

HTS POC Stations

STILL DRAFT BUT NOT SUPER DRAFT

In a POC setting, clients move between different stages and may encounter different providers. We call these points *stations*. When a client leaves a station, the client is in a particular *state*.

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What is a workflow?

A workflow defines a particular flow in a health facility for a particular service in a point of care setting. A client undergoes a workflow. A workflow can have one or more stations, where a particular service will be delivered.

Workflows are designed around a health programme, such as HTS or a Lab Test, and the different points of care within that health programme. In most cases, there is a strictly defined process: a client starts at point A, then can go to point B, and then either to point C or D depending on what happens at point B. We call these points *stations*. At any time, the system needs to know where a particular client is. For example, "Waiting for point A", or "Point C completed". We call these *states*. A client can only be within one state within a single workflow. However, a client can start multiple workflows, even within the same service.

Workflows have session numbers

Because a client does not necessarily need to complete in a single day, and because some services would allow a client to start multiple similar workflows, each workflow gets assigned a unique number, a Session Number. The session number with the client ID uniquely identifies a workflow. So, it is theoretically possible that client number 6 is in point A in HTS workflow 4, and at point D at HTS workflow 5.

In order to be able to correctly link the data coming out of each station with a workflow, and to recreate the workflow in reporting and analysis situations, all stations collecting data store not only the patient ID, but also the Session Number. This makes the following scenario possible:

Patient	Session Number	Started	Current State
14	HTS0001	6 Feb 2021	C
15	HTS0002	6 Feb 2021	B
14	HTS0003	8 Feb 2021	A

Without a session number, it would not be possible to determine to which workflow the data of each state belongs. This is because the HTS001 workflow is currently at C, which means that there was data collected at Point A. And the client is again at point A two days later.

Summary

i A workflow defines a flow in a health facility. A workflow may have one or more points where a service gets delivered, called *stations*. A workflow has three identifiers:

- A type, for example, HTS or Care and Treatment
- A patient ID
- A session number

Session numbers are generated automatically at the onset of a workflow for a particular client. Subsequent visits to stations are linked to the same patient **and** session number to keep their data together.

What are stations?

A station defines an encounter with a single provider within a workflow. A client will have an encounter with a provider at a station, and as part of that, some data will be collected. The provider will enter that data during the encounter.

A station belongs to a larger workflow, for example, HTS. In this workflow, there is a predefined order between stations. A client may not select any station to start with. Similarly, some stations may only be attended if a previous station was completed.

It is important to note that workflows may not always complete: a client may not finish all stations required by their workflow, since a client may leave.

Defining a station

For purposes of defining the workflow, the following properties of a station can be defined:

- **Name:** refers to the name of the station, for example, HTS Post Test Counselling or HIV Test. Names should, as much as possible reflect language used in the real world that resonate with end users
- **Code:** uniquely identifies a station. In documentation and source code, use this code wherever possible as an identifier.
- **Description:** describes a station in terms of end users, i.e. the service provided at a station
- **Potential next stations:** lists the possible next stations, sometimes based on a the outcome of a previous station. For example, after pretest counselling the client may either go for the HIV test, or end the visit.
- **State after completing this station:** describes the potential state(s) a client may be in after leaving this station. Sometimes there is one possible state, sometimes there are more options. The final state will then determine on what happened at the station.
- **Precondition state required for entry into station:** describes any preconditions or qualifying criteria before a client can proceed to a station. For example, before receiving an HIV test, a client must have undergone pretest counselling first. When a criteria is not met for a client, the client cannot proceed to that station. Preconditions always refers to the station, and not the eligibility of a service (HTS in this case). Preconditions are specified by *state*. A client must be in one of the defined states in the precondition criteria in order to enter that state.
- **POC Forms:** lists the forms that are in use with the station. A provider can fill out any of the forms at that station. All forms are available within a particular station once a client is qualified for that station. The forms collect the service data, but they may also influence the a state for a client. For example, the *HIV Test Result* collected on the *Form HIV Test* may determine the state of the client after leaving the station: *HTS HIV Test Tested Positive* or *HTS HIV Test Tested Not Positive*.

What are states?

A state defines in what condition or stage the client is, within a workflow. A state is set after a station is completed. A state may depend on the outcome of the service provided at a station.

For example, a client may go through a pretest counselling session. The state after that session could be "Pretest Counselling Completed". However, in the HTS workflow, it is also important to know whether a client provided consent during their pretest counselling session, which would determine whether a client should actually be tested for HIV at the next station. A better state would therefore be "Pretest Counselling Completed Without Consent" and also "Pretest Counselling Completed With Consent".

States are not patient outcomes

States are *not* patient outcomes, although some of them may appear. so. States are purely meant to determine a client's position in a particular workflow. The states that will be defined in a workflow are based on stations and their entry conditions, and sometimes these coincide with clinical outcomes, but sometimes they don't. In addition:

A client can have only one state in a workflow

As a client moves through the different stages, no history of the stages is kept. A state only refers to the current situation. So a client may be in the "Pretest Counselling Completed Without Consent", but after the client underwent an HIV test and tested negative, the state will change to "HIV Test Completed With Non-Positive Result". For the purpose of state, it is only important to know whether the HIV test was positive or not, since this determine qualification for the posttest counselling session.

Workflows can be paused

A client may determine to *pause* a workflow. When a workflow is paused, it is effectively the state which is paused, it not available in the system for determining queues. A client may resume the workflow by unpausing the state. The state will continue where it left off.

The Workflow Engine

The Workflow Engine is envisioned as an OpenMRS component in POC settings that can always answer the following questions:

- In which state is client X for Session Y
- Is client X eligible for Station A

- Which clients are eligible for Station B

The workflow engine is a critical component of POC systems. It should:

- Be able to compute a client's state within a particular workflow, based on forms entered, past data collected and the current date
- Be able to compute which clients are currently waiting for a particular station
- Retrieve a client's state for a particular workflow
- Retrieve all of a client's active workflows and their states

Stations in HTS

The table below lists the stations that are part of HTS.

	Registration	Pretest Counselling	HIV Test	Posttest Counselling	END
Code	REG	HTS_PRETEST_COUNSELLING	HTS_HIV_TEST	HTS_POSTTEST_COUNSELLING	END
Description	<p>General registration. Ensures a client is registered in the system. Previous clients should not be re-registered, but their registration details should be verified.</p> <p>REG is not specific to HTS.</p>	<p>General pretest counselling. This is the first step of the HTS workflow.</p>	<p>The station where the HIV test is administered. This may in fact be a combination of tests, with a final outcome being determined. The outcome may define the next station.</p>	<p>The station where posttest counselling is provided, as well as linkage into care. A referral for other services may also be given here, but a referral itself is not another station.</p>	<p>This is an endpoint, but not a formal station. A client will not officially check out of this station. There are no forms also.</p>
Potential next stations depending on state	<ul style="list-style-type: none"> • Pretest counselling 	<ul style="list-style-type: none"> • HIV Test • End 	<ul style="list-style-type: none"> • Posttest Counselling • End 	<ul style="list-style-type: none"> • End 	
State after completing this station	HTS_INITIATED	HTS_PRETEST_COUNSELLING_COMPLETED_WITH_CONSENT HTS_PRETEST_COUNSELLING_COMPLETED_WITHOUT_CONSENT HTS_PRETEST_COUNSELLING_ABORTED	HTS_HIV_TEST_TESTED_POSITIVE HTS_HIV_TEST_NOT_POSITIVE HTS_HIV_TEST_NOT_POSITIVE_REQUEST_POSTTEST HTS_HIV_TEST_NOT_DONE HTS_HIV_TEST_ABORTED	HTS_POSTTEST_COUNSELLING_COMPLETED HTS_POSTTEST_COUNSELLING_ABORTED	
Precondition state required for entry into station		HTS_INITIATED	HTS_PRETEST_COUNSELLING_COMPLETED_WITH_CONSENT	Any of the following: HTS_HIV_TEST_TESTED_POSITIVE HTS_HIV_TEST_NOT_POSITIVE_REQUEST_POSTTEST	
POC Forms at Station	FRM_REGISTRATION FRM_INITIATE-HTS	FRM-HTS_PRETEST_COUNSELLING	FRM-HTS_HIV_TEST FRM_REFERRAL ?	FRM-HTS_POSTTEST_COUNSELLING FRM_REFERRAL FRM_LINKAGE ?	

States in HTS

State name	Code	Description	Condition to set (all must be met)

HTS Initiated	HTS_INITIATED	Indicates that the client has requested for an HTS session	FRM HTS INITIATION. HTS_SESSION_NUMBER != NULL FRM_PRETEST_COUNSELLING == NULL FRM_HIV_TEST == NULL FRM_POSTTEST_COUNSELLING == NULL
HTS Pretest Counselling Completed With Consent	HTS_PRETEST_COUNSELLING_COMPLETED_WITH_CONSENT	Indicates that the pretest counselling session has completed with the client's consent	FRM_PRETEST_COUNSELLING. CLIENT_CONSENTED == 'Yes' FRM_PRETEST_COUNSELLING != NULL FRM_PRETEST_COUNSELLING. HTS_SESSION_NUMBER == FRM HTS INITIATION. HTS_SESSION_NUMBER FRM_HIV_TEST == NULL FRM_POSTTEST_COUNSELLING == NULL
HTS Pretest Counselling Completed Without Consent	HTS_PRETEST_COUNSELLING_COMPLETED_WITHOUT_CONSENT	Indicates that the pretest counselling session has completed without the client's consent	FRM_PRETEST_COUNSELLING. CLIENT_CONSENTED != 'Yes' FRM_PRETEST_COUNSELLING != NULL FRM_PRETEST_COUNSELLING. HTS_SESSION_NUMBER == FRM HTS INITIATION. HTS_SESSION_NUMBER FRM_HIV_TEST == NULL FRM_POSTTEST_COUNSELLING == NULL
HTS Pretest Counselling Aborted	HTS_PRETEST_COUNSELLING_ABORTED	Indicates that the pretest counselling session was aborted prematurely	Not currently supported
HTS HIV Test Tested Positive	HTS_HIV_TEST_TESTED_POSITIVE	Indicates that the HIV Test was conducted and yielded a final positive result	FRM_HIV_TEST.FINAL_HIV_RESULT == 'Positive' FRM_HIV_TEST != NULL FRM_HIV_TEST.HTS_SESSION_NUMBER == FRM HTS INITIATION. HTS_SESSION_NUMBER FRM_POSTTEST_COUNSELLING == NULL
HTS HIV Test Tested Not Positive	HTS_HIV_TEST_NOT_POSITIVE	Indicates that the HIV Test was conducted and yielded a final non-positive result	FRM_HIV_TEST.FINAL_HIV_RESULT != 'Positive' FRM_HIV_TEST != NULL FRM_HIV_TEST.HTS_SESSION_NUMBER == FRM HTS INITIATION. HTS_SESSION_NUMBER FRM_POSTTEST_COUNSELLING == NULL
HTS HIV Test Tested Not Positive with Posttest Counselling Requested	HTS_HIV_TEST_NOT_POSITIVE_REQUEST_POSTTEST	Indicates that the HIV Test was conducted and yielded a final non-positive result, but the client requested a posttest counselling session nevertheless	Not currently supported
HTS HIV Test Not Done	HTS_HIV_TEST_NOT_DONE	Indicates that the HIV Test was not conducted	FRM_HIV_TEST.FINAL_HIV_RESULT == NULL FRM_POSTTEST_COUNSELLING == NULL FRM_HIV_TEST.HTS_SESSION_NUMBER == FRM HTS INITIATION. HTS_SESSION_NUMBER
HTS HIV Test Aborted	HTS_HIV_TEST_ABORTED	Indicates that the HIV Test was aborted	Not currently supported

HTS Posttest Counselling Completed	HTS_POSTTEST_COUNSELLING_ COMPLETED	Indicates that the posttest counselling session was completed	FRM_HIV_TEST.FINAL_HIV_RESULT == NULL FRM_POSTTEST_COUNSELLING != NULL FRM_POSTTEST_COUNSELLING. HTS_SESSION_NUMBER == FRM_HTS_INITIATION. HTS_SESSION_NUMBER
HTS Posttest Counselling Aborted	HTS_POSTTEST_COUNSELLING_ ABORTED	Indicates that the posttest counselling session was aborted prematurely	