



# Implementing HIV Case-Based Surveillance in Kenya: A Brief

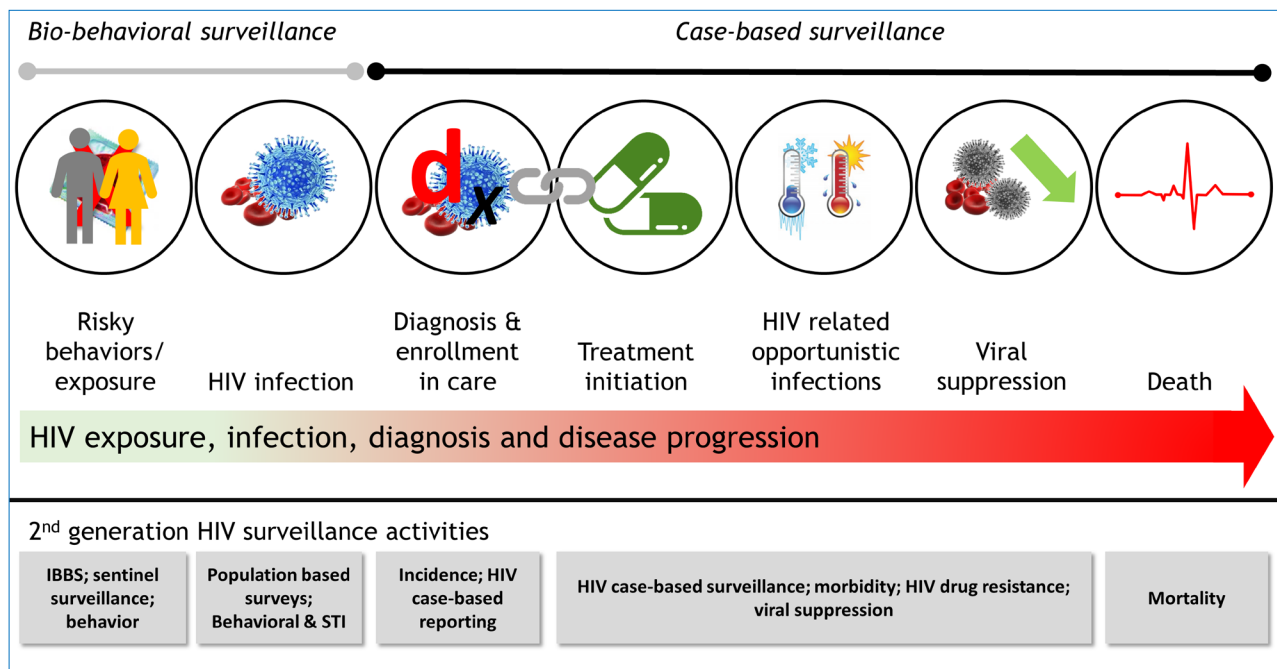
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### What is HIV case-based surveillance?

**H**IV Case Based Surveillance (CBS) is part of second-generation HIV surveillance<sup>1</sup> and involves the identification and reporting of newly diagnosed HIV infected persons and routine longitudinal follow-up of cases beyond diagnosis. CBS monitors the transition of the HIV cases through sentinel events that are related to HIV disease progression. These events include date of

diagnosis, treatment initiation, lab test date, death; lab-related data such as recency of the infection, CD4 count and viral load; opportunistic infections of interest; and vital statistics such as death and cause of death. Events are defined for each country or setting based on data needs, data availability and logistics in collecting such data. Figure 1 illustrates the recommended 2<sup>nd</sup> generation surveillance activities.

**Figure 1: HIV disease stage and related surveillance activities**



<sup>1</sup> Guidelines for Second Generation HIV Surveillance. WHO/UNAIDS Working Group on Global HIV/AIDS and STI Surveillance, 2013.

## Why is HIV case-based surveillance necessary?

Timely and accurate CBS data can be used to inform decisions at local, regional, and national levels. These data should describe the geographic, demographic and risk factor distributions for HIV to inform public health response. While the benefits of CBS are well-known and such systems serve as the backbone of HIV surveillance in developed countries, there are currently limited HIV CBS systems in operation in sub-Saharan Africa.

## Objectives of HIV CBS in Kenya

The Ministry of Health (MOH) through the National AIDS and STI Control Programme (NAS COP) recommends and provides guidance on implementation of HIV CBS in Kenya. The key objectives are:

- a. Strengthen the current aggregate data HIV surveillance systems and complement other 2<sup>nd</sup> generation HIV surveillance activities.

- b. To provide a platform for collecting longitudinal data on people identified with HIV infection into centralized regional and/or national databases.
- c. To identify and characterize recent HIV infections with an aim of targeted interventions and service delivery.
- d. To characterize the evolving HIV epidemic based on longitudinal data of persons living with HIV.
- e. To improve the quality, flexibility and timeliness of information for decision makers in HIV program planning and evaluation.

## Differences between CBS and patient care systems

Although an HIV CBS system can use data from HIV patient care systems, it is not meant for patient management at clinic level. The table below presents the difference in utilization of CBS and patient care systems.

**Table 1: Key differences between HIV CBS and patient care systems**

HIV case-based surveillance	Patient care systems
<ul style="list-style-type: none"> <li>▪ Used for public health monitoring and response</li> </ul>	<ul style="list-style-type: none"> <li>▪ Primarily used for patient management</li> </ul>
<ul style="list-style-type: none"> <li>▪ Data used at level(s) above the facility (e.g. sub-county, county)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Data used at the facility level</li> </ul>
<ul style="list-style-type: none"> <li>▪ De-duplication across sites feasible</li> </ul>	<ul style="list-style-type: none"> <li>▪ De-duplication at facility level</li> </ul>
<ul style="list-style-type: none"> <li>▪ Data compiled from multiple facilities and health information systems</li> </ul>	<ul style="list-style-type: none"> <li>▪ Data are specific for each facility</li> </ul>
<ul style="list-style-type: none"> <li>▪ De-identified data</li> </ul>	<ul style="list-style-type: none"> <li>▪ Identifiable data</li> </ul>

## Using CBS for program improvement

While the primary objective for MoH in implementing HIV CBS is to routinely monitor the dynamics of the epidemic in a timely, longitudinal and comprehensive manner, CBS can provide useful information to facilities to support programmatic planning and response. Specifically, CBS will support program implementation as follows:

1. Implementation of CBS is one of the most conclusive strategies in the routine monitoring of geographic distribution of newly diagnosed persons and prevalent cases; thus providing data for prompt and targeted programmatic response.
2. CBS data are an important source for triangulation of multiple-source data to validate other data sources and understand trends in the epidemic.
3. CBS facilitates overall data quality improvement by supporting de-duplication of HIV cases both within and between facilities.

4. CBS supports monitoring or tracking of case linkage to treatment at facilities; both internal and facilities outside of facility of diagnosis.
5. Functional CBS systems will enhance program performance monitoring at site level for the 95-95-95 targets using CBS dashboards.
6. A CBS system will provide an additional source for routine data quality review and triangulation of data from different sources (e.g. KHIS, CBS, NDWH, DATIM).

## Using CBS for public health action

CBS data are useful for triggering further investigation into a geographic area (as opposed to just facility level) when sudden spikes or unusually large numbers of cases are reported. It is important to understand the underlying pattern of the epidemic, locally and nationally, for correct interpretation. Although HIV case-based reporting may underestimate the number of people with HIV, it may sufficiently represent persons infected and where they live. In table 2, possible HIV program response is presented.

**Table 2: Illustrative public health actions in response to CBS data**

Observed trends	Public health response
<ul style="list-style-type: none"> <li>▪ Drop in HIV new cases</li> </ul>	<ul style="list-style-type: none"> <li>▪ Investigate if testing rates have reduced.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Increase in new HIV diagnoses</li> </ul>	<ul style="list-style-type: none"> <li>▪ Investigate if testing rates have increased or other changes in testing strategies.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Increase in recent infections</li> </ul>	<ul style="list-style-type: none"> <li>▪ Prioritize index partner testing for geographical areas or sub-populations where recent cases are occurring.</li> <li>▪ Prioritize prevention interventions for populations with recent infections.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Increase in time to linkage to care</li> </ul>	<ul style="list-style-type: none"> <li>▪ Find out if these are isolated cases and if patterns are localized.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Increase in number of deaths</li> </ul>	<ul style="list-style-type: none"> <li>▪ Investigate viral load suppression rates, number of patients diagnosed at advanced HIV disease; analyse available data on cause of death.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Age and or sex specific shifts in cases</li> </ul>	<ul style="list-style-type: none"> <li>▪ Investigate if these are location specific; analyse if any changes to testing strategies/patterns.</li> </ul>

## Operationalizing CBS

Due to the existing methods of data collection in Kenya, CBS will be operationalized as indicated in Table 3 below. Each facility setting/scenario has varying levels of resources available to implement CBS. The personnel and data flow channels are equally diverse. For quickest gains in establishing

a comprehensive CBS system, implementation of electronic systems for data collection, storage and submission at facilities is critical. As such, it is prudent for facilities to work towards achieving either scenario A or B; and further prioritize high volume facilities. Of note, only scenario A and B can currently provide the full potential of case-based surveillance.

**Table 3: Summary of HIV case-based surveillance settings**

Data source scenario/setting	Operations
<b>A:</b> EMR and eMobile HTS	Since the eMobile HIV testing services (HTS) links to electronic medical records (EMR), this is the ideal scenario. Data are pulled from EMR into national data warehouse (NDWH). From the NDWH, anonymize cases are sent into the CBS database.
<b>B:</b> EMR + paper HTS	Data should be captured in the MOH 362 paper register and then entered into the HTS module within the EMR.
<b>C:</b> eMobile HTS only (no EMR)	The data collected in the eMobile HTS are uploaded to an eHTS or intermediary server. From here, only HIV-infected cases are sent to the NDWH and then to the CBS database. Sentinel events beyond diagnosis are not captured.
<b>D:</b> All paper	To move forward, at minimum these facilities require investment in eMobile HTS applications, or other electronic data capture applications. Other possible solutions for paper only sites are being explored by the MOH.

## Data management and security

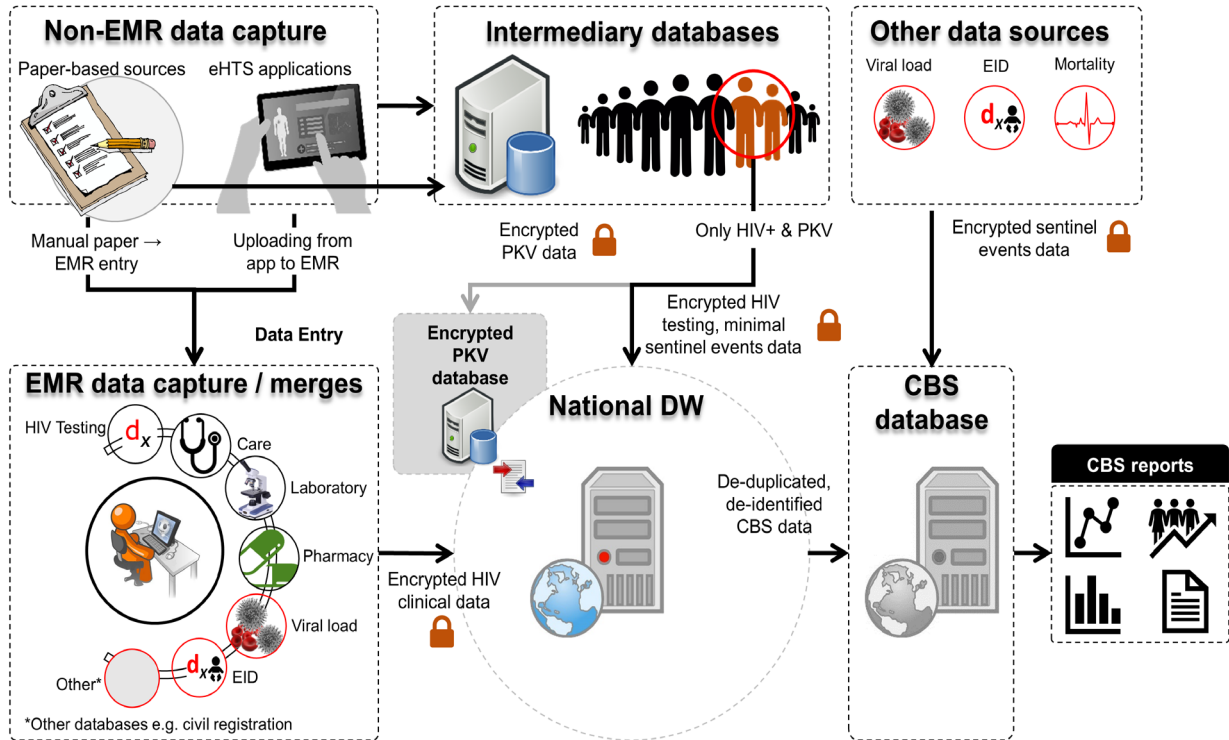
HIV case data are generated at health facilities in the course of service delivery and submitted to the national level through DWAPI to the national data warehouse (DWH). The CBS dashboard developed using data from the DWH and used to generate analytics for HIV program planners. HIV case data are available for review by facility staff, sub-county and county staff, and national HIV program staff; level of access will depend on the role of the staff and where data were collected.

Regardless of the reporting channel, data security is a key feature of the system. Personal

identifying information (PII) is anonymized before transmission to the national level so that it does not link back to specific individuals and stored in secure electronic systems with controlled access. During transmission, data are encrypted using the highest level of security (ISO/IEC 27002). Part of the data management process will include routine data quality audits coordinated by counties with participation by stakeholders to facilitate confidence and utilization of these data. The HIV case-based surveillance database is owned by the Kenyan Ministry of Health under the stewardship of NASCOP.

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**Figure 2: Data flow and management for CBS**



**HTS:** HIV testing services; **Central DW:** Central/ National data warehouse; **ETL:** Extraction, translation and loading; **PII:** Personally identifiable information; **EMR:** Electronic medical records

## Partnerships, roles and responsibilities in CBS

To achieve success, there are numerous stakeholders involved. A summary of their roles and responsibilities are outlined in table 4 below.

**Table 4: Stakeholder roles and responsibilities**

<p>NASCOP Strategic Information Research and Implementation (SIRI) Unit</p>	<ul style="list-style-type: none"> <li>• Establish and coordinate a committee of experts to advise on developing, implementing, monitoring, evaluating and improving HIV surveillance systems in Kenya</li> <li>• Develop and disseminate national roadmap for the implementation of CBS in Kenya</li> <li>• Provide framework and guiding documents for planning and implementation of CBS</li> <li>• Provide overall technical oversight and monitoring of national roadmap</li> <li>• Provide technical guidance to counties implementing CBS</li> <li>• Provide and manage a national platform for data transmission and storage to sub-national levels</li> <li>• Ensure data security for all CBS data</li> <li>• Provide varied levels of access to CBS data and dashboards</li> <li>• Conduct data quality audits on CBS data</li> <li>• Analyse, interpret, report on HIV infections in Kenya</li> <li>• Disseminate CBS routine reports and data dashboards for national, county and facility-level decision makers</li> <li>• Routinely evaluate the surveillance system</li> </ul>
<p>County Health Departments</p>	<ul style="list-style-type: none"> <li>• Coordinate with NASCOP in the implementation of HIV CBS at county levels</li> <li>• Work with county-level collaborating partners to develop a county roadmap for implementation of case-based reporting</li> <li>• Mobilize financial support for resources, as well as sensitization and training of county staff</li> <li>• Lead the monitoring of county roadmap</li> <li>• In collaboration with stakeholders, lead the analysis and interpretation of county level data for decision making</li> <li>• Coordinate county level data review and dissemination activities</li> </ul>

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Service Delivery Partners	<ul style="list-style-type: none"> <li>• Allocate resources to support implementation of CBS within the facilities</li> <li>• Dedicate time and resources for CBS reports review meetings</li> <li>• Coordinating with the surveillance implementing partner, support capacity building for CBS within the counties</li> <li>• Participate in review and updates of guidelines for CBS</li> <li>• Support data quality audits at facility level</li> <li>• Build innovative solutions and strategies to improve data quantity and quality</li> <li>• Participate in county-level HIV TWGs and articulate CBR/S specific needs</li> </ul>
National Surveillance Partner	<ul style="list-style-type: none"> <li>• Support NASCOP in the development of all materials including: guidance documents, SOPs, tool kits, job aides required for implementation of CBS.</li> <li>• Provide technical support to NASCOP and counties in the monitoring of their respective roadmaps for CBS implementation</li> <li>• Provide technical support county level planning and implementation of CBS</li> <li>• Coordinating with the service delivery partners, support capacity building for CBS within the counties</li> <li>• Work with counties and service delivery partners to support data quality audits at facility level on a routine basis</li> <li>• In collaboration with NASCOP, synthesise longitudinal case reports from the data in the data warehouse and establish the main sentinel events on a case-by-case basis</li> <li>• Collaborate with NASCOP in the analysis of individual-level de-identified sentinel events and subsequent generation of reports</li> <li>• Work with NASCOP to develop and disseminate reports and dashboards for CBS data for national, county and facility-level decision makers</li> </ul>

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National HIS Partner	<ul style="list-style-type: none"><li>• Continuously improve EMR and eHTS applications to support both patient management and CBR</li><li>• Collaborate with service delivery partners for capacity building in roll out and utilization of EMRs</li><li>• Develop HIS solutions to facilitate the timely transmission of data to the NDW</li><li>• Collaborate with UCSF on data quality matters within DWH</li><li>• Link and de-duplicate individual patients' data across services and sites</li><li>• Develop and disseminate HIS related materials (tool kits, job aides, SOPs) to support data management and reporting</li><li>• Participate in data quality audits led by the county</li></ul>
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**In conclusion**, implementation of CBS will benefit both County and National MoH by providing timely and accurate data on the status of epidemic and dynamics within sub-populations and geographical areas; facilitating efficient programmatic and policy response. The CBS system will also make these data available for further interrogation at facility level for evaluation of the service delivery response among the populations served. Additional information and resources on CBS are detailed in *HIV Case-Based Surveillance in Kenya: Guidelines for National Implementation* and *Implementing of HIV Case-Based Surveillance: Kenya's Roadmap* which are available at [www.nascop.co.ke](http://www.nascop.co.ke).

### National AIDS and STI Control Programme (NASCOP)

Ministry of Health, Kenya

P.O Box: 19361, Code: 00202 Nairobi, Kenya

T: +254 (0) 20 2630867

E: [headnascop.moh@gmail.com](mailto:headnascop.moh@gmail.com)

