

ScanForm + HIV CBS

Background

Case-Based Surveillance (CBS) is a passive HIV surveillance system that collects longitudinal data from people living with HIV, from diagnosis until death. As national HIV programs shift from measuring services to a human-centered approach, strengthening individual-monitoring systems like CBS are essential for epidemic control.

For facilities lacking infrastructure to support electronic medical record systems (EMRs), ScanForm is a smart and sustainable solution for paper-based reporting. By combining ScanForm with EMRs, a holistic national digital health data system is achieved. As an example, Migori was the first county in Kenya to achieve 100% HIV CBS in 2021, at which point 69% of data was collected with ScanForm and the remaining 31% with EMR.

ScanForm and EMRs can be integrated to form a complete picture of national health systems.

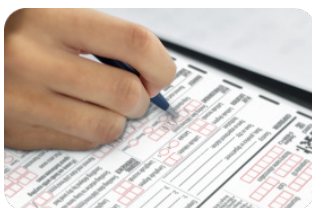
How it works

One ScanForm HIV CBS tool captures a client's clinical history with HIV/AIDS:

(a copy of the tool is shown on the next page)

- **Prospective** (newly diagnosed with HIV): Complete left column (Sections A-C) on the same day of diagnosis. Update Sections D-F as client continues treatment.
- **Retrospective** (previously diagnosed with HIV): Back-fill left column (Sections A-C) with data abstracted from the registers from Section G, and include Sections D-F depending on client's status. Case-Based Reporting (CBR) only collects the first year of care.

The HIV CBS tool is updated from eight Ministry of Health (MOH) registers (section G) as the client continues along the HIV care cascade, including the green card. ScanForm auto-extracts the new information by retaking a photo of the page using a smartphone.



1. Write on paper



2. Take a picture




3. Data is digitized



4. Export and analyze data

HIV CASE - BASED SURVEILLANCE

CASE REPORT FORM



Book No.

Page No.

Discard Record

Photo Taken Photo Taken By


INSTRUCTIONS

Ovals

- Cross ovals with an "X", like this:
- When you make a mistake in an oval, shade it completely like this:
- Write only one symbol in each box.
- Write legibly and completely inside the boxes.
- Always use BLOCK CAPITAL LETTERS for boxes requiring letters.
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- When data is unknown, just leave the boxes blank.

Boxes

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ScanForm HIV-CBS 2.4

REGISTRATION

Reporting Date (dd/mm/yyyy)*

County

Sub-County

Facility Name

Reporting Facility KMHFL Code*

Report type* New case Update of existing case (new sentinel event) Transfer In Correction of previous case report Transit

PATIENT PROFILE/DEMOGRAPHICS

Date of Birth* (dd/mm/yyyy) Sex* M F

CCC No.* - None

National ID No. None

County

Sub-County

Sub-Location

Village/Estate

Phone No.

Age as documented on MOH257 (yrs + mos) +

Age as documented on HTS register (yrs + mos) +

Population Type* Gen Pop Key Pop If Key Pop, tick one MSM FSW PWID

If patient is a child, please fill the information below, if known: None

HEI number

Mother's CCC number

LABORATORY INVESTIGATION: VIRAL LOAD, CD4

Baseline CD4 sample collection date (dd/mm/yyyy)

Baseline CD4 count cells/mm³ Baseline CD4 %

Additional CD4 sample collection date (dd/mm/yyyy)

Additional CD4 count cells/mm³ Additional CD4 %

Viral load sample collection date (dd/mm/yyyy)

Viral load results (c/ml) <LDL: Lower limit is (c/ml)

CLINICAL EVENTS

ARV REGIMEN CHANGES

Date changed to 2nd line (dd/mm/yyyy) 2nd line Regimen

Date changed to 3rd line (dd/mm/yyyy) 3rd line Regimen

TB TREATMENT

Date of start of TB treat. (dd/mm/yyyy)

TB infected at enrollment Yes No

Pregnant at enrollment Yes No

Breastfeeding at enrollment Yes No

DIAGNOSIS AND LINKAGE TO CARE/ANTIRETROVIRAL TREATMENT

Date of HIV Diagnosis (dd/mm/yyyy) Diagnosis by PCR Rapid Antibody test

Date enrolled in HIV care (dd/mm/yyyy) WHO stage at enrollment to care*

Date of ART initiation (dd/mm/yyyy) History of ART at enrollment PEP PEP PMTCT None

Recency HIV infection test conducted? Yes No

ARV Regimen Line* First line Second line Third line

Referred from (Place of 1st diagnosis) HBTIC IPD-Adult VCT Self-test MCH TB Clinic OPD IPD-Child CCC Other (eg STI)

Client tested through Partner Notification Services (PNS)? Yes No

CURRENT STATUS

Date (dd/mm/yy)

Status Change LTFU (28 days) Transfer out LTFU returned to care Death

DATA SOURCE USED* (Select all applicable)

HTS Register HEI register Treatment Preparation Register

ANC register TB Register Individual Clinic Record (e.g. MOH257)

ART Register Viral Load Register Other

PERSON COMPLETING FORM: First and Middle Name

Last Name

PAGE 1

PEPFAR MER 2.6 Indicators that can be auto-generated:

- Section C: Diagnosis and Linkage
- HTS_TST_POS
 - PMTCT_HEI_POS
 - HTS_RECENT
 - TX_NEW
 - TB_STAT
 - PMTCT_STAT
 - PMTCT_FO
 - HTS_INDEX

Section D: Regimens and Treatments

- TX_CURR
- TX_TB

Section E:

- TX_PVLS

Section F:

- TX_ML
- TX_RTT

Other sections:


- Section A: Facility information
- Section B: Patient profile, without PII
- Section G: MOH data sources used

6 Sentinel Events Captured with ScanForm

- HIV diagnosis (section C)
- 1st CD4 test (section E)
- Initiation of ART (section C)
- 1st VL test (section E)
- VL suppression (section E)
- Death (section F)

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PATIENT

First Name

Last Name

IF PATIENT IS A CHILD, FILL MOTHER'S PROFILE

Mother's First Name

Mother's Last Name

REGIMEN CODES

Regimen Code	ARV Combination
01	(AF1A)
02	(AF1B)
03	(AF1D)
04	(AF1E)
05	(AF1F)
06	(AF2A)
07	(AF2B)
08	(AF2D)
09	(AF2E)
10	(AF2F)
11	(AF4A)
12	(AF4B)

Space to support more data elements, such as additional sentinel events, and capture of related issues such as TB, Hepatitis, and COVID-19.

PERSON COMPLETING FORM: First and Middle Name

Last Name

PAGE 2

Unique Identifier

Backside

ScanForm can generate or capture any unique identifier. In Kenya, it computes the same Personal Key Verifier (PKV) used by KenyaEMR, based on personal identifiable information (PII) collected on the backside of the form. This allows paper and electronic records to be linked and deduplicated. PII is stored in a separate repository for additional security.

Advantages



Compliance and security

- Data and servers are *only* in Kenya. Compliance with Kenya's Data Protection Act, NASCOP, and GDPR.
- Auto-deletion of images after upload.



Interoperability

- Generates same patient identifier as KenyaEMR.
- Data is synced with NASCOP data warehouse and dashboards.



Simplicity saves money

- Easy to use. No need to hire auxiliary data clerks.
- No need for stable electricity, network, scanners, computers, or tablets. Works offline and uploads when network is available.
- Extremely low paper costs — a single sheet for the client's life.



Saves time

- 3x faster data entry compared to tablets.
- Scanned source document is remotely available for verification, backed by physical record stored in the facility.
- Auto-generates monthly summary statistics by the 2nd of the month.



Improves data quality

- OCR > 98%, calibrated to local handwriting and self-learning.
- Compiles facility data quality reports for continuous quality improvement.
- Imputation corrects logic errors and missing data.

Data Flow Diagram

