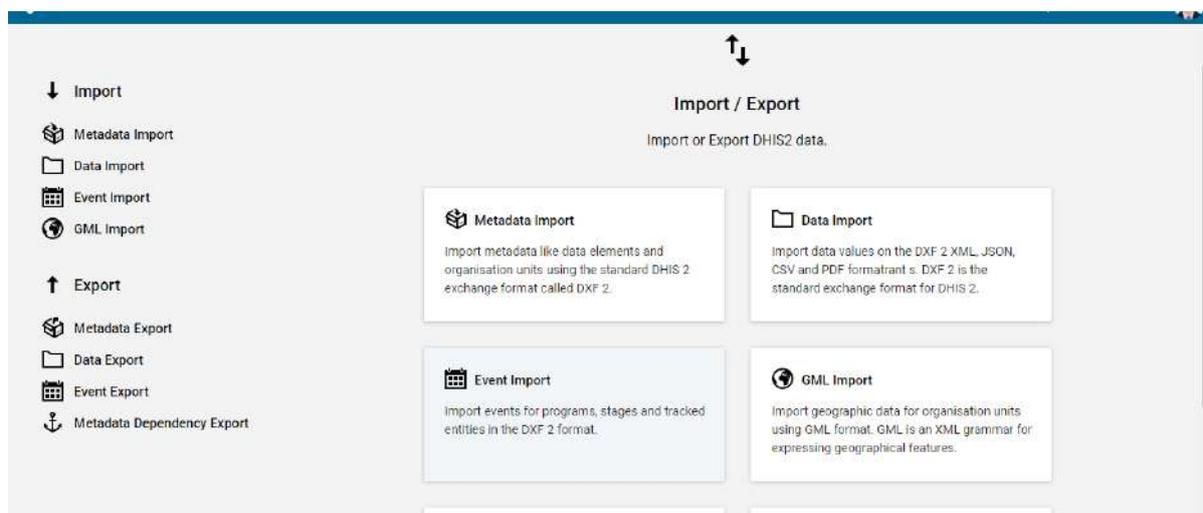


Figure 4. 22 Import/export page in HIV Care and ART Tracking System

STEP-4: After clicking on Data Import following page will show which includes different required fields for selection, click on “+ MORE OPTIONS” to see full details of page contents.

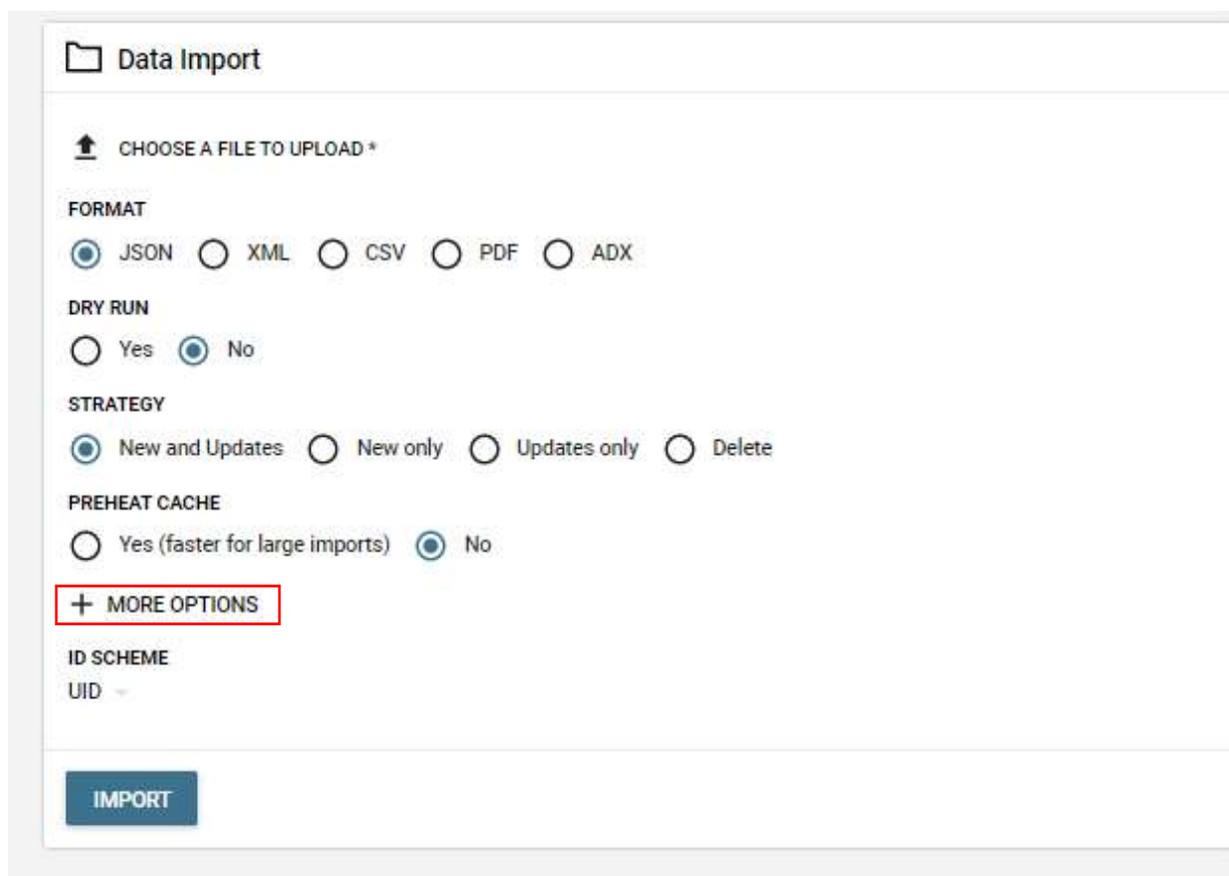


Figure 4. 23 Process to data import in HIV Care and ART Tracking System

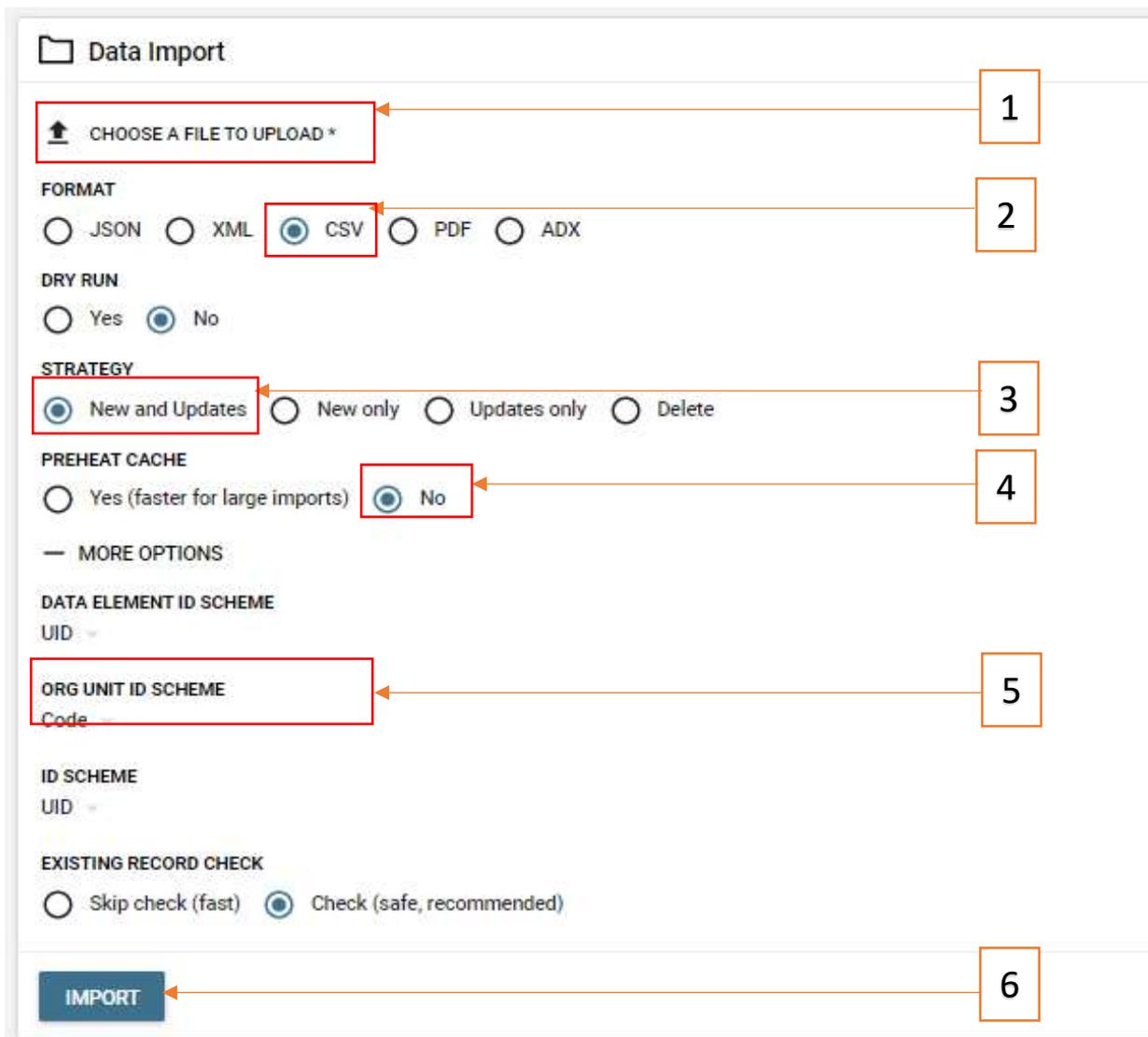


Figure 4. 24 Steps to import data into iHMIS system from HIV Care and ART Tracking System

We need to follow 6 Steps process to upload the CSV file to iHMIS

A) Choose CSV that has been exported from DHIS2 Tracker standard Report by using browse option as below

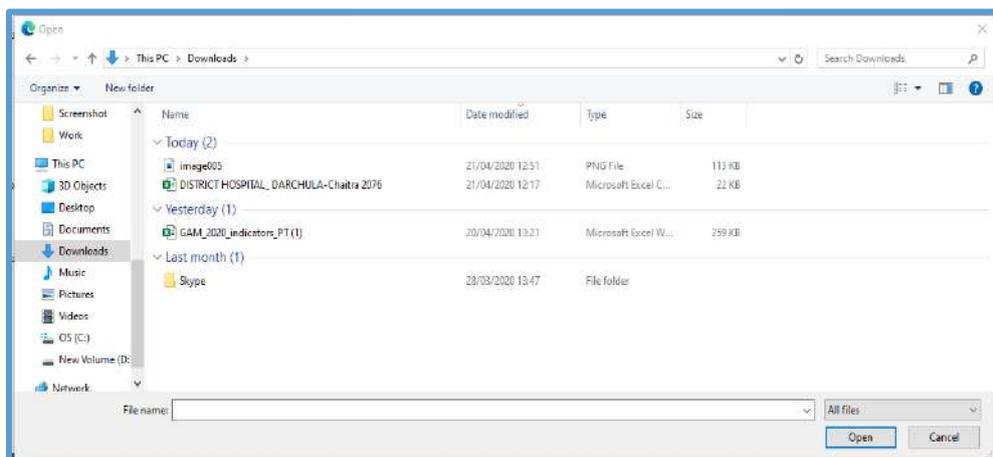


Figure 4. 25 Downloads folder with downloaded csv file from HIV Care and ART Tracking System

- B) Check on CSV
- C) Check on Strategy as New and Updates
- D) Check PREHEAT CACHE as No
- E) Select ORG UNIT ID SCHEME as Code (**Obligatory and most Important**)
- F) Finally Click import.

This will take some time to execute and it shows import summary after the successful import. When import, succeeds you can verify, in iHMIS at the data entry form, which will show as follows. Please recheck that the standard report that is generated matched with the iHMIS Data Set entry report and click on complete.

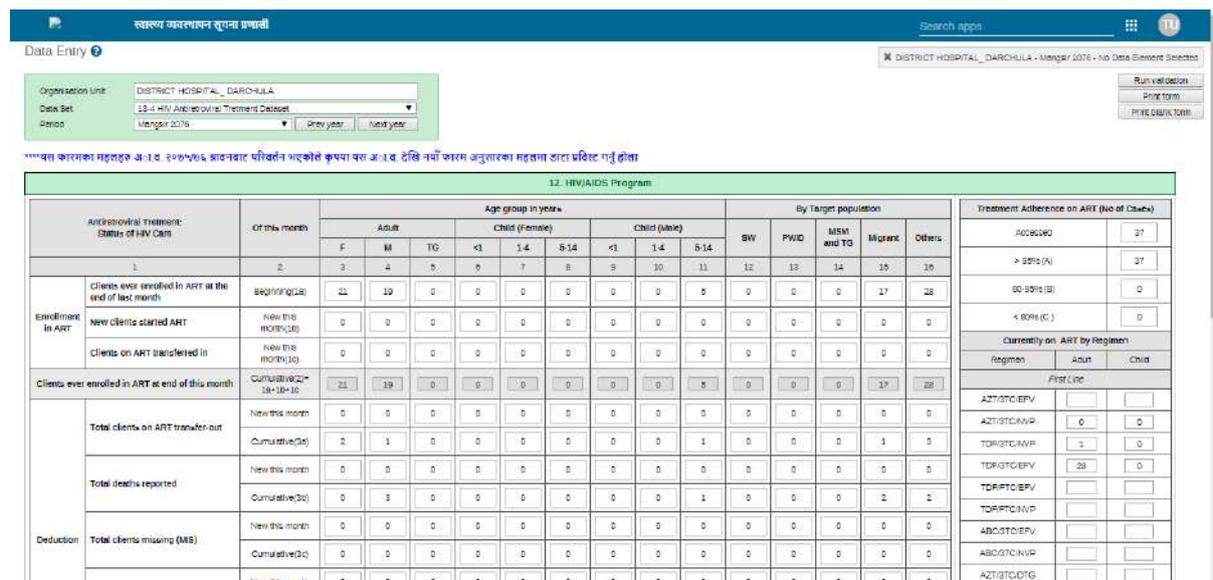


Figure 4. 26 ART report page in iHMIS

When iHMIS runs the analytics, it will be finally reflected to Data Set Report.

4.9 Early Warning Indicators (EWI)

Early Warning Indicators (EWI) are set of quality care indicators which specifically assess factors helping in optimal functioning of treatment programmes, minimizing in the emergence of preventable HIV drug resistance and maintaining the effectiveness of ART regimens. There are various factors related to EWI indicators monitoring such as appropriate prescribing, viral load suppression at 12 months (patient care), adherence (patient behaviour), and follow-up, retention on ART, procurement and supply management of ARV drugs and appropriate switch of regimen in people with virological failure (clinic level and programme management).

Various information is collected in DHIS 2 Tracker as part of EWI monitoring:

- a. ART prescribing practices;
- b. patients lost to follow-up after initiation of ART;
- c. patients on appropriate first-line therapy at 12 months;
- d. on-time patient appointment keeping and antiretroviral (ARV) drug pick-ups;
- e. ARV drug supply continuity;
- f. Adherence; and
- g. HIV viral load suppression at 12 months.

EWIs are monitored at all ART sites in the country, it provides information on interpretation of EWI results at national and site level:

a. At national level:

- i. Alerts national ART program managers to different factors that need increased support to reduce the potential for significant population-level virological failure and emergence of preventable HIVDR.
- ii. Guide the development of national public health actions required to address them.

b. At ART site level:

- i. Alerts ART site health workers to specific areas which require attention and supports overall optimization of patient care.
- ii. To take prompt actions/conduct care related activities in an efficient way.

Early Warning Indicators are categorized in different groups inside DHIS2 Tracker:

1. On-time pill pick-up
2. Retention in care
3. No ARV stock-outs
4. Dispensing practices
5. Virological suppression

4.9.1 Early Warning Indicator: On-time pill pick-up

'On-time pill pick-up' is one of the categorized Early Warning Indicator in DHIS2 Tracker System. This indicator basically calculates the percentage of patients who picked up the ART no more than two days late of the scheduled date after the previous pill pickup date. This indicator excludes the transferred out, death and stopping ART group of patients. The suggested target of this indicator is >90%.

The performance is classified into three colour codes:

- a. Green: >90% (Good Performance)
- b. Amber: 80%-90% (Fair Performance)
- c. Red: <80% (Poor Performance)

The score card can be used to client management by contacting immediately to the client for pill pickup, send reminder message to the client using mHealth and coordinate CHBC team.

The source for this indicator is available at HMIS 7.4 HIV Treatment Care Register inside 'Treatment Care History' section at Row 9: On-time pill pick up.

4.9.2 Early Warning Indicator: Retention in care

'Retention in care' is one of the categorized Early Warning Indicator inside DHIS 2 Tracker System. Percentage of adults and children who are still on treatment and are alive during/after certain time period of starting ART. This indicator is similar to the ART cohort report which was prepared annually and manually by ART sites. This indicator includes all those patients who have stopped ART, been missing or lost to follow-up and death cases; but excludes 'transferred-out' cases. The suggested target of this indicator is >85%.

The performance is classified into three colour codes:

- a. Green: >85% (Good Performance)
- b. Amber: 75%-85% (Fair Performance)
- c. Red: <75% (Poor Performance)

The score card can be used in maintaining and improving the client’s retention in care. Non-retention clients who are missing or LFU can be contacted and counselling can be done for continuing ART, common reasons for non-retention can be determined and addressed and CHBC team can be mobilized based on the score card. PLHIVs with good retention in treatment are eligible for Multi- month Dispensing (MMD).

The source for this indicator is available at HMIS 7.4 HIV Treatment Care Register inside ‘Treatment Care History’ section at Row 1: Treatment Status.

4.9.3 Early Warning Indicator: No ARV stock-outs

Early Warning Indicator- ‘No ARV stock-outs’ generates the percentage of months within a designated year in which there were no ARV drug stock-outs inside DHIS 2 Tracker System. This indicator helps to ensure that there were no stock-out days of any ARV drugs. The suggested target of this indicator is 100%.

The performance is classified into two colour codes:

- a. Green: 100% (Good Performance)
- b. Red: <100% (Poor Performance)

The score card can be used in maintaining the ARV stock, timely request can be done to responsible authority (currently at NCASC and in future HIV-related logistics can be managed at province level) and also useful in bimonthly report submission and analysis.

This indicator is same as reported in ART report (previously it was reflected in STI report) of HMIS 9.3 monthly reporting.

The process to record and generate report for this indicator is described below:

Click on Dashboard, where we have shared the link to record the ARV stock out which is shown as below figure



Figure 4. 27 ARV Stock Out option in Dashboard

After clicking the ARV stock out, it will open the data entry form which looks like below, your health facility is selected but you must select the data set, please select data set as ARV Stock out and select the Month and Year.

After selecting the data set and period it will show up the following data entry form.

Provide response for 1, 2 and 3, if ARV drug stock out for the month then check 'Yes' and then select the drug name from the drop down list and number of days it was stock out in the text box at the right side, validate and complete the form as follows, if not stock out then check for 'No' for ARV drug stock out for this month and press complete.

One example is displayed below:

The screenshot shows the 'Data Entry' interface of the ART Tracking System. At the top, there's a header with 'nd ART Tracking System' and a search bar. Below the header, the 'Data Entry' section is highlighted in green. It contains the following fields:

- Organisation Unit: RAMKOT PHC_KATHMANDU
- Data Set: ARV Stock Out
- Period: April 2020

Below these fields, there are three main questions:

1. ARV drug stock out for this month? Yes No
2. Select the stock out ARV drug from dropdown list below
3. Mention number of stock out days for ARV drug

Question 2 has three options (a, b, c) with dropdown menus. Question 3 has three corresponding input boxes for the number of days.

Figure 4. 28 Data entry of ARV Stock out in HIV Care and ART Tracking System

This screenshot shows the same form as Figure 4.28, but with data entered. The 'No' radio button is selected for question 1. For question 2, option 'a' is selected with 'ABC/3TC + RAL'. For question 3, the number of days is entered as '12' for option 'a' and '10' for option 'b'. Options 'c', 'd', and 'e' have empty input boxes.

At the bottom of the form, there are three buttons: 'Complete', 'Incomplete', and 'Run validation'.

Figure 4. 29 Example of ARV Stock out data entry form in HIV Care and ART Tracking System

4.9.4 Early Warning Indicator: Dispensing practices

As defined by Management Sciences for Health (MSH), “Good dispensing practices ensure that an effective form of the correct medicine is delivered to the right patient, in the correct dosage and quantity, with clear instructions, and in a package that maintains potency of the medicine”. In HIV Care and ART Tracking System, this indicator will be measured by the whether recommended combinations are dispensed or not. All the recommend combinations are listed in DHIS2 Tracker. The number of patients who pick-up ARV from the ART centre specifically the ‘other’ regimen than recommended combinations in ART follow up are included in the indicator analysis. The suggested target of this indictor is 0%.

The performance is classified into two colour codes:

- a. Green: 0% (Good Performance)
- b. Red: >0% (Poor Performance)

The score card can be used in tracking if the clients are following nationally recommended regimen or not. Possible and necessary corrections can be done on time if the client is on any other combination of regimen than standard recommended combinations of drugs.

The source for this indicator is available at HMIS 7.4 HIV Treatment Care Register inside ‘HIV Care History’ section under heading ‘ ART Start date and Regimen’, ‘Treatment Substituted’ and ‘Treatment Switched’ section.

4.9.5 Early Warning Indicator: Virological Suppression

The ‘virological suppression’; one of the early warning indicators calculates the percentage of patients having their viral load less than 1000 copies/ml after a specific time period of ART initiation. This indicator includes all the PLHIVs who have a viral load test result available after a specific period (at least 6 months crossed) of ART initiation and excludes transferred out, death, missing, lost to follow-up and stopped ART PLHIVs.

The suggested target of this indictor is 70% for PLHIVs of up to 2 years of age and >85% for PLHIVs above 2 years of age.

The performance is classified into three colour codes as follow:

Performance	Pediatrics (≤2 years)		Pediatric (>2 years) and all adult	
	Percentage	Color code	Percentage	Color code
Good performance	>70%	Green	>85%	Green
Fair performance	60%-70%	Amber	70%-85%	Amber
Poor performance	<60%	Red	<70%	Red

The score card can be used in tracking the suppression of viral load among clients. With the help of score card, clients with unsuppressed viral load can be referred to doctor for further assessment or treatment plan.

The source for this indicator is available at HMIS 7.4 HIV Treatment Care Register inside 'CD4 count, follow-up, weight and height' section under heading 'Viral Load Date' and 'Viral Load Result' section.

4.9.6 PLHIV groups displayed in Early Warning Indicator results

There are total seven groups of PLHIV based on their ART start date, and indicator results will be presented separately for paediatric (<15 years old) and adult (≥15 years old). Following are the groups defined within the system:

1. Group A: PLHIV whose ART start period is less than 12 months from date of analysis (DOA) (dynamic group)
2. Group B: PLHIV whose ART start period is between 12 months to 23 months from DOA (dynamic group)
3. Group C: PLHIV whose ART start period is between 24 months to 35 months from DOA (dynamic group)
4. Group D: PLHIV whose ART start period is between 36 months to 47 months from DOA (dynamic group)
5. Group E: PLHIV whose ART start period is between 48 months to 59 months from DOA (dynamic group)
6. Group F: PLHIV ART start period of between 60 months to 71 months from DOA (dynamic group)
7. Group G: PLHIV ART start period of more than 71 months from DOA (fixed group)

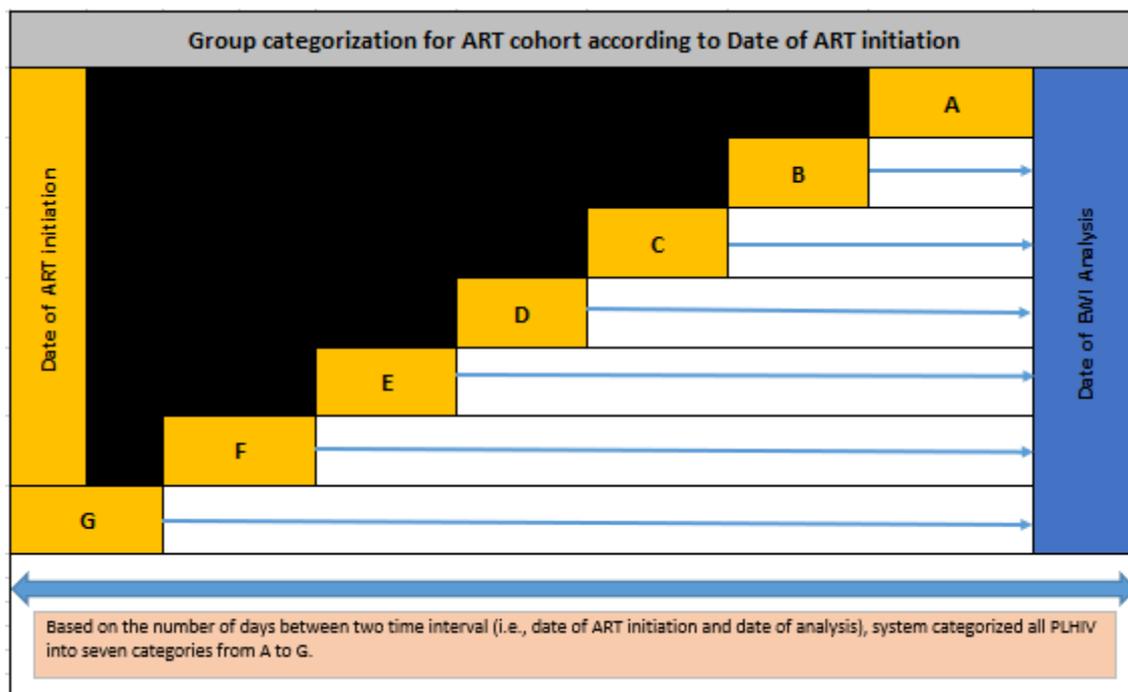


Figure 4. 30 Categorization of PLHIV for generation of indicators for EWI

4.9.7 Scoreboard of Early Warning Indicators (EWI)

Search Scorecard on Search application, and click on Scoreboard, after clicking the scoreboard it opens the page as shown below:

Scoreboard application is used for monitoring different indicators with respect to target, numerator and denominator are already been set on the indicators, we have used this scoreboard application for monitoring EWVI indicators.



Figure 4. 31 Search apps function to search scheduler in HIV care and ART Tracking System

Various scoreboard that are created are shown, but select the required scoreboard to view after clicking the view it will redirect to the window as following, where you can view the indicators against the target achieved, poor indicators etc.

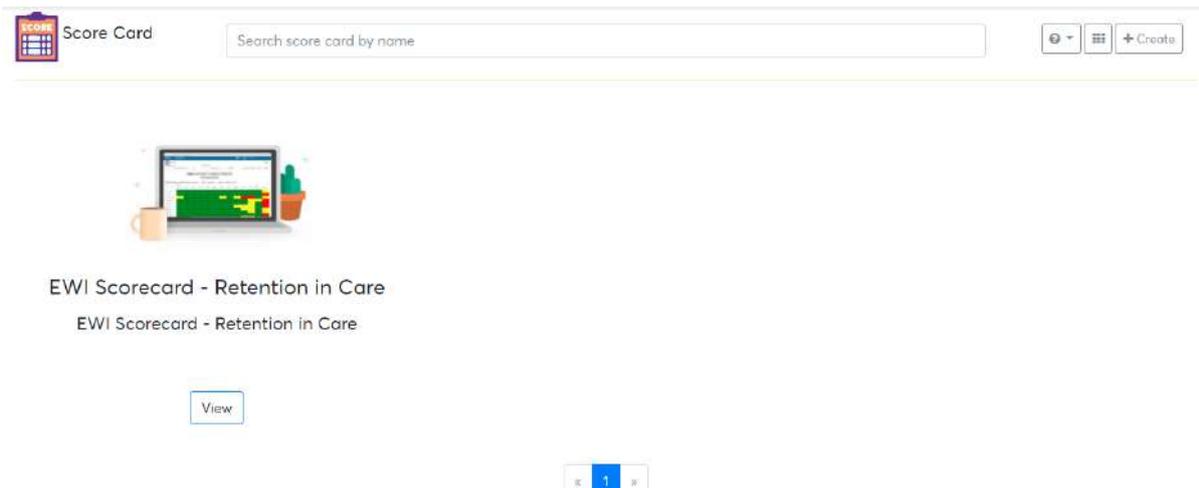


Figure 4. 322 EWI Scorecard-Retention in Care inside HIV Care and ART Tracking System

For EWVI indicators our whole population is distributed in different group ranging from Group A to Group F, Group A are those PLHIV enrolled in ART for less than 12 months from the date of analysis and Group G are those PLHIV who are enrolled in ART for >6 years from date of analysis, the scoreboard is show as below:

Generally, Scoreboard generation takes time as about of number of indicators that has been added on scoreboard.



Figure 4. 33 EWI Scorecard- Retention in Care inside HIV Care and ART Tracking System

4.9.8 Things to remember for Early Warning Indicators (EWI)

While using Early Warning Indicators from DHIS 2 Tracker, following things must be remembered for better score board presentation:

Do's:

1. Keep record entry up to date
2. Monthly entry of ARV drug stock out data
3. Make sure scheduling of pill pick-up dates for clients is done
4. Timely request of ARV drugs which is near to stock out
5. Refer viral load unsuppressed clients to the clinics

Do Not Do's:

1. Do not leave the ART starting details of the clients blank in Tracker
2. Do not leave event record entry blank in Tracker
3. Do not miss scheduling baseline pill pick up date

5. mHealth (Mobile Health)

The tracker system supports mHealth to deliver appointment reminder messages, and HIV related awareness messages to the client enrolled in the service. MHealth aims to support HIV treatment and improve retention in treatment. The structured messages deliver to the provided mobile number of the client during registration. The messages could be delivered through two different methods through the system:

- a. Automated Push SMS
- b. Manual Push SMS

a. Automated Push SMS:

The system automatically pushes structured SMS to the client's mobile in Nepali language based on the recorded information in the system. The automated push messages such as next appointment date for pill pick up, appointment date for CD4 and Viral load test, specific awareness message (positive prevention, PMTCT, EID, screening for OI etc) are pushed in different frequencies. The details of the messages and the frequency is shown in **Annex 1**.

b. Manual Push SMS:

The manual push SMS can be used when a specific message needs to be sent to the individual client. For the process, the ART counsellors simply need to type SMS and send the message on the mobile phone of the client as required. The mobile number is displayed as recorded during the registration of the client.

Things to be considered in mHealth

- The mobile number must be entered into the system for the use of mHealth.

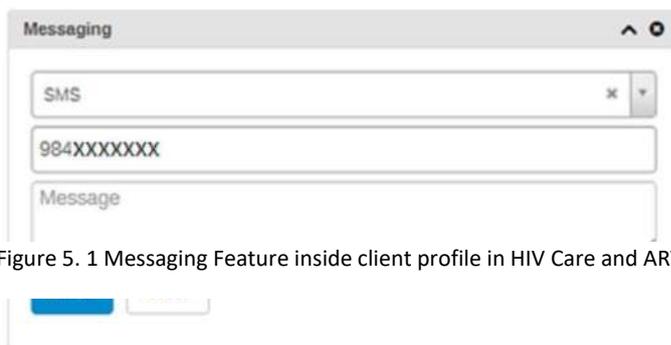


Figure 5. 1 Messaging Feature inside client profile in HIV Care and ART Tracking System

- The landline number should not be entered in the system for mHealth
- The service is only available in Nepali network mobile number. For example, the client does not receive any SMS if the mobile number of another country is entered.
- The client's consent for SMS should be received at the time of registration. The client must be informed about the mobile health intervention and types of message and their frequencies that client is going to receive through the system.

6. Notes

Please consider the following things while using the system:

Username and Login

1. Use the weblink and the user's details (name and password) provided from NCASC. Do not modify username within the system.
2. Do not share your username and password with any unauthorized person. Any misuse of the personal information of the patient (publication of illegal materials in electronic form, etc.) is an illegal act, and sharing personal information of the patient to an unauthorized person or publishing it in electronic media without consent is punishable as per the **Electronic Transactions Act, 2008**.
3. Change password every six months as when displayed by the system.
4. Inform the client/patient that our biometric system does not record the fingerprints of the client; rather it converts the fingerprints to an alphanumeric code shown below.

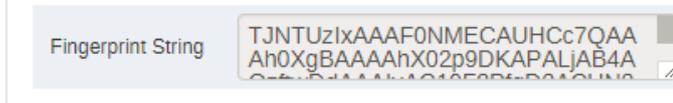


Figure 6. 1 Alphanumeric code of fingerprint string stored in HIV Care and ART Tracking System

5. Collect the fingerprint of every client enrolled in HIV treatment and care services. Check if the client is already enrolled in the system through the biometric system as mentioned in the patient registration section.
6. Before registering the client in the system, make sure that the HIV program is selected at the top. Do not enter until all the data field are populated selecting the HIV program. The system does not count the client information if client information is entered without selecting an HIV program, and you will not be allowed to register the client again.
7. The system automatically records the current date during the enrolment. When entering the records of existing clients or old clients, check the date in their personal records and enter the same date as per the record.
8. Enter a 10-digit mobile number in the field for the client's mobile number. Do not enter a landline number or any international mobile number.

Client's Profile

9. Do not click **Complete**, **Deactivate** and **Delete** buttons that appear in the page after registering the client into the system. If these buttons are used, then additional individual information cannot be entered/updated in the system.

Back | HIV Program

Enrollment

Selected program

Enrolling organisation unit: RAMKOT PHC_KATHMANDU

Date of registration: 2018-10-11

Coordinate: Latitude Longitude

Buttons: Complete, Deactivate, Delete (all marked with a red X)

Figure 6. 2 Buttons not to click in profile of client in HIV Care and ART Tracking System

10. Enter all the required and relevant data field provided in the program stage.
11. Validate the information entered in the program stage before clicking on 'Complete' and 'Save and continue' buttons.

HTC-HIV Counselling and Testing & ART-HIV Counselling and Testing

12. Do not create the HTC-HIV counselling and Testing and ART-HIV counselling and Testing of the same client.

Medical History and Case Assessment

13. This is a compulsory event/stage for every entry in the system, so this must be created for every client registered in the system.

Schedule for ART follow-up

14. Do not create a new ART follow-up stage when ART follow-up stage is scheduled before, select the scheduled stage and complete the ART follow-up details. If different ART follow-up stage is created, then software automatically considers the client as missing and continuous SMS through the system will be sent to the client for follow-up.

7. Data Security and Privacy

Nepal government has formulated “The Electronic Transaction Act, 2063” to secure the electronic data. The act defined various types of offences and punitive laws against any violation of rules related to electronic data security and privacy.

1. To Pirate, Destroy or Alter computer source code:

A person shall be liable to the punishment with imprisonment not exceeding three years or with a fine not exceeding two hundred thousand Rupees or with both.

2. Unauthorized Access in Computer Materials:

A person shall be liable to the punishment with the fine not exceeding Two Hundred Thousand Rupees or with imprisonment not exceeding three years or with both depending on the seriousness of the offence.

3. Damage to any Computer and Information System:

If any person knowingly and with a mala fide intention to cause wrongful loss or damage deletes, alters, disrupts any information of any computer source Two Hundred Thousand Rupees or with imprisonment not exceeding three years or with both

4. Publication of illegal materials in electronic form:

A person shall be Liable to the punishment with the fine not exceeding One Hundred Thousand rupee or with the imprisonment not exceeding five years or with both.

8. References

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5. Management Sciences for Health. Chapter 30 Ensuring good dispensing practices. 2012.
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Annex 1. Type and frequency of SMS

Awareness Messages

Awareness Message	Audience	Message	Frequency
CD4 Count Test	All Clients	औषधी शुरु गरेको र CD4 जाँच गरेको ६ महिना भए , पुनः CD4 जाँच गर्ने होइन त ?	trimester
CD4 Count Test	All Clients	CD4 जाँच गराऔ रोगसँग लडने क्षमता कति छ भनेर बुझौ ।	bi annual
VL Test	All Clients	भाइरल लोड जाँच गराई शरिरमा भाइरसको अवस्था थाहा पाउनुहोस् ।	trimester
	All Clients	भाइरल लोड जाँचले तपाईंको अवस्था मात्र होइन तपाईंको नजिकको साथीलाई पनि सुरक्षित राख्छ ।	bi annual
	All Clients	औषधि शुरु गरेको पहिलो वर्ष २ पटक (६/६ महिनामा) र त्यसपछिको हरेक बर्षमा एक पटक मात्र भाइरल लोडको जाँच गराउनुहोला ।	bi annual
Regular Health Checkup/TB Screening	All Clients	स्वस्थ जीवनको लागि नियमित स्वास्थ्य जांच तथा अन्य संक्रमणको पनि जांच गराउनुहोला ।	Monthly
Pill Count/Pill Pickup	All Clients	राखी राख्नुहोस सम्झना, हरेक दिन औषधी सेवन र गणना ।	Weekly
		समयको ख्याल राख्नुहोस नियमित औषधी लिन आउनुहोस् ।	Monthly
OI	All Clients	नियमित औषधिको सेवन, अवसरबादी समस्या रहित जीवन ।	bimonthly
ART Benefits	All Clients	हरेक दिन औषधी सेवन ,राख्छ स्वस्थ जीवन ।	Fortnightly
PMTCT	Married Male and Female clients	स्वास्थ्य संस्थामा सुत्केरी गराऔ, आमा र बच्चा दुवैको स्वास्थ्य पक्का गराऔं ।	Quarterly
Partner test	Married Male and Female clients	आफ्नो साथीको पनि जांच गराऔ, सम्बन्ध अझै बलियो बनाऔं ।	Quarterly
Cervical cancer	Female clients (20 years and above)	नियमित पाठेघरको जांच गराऔ ,पछि हुन सक्ने समस्यालाई अहिले नै पता लगाऔं ।	Quarterly
Pregnancy Awareness message for EID which is to be sent before Expected Delivery Date mentioned in "Pregnancy and Delivery Detail stage".	Married Male and Female clients	स्वास्थ्यकर्मीसंग सल्लाह लिई स्वस्थ बच्चा जन्माऔं ।	Quarterly
	Pregnant female clients	स्वास्थ्य संस्थामा सुत्केरी गराऔं, आमा र बच्चा दुवैको स्वास्थ्य पक्का गराऔं ।	trimester
Awareness message for rapid test which is to be sent before child completes 18 months.	Female client who delivered live birth	तपाईंको बच्चा १८ महिना पुगेपछि ,३ महिना स्तनपान गराउन छुटाई ,बच्चाको जाँचको लागि स्वास्थ्य संस्थामा ल्याउनु होला ।	trimester

Appointment Messages:

SN	Category Message	Message
1	Pill Pick up	तपाईंको औषधि लिने बेला भयो, तपाईं मिति (insert Date here) मा (insert Health Facility name here) को सेवा केन्द्रमा आउनुहोला ।
2	CD4 Count	६ महिना भयो, CD4 गर्न मिति (insert Date here) मा (insert Health Facility name here) को सेवा केन्द्रमा आउनुहोला ।
3	VL Test	भाइरल लोड जाँच को लागि मिति (insert Date here) मा (insert Health Facility name here) को सेवा केन्द्रमा आउनुहोला ।
4	PMTCT EID	जन्मने बितिकै (insert Health Facility name here) मा बच्चाको रगत जाँच गराऔं, बच्चालाई स्वस्थ बनाऔं ।
5	TB Screening	सम्भावित क्षयरोग (टि. बी) को जोखिमबाट बच्न (insert Health Facility name here) मा क्षयरोग (टि. बी) को जाँच गर्न आउनुहोला .
6	CD4 Count Test	औषधी शुरु गरेको र CD4 जाँच गरेको ६ महिना भए , पुनः CD4 जाँच गर्ने होइन त ?
7	CD4 Count Test	CD4 जाँच गराऔ रोगसँग लडने क्षमता कति छ भनेर बुझौ ।
8	Awareness message for EID which is to be sent before EDD.	बच्चा जन्मने बितिकै (insert organization name here) मा बच्चालाई जाँच गराऔं, बच्चालाई स्वस्थ बनाऔं ।
9	EID appointment reminders with facility name and date of visit.	तपाईंको बच्चा जन्मेको ६ हप्ता भित्रमा जाच गराउन (INSERT ORGANIZATIONAL UNIT) मा (INSERT DATE) गते ल्याउनु होला ।
10	Awareness message for rapid HIV test which is to be sent before child completes 18 months.	तपाईंको बच्चा १८ महिना पुगेपछि ,३ महिना स्तनपान गराउन छुटाई ,बच्चाको जाँचको लागि स्वास्थ्य संस्थामा ल्याउनु होला ।
11	Awareness message for EID which is to be sent before EDD	स्वास्थ्यकर्मीसँग सल्लाह लिई स्वस्थ बच्चा जन्माऔं ।
12	Awareness message for EID which is to be sent before EDD	स्वास्थ्य संस्थामा सुत्केरी गराऔं, आमा र बच्चा दुवैको स्वास्थ्य पक्का गराऔं ।