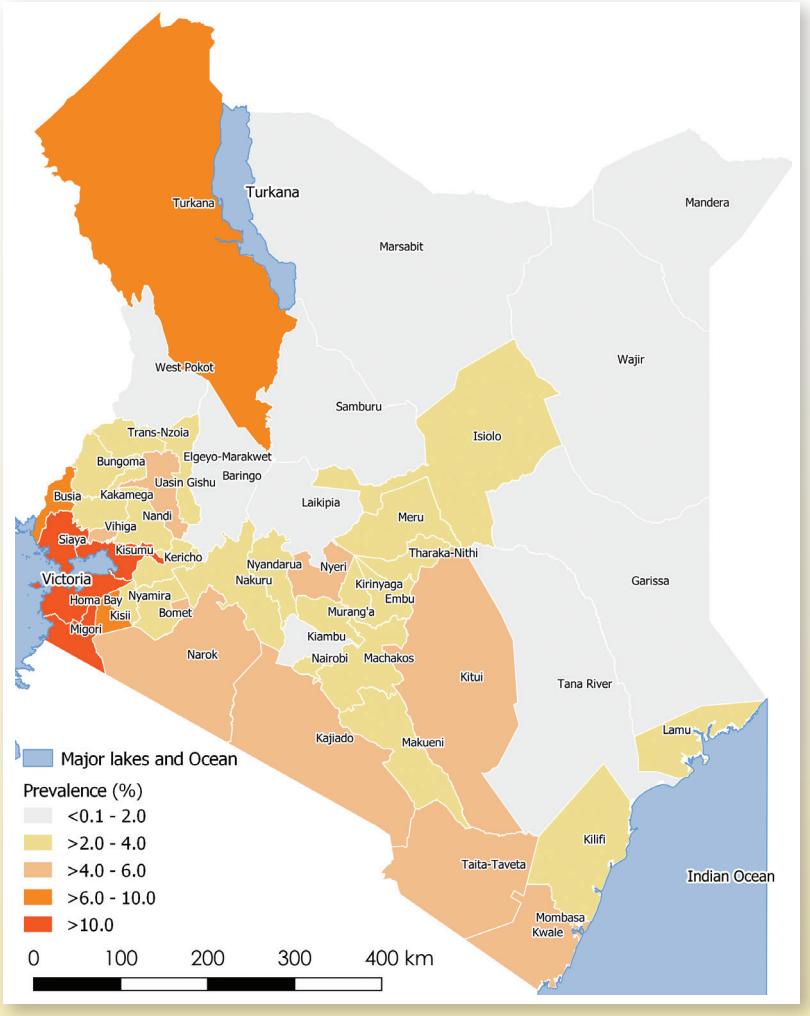
MINISTRY OF HEALTH

IMPLEMENTATION OF HIV CASE-BASED SURVEILLANCE

Kenya's Roadmap



June 2020

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Acknowledgements

The purpose of this document is to provide a roadmap of how CBS will be implemented in the whole country—where to start and why; as well as on overview of the levels of effort required from different stakeholders to achieve full national coverage. This document will be complemented by the Guidelines for National Implementation of CBS and the accompanying standard operating procedures (SOPs) which provide an in-depth overview of how CBS is envisioned in Kenya, definitions, instructions and tools for implementing CBS. This document will be revised periodically to reflect the changes in epidemic and country priorities.

The development of this document has been done as a collaborative effort of multiple institutions and stakeholders under the leadership of the Ministry of Health. We acknowledge with appreciation to these institutions and organizations, both local and international, whose members spent many hours to ensure this document is developed and disseminated. We appreciate the efforts of the Ministry of Health Officials at NASCOP, University of California, San Francisco (UCSF) and the US Centers for Disease Control and Prevention (CDC)-Kenya. Financial support for the development, review and publication of this document was provided by the US President's Emergency Plan for AIDS Relief (PEPFAR), through CDC-Kenya.

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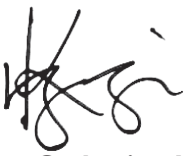

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Acronyms

ANC	Antenatal Clinic
ART	Antiretroviral Therapy
CASCO	County AIDS and STI Coordinator
CBR	Case-based Reporting
CBS	Case-based Surveillance
CCC	Comprehensive Care Clinic
CoE	Committee of Experts
DDSR	Division of Disease Surveillance and Response
KHIS	Kenya Health Information System
DATIM	Data for Accountability, Transparency and Impact
DHS	Demographic Health Surveys
DSS	Disease Surveillance System
DQA	Data Quality Assessment
DWAPI	Data Warehouse Application Program Interface
DW	Data Warehouse
EID	Early Infant Diagnosis
EMR	Electronic Medical Record
HEI	HIV-Exposed Infant
HIS	Health Information Systems
HIV	Human Immunodeficiency Syndrome
HMIS	Health Management Information System
HTS	HIV Testing Services
IDSR	Integrated Disease Surveillance and Response
IP	Implementing Partner
KAIS	Kenya AIDS Indicator Surveys
KENPHIA	Kenya Population-based HIV Impact Assessment
MOH	Ministry of Health

NASCOP	National AIDS and STI Control Program
NDW	National Data Warehouse
PITC	Provider Initiated Testing and Counselling
PMTCT	Prevention of Mother-to-Child Transmission
SCASCO	Sub County AIDS and STI Coordinator
SIRI	Strategic Information and Research Implementation
SOP	Standard Operating Procedures
STI	Sexually Transmitted Infection
TB	Tuberculosis
ToT	Trainers of Trainers
TWG	Technical working group
UNAIDS	Joint United Nations Programme on HIV/AIDS
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

1. Background

As the Kenya epidemic matures, there is increasing demand for data to adequately monitor the dynamics in the epidemic and the gains made over 20 years of investment in HIV programming. The current HIV surveillance system has relied heavily on periodic and cross-sectional surveys such as the Kenya AIDS Indicator Surveys (KAIS), the Kenya Population-Based HIV Impact Assessment (KENPHIA) and Demographic and Health Surveys (DHS); as well as programmatic data, which are collected in aggregate form. One of the limitations of the current system is the challenge in describing in fluid and timely manner the epidemic along the cascade of care from diagnosis, to entry into care, ART initiation, viral suppression and other outcomes.

To address this limitation, Kenya will be implementing HIV case-based surveillance (CBS). HIV CBS involves the capture of individual-level information from persons diagnosed with HIV infection. Case-based surveillance can measure and characterise persons newly diagnosed with HIV, their immune status at diagnosis and provide information on the number and characteristics of persons living with HIV, the time from diagnosis to entry into care; retention in care, use of ART, time from ART initiation to viral suppression, the proportion of prevalent cases who are virally suppressed, and HIV mortality.[1] Moreover, HIV CBS systems can monitor and detect shifts in the epidemic and enable characterisation of the population failing to be reached by programmatic efforts. The WHO/UNAIDS guidelines for second-generation HIV surveillance recommend CBS for monitoring HIV infection in countries with generalized epidemics such as Kenya.[2]

After conducting a pilot in 2015 in Siaya and Kisumu counties, NASCOP found that data to implement CBS in Kenya were available, but in varying formats and quality; that it was indeed possible to systematically collect, store and analyse individual-level data; and further that a multi-data source and geographically phased approach would be needed to roll out CBS on a national scale.[3]

This document outlines the overarching, high-level roll-out plan for CBS. The document's purpose is to provide a roadmap of how CBS will be implemented in the whole country—where to start and why; as well as on overview of the levels of effort required from different stakeholders to achieve full national coverage. This document will be complemented by the CBS Guidelines for National Implementation; which appendices have standard operating procedures (SOPs) providing an in-depth overview of how CBS is implementation is envisioned on the ground, definitions, instructions and tools for implementing CBS. In addition, guidelines on data security and governance around CBS to supplement this roadmap will be developed.

1 UNAIDS/WHO Working Group. Guidelines for Second Generation HIV Surveillance : an update : know your epidemic. 2011

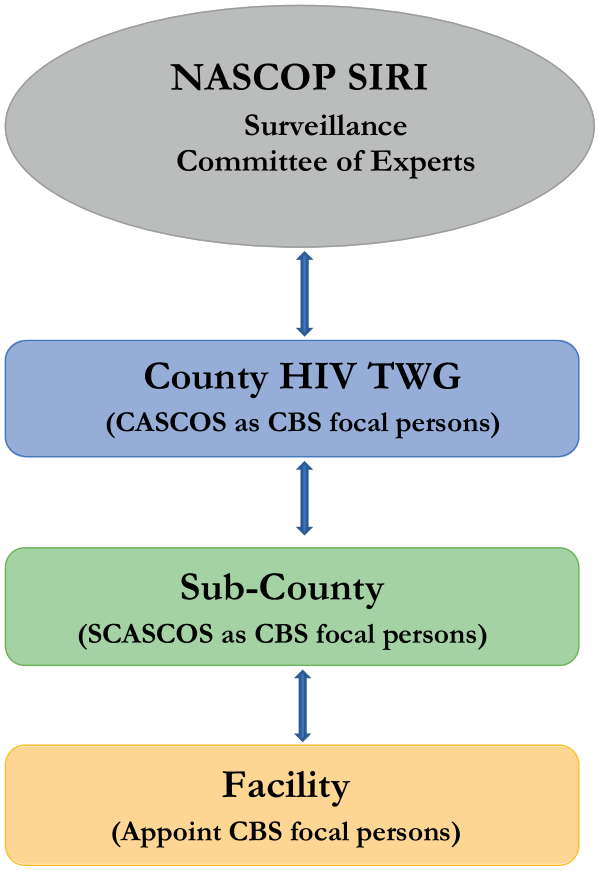
2 World Health Organization. Consolidated strategic information guidelines for HIV in the health sector. 2015

3 National AIDS and STI Control Programme, Ministry of Health K. Case-based Surveillance of HIV in Kenya: Results of a pilot conducted in Kisumu and Siaya. 2017

2. Overall coordination of CBS in Kenya

The HIV Case-Based Surveillance in Kenya: Guidelines for National Implementation (www.nascop.or.ke) describe in detail the mechanisms for coordinating HIV CBS planning and implementation. Figure 1 below highlights the different levels of coordination required.

Figure 1: Coordination Structure of HIV CBS System



This coordination mechanism will be crucial in engaging CBS stakeholders (funders, case reporting agencies, people living with HIV, civil society organizations (CSOs) and users of the CBS data and ensuring buy-in and support of CBS system users. At the national level the NASCOP Strategic Information and Research Implementation (SIRI) will take the lead in coordinating and develop policies and guidelines that support the planning and implementation of CBS. They will form a CBS taskforce (committee of experts) with key stakeholders and partners to help conceptualize and facilitate the implementation of CBS at the national level, as well as provide support to the county implementation process. At the county level, the CASCOs working with SCASCOs will be the focal persons to coordinate county-level stakeholders, steer and monitor CBS implementation. In addition to government-led coordination, implementing partners working with facility-level staff will be critical in supporting MOH with resources (staff, equipment, internet) to operationalize CBS at facility level.

3. Roles and Responsibilities

Full implementation of CBS will require a coordinated approach across various stakeholders. There are several activities required for successful implementation of CBS including: technological improvements, innovation and expansion of the use of electronic systems in data collection and management systems, supporting counties on strategic planning, developing and disseminating guidance and policy documents to support, monitoring roll out of CBS, analysis and dissemination of CBS data, evaluation of the surveillance system and overall financing of CBS. Table 1 below lists objectives, activities and responsible parties.

Table 1: Activities, Roles and Responsibilities for CBS Implementation

Activity	Responsible Parties
Objective: Coordination	
• National coordination	NASCOP
• County coordination including ensuring timely reporting	County departments of health
• Policy and guideline development	NASCOP with support from national surveillance partner
Objective: Technology for CBS	
• Update EMRs and mobile HTS solutions, APIs for data transmission and de-duplication, automated data quality checks	NASCOP with support from national HMIS partner
• Implement EMRs, mobile HTS and HTS module solutions for clinical management at the facility level	County with support from implementing partners
• Host servers at county level	County with support from implementing partners
• Host servers at national level	NASCOP with support from national HMIS partner
Objective: Sensitization and Capacity Building	
• Engage and sensitize counties for CBS	NASCOP with support from national surveillance partner
• Train IPs on implementation updates to EMRS, mobile HTS applications and modules	County with support from national HMIS partner
• Train facility staff on reporting procedures	County with support from implementing partners
• Train trainers of trainers (ToTs) at county level on reporting procedures	NASCOP with support from national surveillance partner
• Develop and disseminate CBS-specific guidelines, SOPs, slides, tools to support CBS roll out.	NASCOP with support from national surveillance partner

Objective: Data storage and Management	
• Provide Server space	NASCOP
• Manage the receiving and storage of data in DWH	NASCOP with support from national HMIS partner
• Develop and implement de-duplication algorithms for CBS data	NASCOP with support from national HMIS partner
• Push data on a monthly basis to CBS staging database	NASCOP with support from national HMIS partner
• Routinely conduct data quality reviews for the NDWH and CBS database	NASCOP with support from national HMIS and surveillance partner
• Develop and manage CBS database.	NASCOP with support from national surveillance partner
• Pull data from CBS staging database on a monthly basis for analysis	NASCOP with support from national surveillance partner
Objective: Data Analysis, Use and Dissemination	
• Design and develop CBS dashboards, analyses and reports	NASCOP with support from national surveillance partner
• Conduct analysis and visualizations for CBS data	NASCOP with support from national surveillance partner
• Provide access to dashboards and disseminate data to relevant stakeholders	NASCOP with support from national surveillance partner
Objective: Financing	
• Financing of CBS	NASCOP with support of donors
• Mobilize extra resources	NASCOP with support of donors

4. Implementation Roadmap

4.1 Roadmap Considerations

The roadmap for implementation of CBS has put several factors into consideration:

Learning from pilot findings:

In 2015 NASCOP led a CBS pilot in Kisumu and Siaya counties[4]. The key findings for this exercise were that CBS implementation is feasible in Kenya, that current data collection tools and systems could be used as data sources for CBS and that leveraging on existing electronic systems would be the most efficient and cost-effective way to implement CBS.

County HIV Prevalence:

The Kenya 2018 estimates report the prevalence at 4.9% with an estimated 1.5 million adults and children infected with HIV nationwide[5]. HIV prevalence varies with geographic region (ranging from 21.0% and 20.7% in Siaya and Homabay counties of Nyanza region respectively, to approximately 0.1% in Wajir county in North Eastern region) [4]. CBS should prioritize counties with higher HIV prevalence initially. However, lower prevalence counties should not be deprioritized entirely as they pose unique challenges and could also include pockets of high prevalence or transmission hotspots despite having overall low prevalence.

Utilization and functionality of EMRs in facilities:

In addition, EMR implementation varies by county with Western Kenya counties, Nairobi and Mombasa county having the highest rates of EMR utilization, measured by the proportion of total patients in HIV care whose records are in EMRs. Furthermore, a mapping exercise of EMR coverage conducted in 2017 found that facilities using EMRs capture approximately 61% of patients on treatment and care in Kenya (2019). The main EMRs used in Kenya are IQCare and versions of Open MRS including Kenya EMR. It is envisioned that Kenya will transition to one EMR (Kenya EMR). Facilities primarily use EMRs for data management of HIV clinical services.

Roll out of mobile HTS applications or HTS modules within EMR:

While EMRs are primarily used for HIV clinical care data management, IQCare and KenyaEMR have incorporated e-Care improvements to include an HTS module which allows functionality of one data collection, storage and management system for both diagnosis and treatment data when services are delivered in the same facility. Where the use of the HTS module is not practical or possible, mobile HTS applications have been developed and deployed to facilitate the collection and reporting of HIV testing and positivity data. Providers use mobile HTS applications at testing points and push testing data to an EMR database in facility-based EMRs servers.

4 National AIDS and STI Control Programme, Ministry of Health K. Case-based Surveillance of HIV in Kenya: Results of a pilot conducted in Kisumu and Siaya. 2017. www.nascop.co.ke

5 National AIDS Control Council (NACC), National AIDS and STI Control Programme (NASCOP) K. Kenya HIV Estimates Report 2018. October, 2018 [cited 2017 Mar 16];1–28.

HIV treatment providers at comprehensive care clinics (CCC) can then retrieve these testing data for individual patients whenever patients are due for enrolment or to start treatment and continue documentation of clinical service delivery on individual patient files. The mobile HTS applications can also be used at paper-only facilities to abstract HIV-positive cases only for reporting to the CBS database. There are currently two mobile HTS applications in use at public health facilities in Kenya: mUzima and Afya mobile which work with KenyaEMR and IQCare respectively.

Patient volume in facilities with EMR:

Patient volume at facilities is another important consideration. For quick initial progress in building a CBS system, receiving the bulk of cases in a defined geographic area is beneficial for both the MOH and stakeholders. Such data can be useful in initial analyses and decision making, though with some limitations due to coverage. Additionally, counties can benefit from a broad learning experience as high patient volume facilities will have multiple data sources and complex logistics for data management.

Readiness and enthusiasm of the counties:

It is also important to qualitatively assess the readiness and enthusiasm for CBS in county leadership. CBS relies heavily on county-level leadership for its planning, coordination, implementation and monitoring. Counties should have CBS as a priority in their strategic plans and lead the coordination, advocacy and implementation efforts with their partners and stakeholders. In addition, counties should be seen to make deliberate efforts towards implementing CBS. These may include conducting sub-county and facility sensitizations on CBS, conducting assessment of facility readiness, and documenting the agreed-upon approaches and timeline for implementation.

Available resources:

CBS implementation requires resources (human, hardware, software, infrastructure etc). First CBS should leverage existing systems in facilities as a platform from which data are derived. Where systems don't exist, counties should work with implementing partners to advocate and coordinate efforts for resource mobilization to build or implement such systems. Of note however, as CBS builds on existing data management and reporting systems, expansion or improvements that benefit CBS should not be at the expense or additional burden to clinical care and routine program monitoring and reporting.

CBS guidelines recommendations:

The Kenya CBS Implementation Guidelines provide details regarding setting up of an HIV CBS system including a description of the components of the system, sources of the data to be reported to the system, the data repository, mechanisms of evaluating the system, how the system will be governed to ensure adherence to ethical principles, and possible data analysis outputs.

4.2 County-level Phased Approach

Taking into consideration the following criteria: HIV burden, utilization of EMRs with HTS modules; patient volume in EMRs; and readiness/enthusiasm of the counties to adopt CBS. An illustration of a tiered approach in the implementation of CBS in the country is shown in table 2 below. From a national perspective, Tier 1 will receive priority support. This however doesn't preclude other counties from beginning the process of CBS implementation.

Table 2: Prioritization of Geographical Implementation of CBS

County	2019 HTS_ POS	2019 TX_ CURR	# Facilities w/EMR	Dec 2019 # Facilities Reported in NDWH	Dec 2019 # TX_CURR or Active Clients Reported to NDWH	Tiers
Nairobi	24,699	137,761	125	85	112,323	**TIER 1:** • 9 counties • 60.8% of those on treatment • 57.7% of those diagnosed
Homa Bay	14,565	106,156	58	26	43,156	
Kisumu	11,857	105,820	64	45	45,055	
Siaya	9,817	87,733	113	109	72,887	
Migori	9,137	71,890	41	32	30,390	
Mombasa	6,639	45,087	37	9	21,804	
Kakamega	5,611	42,529	44	33	19,956	
Kiambu	7,897	39,983	40	23	23,383	
Nakuru	6,654	38,825	22	16	20,786	
Busia	3,450	32,583	23	15	16,232	**TIER 2:** • 11 counties • 22.8% of those on treatment • 22.4% of those diagnosed
Kisii	4,105	30,941	29	27	19,588	
Machakos	4,353	25,835	32	28	19,636	
Uasin Gishu	4,154	24,554	24	21	14,904	
Kilifi	4,076	23,953	21	4	9,208	
Bungoma	4,138	23,759	24	24	6,132	
Makueni	2,834	20,413	29	21	15,591	
Kitui	2,944	20,238	33	19	12,769	
Meru	3,341	18,739	28	20	12,459	
Nyeri	2,064	17,653	32	30	14,931	
Muranga	2,191	15,392	28	26	14,517	

County	2019 HTS_ POS	2019 TX_ CURR	# Facilities w/EMR	Dec 2019 # Facilities Reported in NDWH	Dec 2019 # TX_CURR or Active Clients Reported to NDWH	Tiers
Vihiga	2,207	14,947	19	18	7,206	**TIER 3:** • 15 counties • 14.4% of those on treatment • 17.0% of those diagnosed
Trans Nzoia	3,168	14,494	15	9	3,057	
Kericho	2,138	13,888	16	0	1,128	
Kajiado	2,707	13,827	20	13	8,398	
Nyamira	2,287	13,771	24	24	8,213	
Kirinyaga	1,570	10,811	16	7	7,275	
Bomet	1,407	10,529	20	1	963	
Kwale	2,123	10,129	12	0	4,428	
Nandi	1,359	9,718	20	1	5,143	
Embu	1,316	9,346	20	19	5,210	
Nyandarua	1,493	8,755	19	19	8,067	
Narok	2,484	8,610	20	1	2,976	
Turkana	2,005	8,122	18	12	4,431	
Tharaka Nithi	1,051	6,843	14	7	4,997	
Laikipia	1,270	6,302	16	10	5,191	
Taita Taveta	919	5,755	15	2	3,703	**TIER 4** • 12 counties • 2.0% of those on treatment • 2.9% of those diagnosed
Baringo	661	4,097	10	10	3,483	
Elgeyo Marakwet	621	2,770	8	5	1,381	
West Pokot	780	2,222	6	6	1,241	
Lamu**	236	1,552	3	0	0	
Samburu	377	1,366	3	3	728	
Garissa**	283	1,314	0	0	0	
Marsabit**	224	916	5	0	0	
Tana River**	169	814	11	0	0	
Mandera**	77	644	0	0	0	
Isiolo **	396	592	2	0	0	
Wajir **	45	276	1	0	0	
Kenya	**167,899**	**1,112,254**				

*Abstracted from KHIS

**These counties have transitioned out of PEPFAR support to County-led support and funding for their HIV programmes.

†Number of active patients (TX_CURR) reported to NDWH as of September 2019

Using the tier approach above, if first-tier counties should achieve 100% of CBS from facility-based sources of data, the CBS system would capture approximately 45% of prevalent HIV cases in Kenya. Addition of the eleven 2nd tier counties would facilitate approximately, 62% of the prevalent cases. While the tier system emphasizes on a quantitative approach, qualitative information and local context should be included in final decision making. Each county should develop a micro-plan on how it will attain coverage for CBS. Guidance on considerations for putting together a micro-plan including facility mapping, which facilities to start with, who to involve, sample tools etc, are included in Appendix 3.

4.3 Facility-level Approach

While it is ideal for each county to achieve 100% coverage of CBS, there is diversity in the scenarios or settings and resources available in each county. As such, we acknowledge that achieving 100% capture of all new and prevalent cases is likely to be a phased process. To achieve the quick gains in CBS implementation, Kenya and each county will prioritize reporting from facilities with EMRs and mobile HTS applications; prioritizing those with high patient volume. Table 3 below illustrates the possible scenarios in facilities. Counties will prioritize category A and B facilities in their initial phase (Phase 1) of CBS implementation.

Table 3: Summary of CBS/R Data Source Settings

Data source scenario/setting	Operations
A: 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, anonymized cases are sent into the CBS database.
B: EMR + paper HTS	Data should be captured in the MOH 362 paper register and then entered to the HTS module within the EMR.
C: eMobile HTS only (no EMR)	The data collected in the eMobile HTS are uploaded to eHTS or intermediary server. From here, all HIV-infected cases are sent to the CBS database. Capture of sentinel events beyond HIV diagnosis is not required.
D: All paper	At minimum, where possible facilities would need to investment in using an eMobile HTS applications or another electronic data capture tool. Simultaneously, the MOH is working on alternative solutions for paper sites.

4.4 Logical Framework for Implementation

Table 4 provides an overview of the logical framework for the roadmap. All activities are aligned to MOH priorities as well as priorities set out by stakeholders.

Table 4: Logic Model for Implementation of HIV Case-Based Surveillance in Kenya

Objectives & Activities	*Outputs*	Outcomes *(Intended effects or changes that will result from CBR/S activities)*		
		Short-Term Outcomes (1-2 years)	**Intermediate Outcomes (3-4 years)**	**Long-Term Outcomes (5th year)**
Coordination ▪ Stakeholder engagement ▪ County coordination ▪ Dissemination of CBS guidelines in appropriate forums at county level **Technology for CBS** ▪ Roll-out of EMRs in high volume sites ▪ Roll out of e-HTS application in sites with and without EMRs ▪ Development of CBS dashboards ▪ Sustainable data hosting **Sensitization and capacity** ▪ County engagement and sensitization ▪ Capacity building at the county level for implementation of CBS	▪ CBS guidelines available and accessible in all counties ▪ CBR/S data available in the national DWH on a monthly basis ▪ CBS dashboards available and accessible for use by stakeholders ▪ Technical capacity in describing the epidemiology of HIV at national and county level	▪ Increased and sustained local/ county level human resource and health systems capacity for CBR/S in Kenya ▪ Fully functional platform for collecting longitudinal data on children, adolescents and adults identified with HIV infection into centralized regional and/ or national databases ▪ Increased availability of high-quality individual-level data for characterizing the evolving HIV epidemic based on longitudinal data of persons living with HIV	▪ Increased and high-quality scientific CBR/S related outputs (manuscripts and abstracts) ▪ Integrated HIV CBR/S and recent HIV infections data for better synthesis and response ▪ Improved quality, flexibility and timeliness of information for decision makers in HIV program planning and evaluation.	▪ Strengthened data HIV surveillance systems for better national public health surveillance ▪ Improved documentation of HIV program coverage and impact ▪ Increased understanding of evolving HIV epidemiology in Kenya

5. Monitoring CBS implementation

Monitoring implementation progress will be a key function of MOH with support from implementing partners. Monitoring of progress should occur at county and national levels. At the county level, counties with support from implementing partners and other stakeholders will lead the effort. Based on individual county-level implementation roadmaps, counties will monitor data source-level aspects including but not limited to data quality, data completeness, and data reporting. In addition, counties will monitor their roadmap milestones and timelines for CBR/S coverage in their counties. At the national level, NASCOP will lead monitoring of CBS implementation with support from the surveillance committee of experts (CoE). The national roadmap table of geographic prioritization (Table 2) will be used to monitor overall implementation for the country. Additionally, county departments of health and NASCOP will monitor progress and success using uniform indicators in Table 5 below.

Table 5: Monitoring CBS Implementation

INDICATOR	DESCRIPTION	WHO
Indicator 1	A functioning CBS system collecting data of HIV cases from "diagnosis to death"	National/ County
▪ Indicator 1.1	HTS Application or HTS modules coverage for facilities that reporting 80% of newly identified cases.	County
▪ Indicator 1.2	EMR and HTS Application coverage for facilities reporting 80% of prevalent cases at the end of the prior year.	County
▪ Indicator 1.3	Timely reporting of indicator 1.1 and 1.2 facilities into the NDWH. Specifically upload of data consistently (last and consecutive 3 months) on or before (5th of month) deadline.	County
▪ Indicator 1.4	Data quality verification score of 90% or higher within each reporting step for last and consecutive 3 months. Specifically confirm alignment of data documented at the facility with what appears at DWH and CBS dashboard.	County
Indicator 2	Percentage and number of sites that report CBS data to the NDWH passively (data must meet the criteria in indicator 1.3 and 1.4).	National
Indicator 3	Data triangulation alignment of ≥95% of key indicators across different reporting systems (KHIS/DATIM/CBS). ▪ 1. Newly diagnosed ▪ 2. New on treatment ▪ 3. Currently on treatment	National
Indicator 4	Percentage and number of county and sub-county HIV and STI coordinators, county health record information officers and HIV program managers at national and subnational level that access dashboards.	National
Evaluation	Evaluation of the surveillance system conducted every 2 years. (county-level and national level). To include end-user survey and assessment of utilization of CBR/S data at sub-county/county/ national level for decision-making.	National/ County

6. Roadmap Timelines

Timelines for implementation within county levels should be included in the county micro-plans. Of note, is implementation does not have to occur sequentially by tier, and within the micro-plans, counties can make decisions on individual targets. At the national level, CBS can be established within a 2-year period. Table 6 below is an illustration of the expected timeline. For the most part, 2020 will focus on reporting of Tier 1 and 2 counties for all their Phase 1 (scenario A&B) facility types. In the last quarter of 2020 at least 1 of the Tier 1 and Tier 3 counties will start reporting from their Phase 2 facilities. While this roadmap guides national level strategic planning and monitoring, counties in collaboration with their partners will develop micro-plans which may move at a faster pace than the national roadmap prescribes. Coordination between the national and county-level MOH surveillance units will be important in updating the national roadmap based on county-level decision making.

Table 6: Priority Counties for CBS Roll Out 2020

January-December 2020		
	Counties	**Notes**
January-March 2020	• Siaya, Phase 1 • Kisumu, Phase 1 • Homabay, Phase 1	• Siaya IP (CHS, Ngima for Sure, KCCB-KARP) • Kisumu IP (ICAP, FACES, Afya, DOD, KCCB-KARP) • Homabay (EGPAF, AHF, KCCB)
April-June 2020	• Kakamega, Phase 1 • Nakuru, Phase 1 • Nyeri, Phase 1 • Machakos, Phase 1	
July-Sept. 2020	• Mombasa Phase 1 • Kiambu Phase 1 • Makueni, Phase 1 • Uasin Gishu, Phase 1 • Kirinyaga, Phase 1	
Oct-Dec 2020	• Nairobi, Phase 1 • Migori, Phase 1 • Siaya, Phase 2 • Muranga, Phase 1 • Nyamira, Phase 1 • Baringo, Phase 1 • Isiolo, Phase 1 & 2	• Isiolo is a transition county

*Phase 1 involves reporting from all facilities with scenarios A (EMR and eMobile HTS) or B (EMR + paper HTS)

**Phase 2 involves reporting from all facilities with scenarios C (eMobile HTS only) or D (All paper)

*** Green=Tier 1 county; Blue=Tier 2 county; Red=Tier 3 county

Appendix 1: HIV Case-Based Surveillance Form

Version: 25 Sept 2018

A. REGISTRATION

***Person Completing Form**: First Name* _____ *Last Name:* _____

Reporting Date: __ __ /__ __ /__ __ __ __
Reporting County: _____
Reporting Sub-County: _____
Reporting Facility Name: _____
Reporting Facility MFL code: |__|__|__|__|__|

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

B. PATIENT PROFILE / DEMOGRAPHICS

Patient Name: First: Middle: Last:

Date of Birth (DD/MM/YYYY): __ __ / __ __ / __ __ __ __

Age as documented on MOH257: |__|__|

Age as documented on HTS register: |__|__|

Phone No.: |_|_|_|_|_|_|_|_|_|_| ☐None
Ward: _____
Village/Estate: _____
Sub-County: _____
County: _____

Sex: ☐Male ☐Female

Population type: ☐Gen pop ☐Key Pop **If Key Pop, tick one** ☐MSM ☐FSW ☐PWID

CCC No.: |__|__|__|__|__|-|__|__|__|__|__| ☐ None

National ID No.: |_|_|_|_|_|_|_|_|_|_|_| ☐ None
Other unique No[1]: _____

If patient is a child, then fill below if known for additional profile information to assist in patient identification.

HEI number: |_|_|_|_|_|_|_|_|_|_|_| ☐ None **Mother's CCC number:** |__|__|__|__|__|-|__|__|__|__|__|

Mother's Name: First: Middle: Last:

C. HIV DIAGNOSIS AND LINKAGE TO CARE/ANTIRETROVIRAL TREATMENT (ART)

Date of HIV Diagnosis: __ __ /__ __ /__ __ __ __ **Diagnosis by:** ☐ PCR ☐ Rapid Antibody test

Recency HIV infection test conducted?[2] ☐ Yes ☐ No **If yes, HIV infection recent?**[3] ☐ Yes ☐ No

Referred from (Place of 1st diagnosis)

☐ HBTC	☐ MCH	☐ IPD-Adult	☐ Other (e.g. STI) _____
☐ VCT	☐ TB Clinic	☐ CCC	
☐ OPD	☐ IPD-Child	☐ Self-test	

Client tested through Partner Notification Services (PNS)?[4] ☐ Yes ☐ No

WHO stage at enrollment to care: |__|
TB infected at enrollment: ☐ Yes ☐No
Pregnant at enrollment: ☐ Yes ☐No
Breastfeeding at enrollment: ☐ Yes ☐No

History of ART at enrollment:
☐ PrEP ☐ PEP
☐ PMTCT ☐None

Date enrolled in HIV care:
__ __ / __ __ / __ __ __ __
Date of ART initiation:
__ __ / __ __ / __ __ __ __

D. CLINICAL EVENTS

ART Regimen Changes
Date changed to 2nd line ART __ __ / __ __ / __ __ __ __
Date changed to 3rd line ART __ __ / __ __ / __ __ __ __

TB treatment[5, 6]
Date of start of TB treatment __ __ / __ __ / __ __ __ __

E. LABORATORY INVESTIGATION: VIRAL LOAD, CD4

CD4 sample collection date: __ __/ __ __ / __ __ __ __
CD4 test results: _____ Cells/μL **OR** CD4% _____

VL sample collection date[6] __ __ / __ __ / __ __ __ __
VL result _____c/ml ☐ <LLD [lower limit is __ __ c/ml]

F. STATUS

LTFU[7]: ☐ **LTFU as of Date:** __ __ / __ __ / __ __ __ __
Transfer out: ☐ **Transfer out Date:** __ __ / __ __ / __ __ __ __
Death: ☐ **Date of death**: __ __ / __ __ / __ __ __ __

G. DATA SOURCE USED (Select all applicable)

☐ HTS Register
☐ Treatment Preparation Register
☐ ART Register
☐ Individual Clinic Record (e.g. MOH257)
☐ ANC register
☐ HEI register
☐ Viral Load Register
☐ TB Register
☐ Other: _____

H. NOTES

1. **Other Unique Number**: Pull down with ANC number, DSS number and any other agreed upon
2. **Recency HIV test conducted:** This is a place holder
3. **HIV infection recent:** This is a place holder
4. **Client tested through PNS:** This is a place holder
5. **Date of start of TB treatment**: included as proxy for date of TB diagnosis
6. TB occurrences and VL results are **repeated events**. Report all occurrences.
7. **LTFU**: Not appearing for >90 days since last clinic appointment.

Appendix 2: Roadmap Timelines for CBS by County Tier and Facility Phase

Table 7: Overview of Phased CBS Implementation

	January-December 2020				January-December 2021			
COUNTY TIERS	**Q 1**	**Q 2**	**Q 3**	**Q 4**	**Q 1**	**Q2**	**Q3**	**Q4**
TIER 1	3 P1	2 P1	2 P1	2 P1 & 1 P2	2 P2	2 P2	2 P2	1 P2
TIER 2		2 P1	3 P1	2 P1	2 P2 & 3 P1	3 P2 & 3 P1	3 P2 & 3 P1	4 P2
TIER 3				1 P1 & P2	2 (P1 & P2)	3 (P1 & P2)	3 (P1 & P2)	3 P1 & 6P2
TIER 4					1 (P1 & P2)	3 (P1 & P2)	3 (P1 & P2)	34(P1 & P2)

*Tier 1: 9 counties; Tier 2: 12 counties; Tier 3: 14 counties; Tier 4: 12 counties

**Phase 1: Facilities with scenario A (EMR and eMobile HTS) or B (EMR + paper HTS)

***Phase 2: Facilities with scenario C (eMobile HTS only) or D (All paper)

Based on mapping of the counties in Table 2, we took into consideration the following: HIV burden (using number on treatment and number diagnosed HIV positive in most recent year), utilization of EMRS in both HTS and in treatment and care service delivery points, availability of support from implementing partners and readiness or enthusiasm of counties to implement CBS. Based on table 2, counties were divided into tiers and a phased 2-year plan (Appendix 2) has been outlined to guide the national and county MOH on implementation.

Between January and December 2020, we propose to activate CBS in all 9 tier 1, 7 tier 2 and 1 tier 3 counties within all their phase 1 type of facilities. We also propose to roll out CBS in phase 2 type facilities in only 2 counties to set the learning platform for future implementation. In 2021 we plan to learn from counties implementing and roll out CBS to the remainder of the counties.

Appendix 3: Preparing for Implementation of HIV CBS

Overview

For counties to begin rolling out of CBS, there needs to be a system and facility assessment to determine the best implementation approach. Counties have different levels of disease burden, human recourses, data collection systems or structures, implementation partner support and financing. As such, under the leadership of the CASCO and with support from the national surveillance CoE, counties should conduct the following exercises:

Step 1: County facility mapping

Facility mapping involves exhaustively listing and identifying facilities that provide HIV services in the geographic area of interest (in this case county). The purpose of this exercise is to identify all possible sources of HIV CBS data. This exercise includes a listing of all facilities reporting to KHIS on HIV tests and persons currently in HIV care. Additionally, the numbers reported on these key indicators (numbers of HIV positives and currently on care) for the most recent quarter or year should be included in this report. Finally, the report should stratify these facilities into the following scenarios:

- ***Scenario 1: Facilities using eMobile HTS application and EMR at the clinic:*** These facilities at HTS points of service delivery utilize the eMobile HTS application (which mirrors the MOH 362 paper register) to document services delivered. This application serves as an electronic MOH 362; uploading all data into a designated eHTS App server. Data on the eHTS App server is then pulled into the EMR at the facility to support linkage and continuation of care for HIV positive individuals.

- ***Scenario 2: Facilities using paper registers at HTS and EMR at the clinic.*** These facilities utilize paper registers (MOH 362) to document all HTS service delivery. In routine practice, there is no transfer of data from paper register into the EMR client file.

- ***Scenario 3: Facilities using eMobile HTS application at HTS and paper registers at the clinic.*** Such facilities have implemented the eMobile HTS mobile application, however, for clinical care, they use paper-based documentation (green card/MOH 257).

- ***Scenario 4: All paper.*** In these facilities, all service delivery is documented on paper-based registers or files.

Table 8 is an illustration of a facility mapping report. Using this mapping report, the CASCO should in collaboration with the county HIV TWG and/or relevant stakeholders develop a workplan for rolling out CBS in the county. The workplan should detail the priority facilities (ideally, those that are in scenario 1) and timelines for implementation. STEP 3 of this appendix discusses the details involved in implementation for each of the scenarios.

Table 8: Facility Mapping Report

COUNTY:	Siaya*					
YEAR:	As of December, 2019					
FACILITY NAME	MFL CODE	CURR ON ART (KHIS)	# TESTED HIV POS (KHIS)	HAS e-HTS?	HAS EMR?	REPORTING TO NDWH?
ABIDHA HEALTH CENTRE	13461	1078	15	NO	YES	YES
RWAMBWA HEALTH CENTRE	14063	1245	20	YES	YES	YES
KARUOTH DISPENSARY	17533	515	3	NO	NO	NO
LIDHA DISPENSARY	18320	238	27	NO	NO	NO
SEGA DISPENSARY	14072	541	12	YES	YES	YES
ALUOR MISSION HEALTH CENTRE	13473	509	5	NO	YES	NO
AMBIRA SUB-DISTRICT HOSPITAL	13476	2384	100	YES	YES	YES
BAR AGULU DISPENSARY	13496	949	30	YES	YES	YES
BAR OLENGO DISPENSARY	13499	616	33	NO	YES	YES
BONDO DISTRICT HOSPITAL	13507	4087	2	YES	YES	YES
BORO DISPENSARY	13513	708	24	NO	YES	YES
DIENYA HEALTH CENTRE	13533	475	43	NO	YES	YES
NYAMBARE HEALTH CENTRE	13904	475	4	NO	YES	NO
SIAYA DISTRICT HOSPITAL	14080	3552	50	YES	YES	YES
MBAGA HEALTH CENTRE	13797	326	3	NO	YES	NO
MABINJU DISPENSARY	13743	373	40	NO	NO	NO
MAGETA HEALTH CENTRE	13750	504	26	NO	NO	NO

*These are sample data

Step 2: Individual facility planning

Facility mapping helps counties understand the landscape to guide in CBS implementation and identify priority facilities for expediency and efficiency in scaling up CBS. Prior to implementation of CBS in a facility, an **individual facility** planning exercise is conducted in collaboration with the SCASCO and facility staff. The purpose of the facility planning exercise is to:

1. Confirm and document facility details:
    a. Existence and utilization of electronic systems
    b. Most recent data reported in KHIS on indicators of interest (number of HIV positive identified and number currently in care)
    c. Quantification of human resources available for CBS,
2. Identification of sources of data in the facility (OPD, IPD, CCC, ANC, TB, Maternity clinics etc.)
3. Micro planning for reporting from each of the data sources
    a. **How** to submit case reports?
    b. **Who** will submit the case reports?
    c. **When** case reports will be submitted?

4. Identify and document resources required and possible solutions to implement CBS
    a. Structural such as electricity, power back-up, internet
    b. Equipment such as computers, mobile phones and/or tablets, data back-up devices
    c. EMRs to support data capture
    d. HIS Technical staff or technical support
    e. Capacity building needs

See Table 9 for a sample facility planning tool. The completion of this assessment will help the SCASCO and facility staff identify areas that need addressing prior to implementation of CBS at the facility. Such matters may include the purchase of a dedicated tablet for CBS, following up with IPs to support internet bundles for data submission, planning for on the job training for case-based surveillance to facility staff etc.

Table 9: Facility Planning Tool

FACILITY PROFILE	
Facility Name	
MFL Code	
Sub-County	
County	
SCASCO Name/Contact	
HTS Mobile App	In use? Yes/No Name of App? Where are eHTS data sent? (e.g. regional server/cloud, facility EMR?) How frequently are data submitted upward? (continuously, whenever network available, every week, every month?) Who manages the server (if in use)? In Table 2 below, list all HTS service delivery points in the facility and tools in use (e.g. app, register)
EMR	In use? Yes/No Name of EMR? Are EMR data submitted to the National Data Warehouse? How frequently are data submitted to NDWH? Are all active patients migrated to EMR? Are all visits migrated to EMR?
Facility data	Source: MOH 731 Report for month of _____ Number tested for HIV: Number test positive: Number currently on ART:
Facility Human Resources	**Describe facility staffing for HTS service providers** *Example* *2 HTS counselors in OPD* *3 ANC nurses* *1 HTS counselor in CCC* *1 TB nurse*

CBR DATA SOURCES						
Data Source	**Tools used to capture HTS data (e.g. MOH362, ANC Register, mobile app)**	**How to submit case reports?**	**Device to be used for eHTS or CBR (specify ownership)**	**Person responsible for submitting case reports (be specific)**	**When are reports submitted to the national CBS database?**	**Remarks**
OPD	*MobileApp*	*Existing system for uploading HTS data to regional HTS Cloud.*	*Partner provided tablet*	*HTS Cloud manager*	*Monthly*	
IPD	*MobileApp*	*Existing system for uploading HTS data to regional HTS Cloud.*	*Partner provided tablet*	*HTS Cloud manager*	*Monthly*	
CCC (initial test only)	*MobileApp*	*Existing system for uploading HTS data to regional HTS Cloud.*	*Partner provided tablet*	*HTS Cloud manager*	*Monthly*	
ANC Clinic	*ANC Register*	*Designated staff through CBR mobile app*		*Designated staff or HTS Cloud Manager.*	*Weekly*	
HEI Follow-up Clinic	*HEI Register*	*Designated staff through CBR mobile app*		*Designated staff or HTS Cloud Manager.*	*Weekly*	
Family Planning Clinic	*FP Register*	*Designated staff through CBR mobile app*		*Designated staff or HTS Cloud Manager.*	*Weekly*	
Maternity	*Maternity Register*	*Designated staff through CBR mobile app*		*Designated staff or HTS Cloud Manager.*	*Weekly*	
TB Clinic	*TB Register*	*Designated staff through CBR mobile app*		*Designated staff or HTS Cloud Manager.*	*Weekly*	
Community based testing	*MOH 362*	*Designated staff through CBR mobile app*		*Designated staff or HTS Cloud Manager.*	*Weekly*	

REQUIRED RESOURCES	
Describe facility electricity source and reliability.	
Where/how will you charge devices listed above? If no, team to provide solution/plan.	
Describe your internet source and reliability.	
Do you have sufficient network access to submit your CBR data? If no, team to provide solution/plan.	
Describe who provides or how you get support for HIS (e.g. eHTS, EMR)	
Do you have compatible tablets/smartphones that can be used for HIV data collection	

SUMMARY NOTES/FINDINGS	
	Findings/Notes
1.	
2.	
3.	

ACTION ITEMS			
	Action Item	**Who**	**When**
1.			
2.			
3.			

Step 3: Implementation in different facility scenarios

Based on steps 1 & 2 the roadmap developed by the county will define where and when the county will be implementing CBS. At the core of implementation are the variations in facility scenarios and data sources outlined in Step 1. Below is some guidance on how to implement within the different facility scenarios.

Scenario 1: Facilities with EMRs and eMobile HTS App in Use

These facilities have implemented mobile HTS apps at their HIV testing services delivery points within facilities. The HTS app collects all tests conducted including their results (HIV- and HIV+) and reports them into an intermediary registry/eHTS App server. Additionally, these facilities have point of care (POC) or retrospective EMRs to document all clinical services delivered. Data collected in the eHTS server is submitted into EMRs to facilitate linkage and continuation of service delivery at that facility. Table 10 below illustrates who, who, when and where CBS data for these facilities should be collected.

Table 10: Roles and Responsibilities for facilities with EMR and eMobile HTS applications

Who collects CBR and CBS data?	**CBR:** These data will be collected by HTS provider **CBS:** These data will be collected by person entering data into the EMR at the facility.
What CBR and/or CBS-relevant data will be collected?	**CBR:** Refer to CBR Form Section A Section B Section C **CBS:** Refer to CBR Form Sections D Sections E Sections F **Note:** When submitting data directly from EMR, ensure that data on all sections of the CBR form are captured.
Where are data captured?	• For CBR, data are captured at the POC into the HTS mobile application. • For CBS, data are captured in the EMR within the patients' clinical record
When are data captured?	• For CBR data are captured at the time of HIV testing service delivery. • For CBS, data are captured into the EMR either at POC or back entry of client information after service delivery.

How (when & who) are data received by CBS database?	**For CBR & CBS (See Figure 1)** • Once HTS data are entered into the HTS mobile App by HTS provider, data goes to a HIV registry/eHTS sever. • This eHTS server holds individual records for all clients tested and their results (HIV+ and HIV-). • Data in the eHTS server are then uploaded to the EMR server by the HTS provider daily. • The EMR filters and pulls **only** HIV positive cases from HIV registry/eHTS sever to the EMR database. This is an automated process that occurs daily. • Data are then uploaded from the EMR through DWAPI to the national data warehouse. The data manager/designee does this daily. • From the NDWH all data are pushed into the CBS database. This is a weekly automated process. **Note:** There may be POC in a facility where the mobile application is not in use. For such non-eHTS service delivery points in the facility: • Service providers will collect testing data on standard MOH registers (ANC, Maternity, TB registers etc). • The CBS focal person visits all service delivery points weekly to abstract only **new HIV diagnoses** using an eMobile HTS app • The focal person electronically submits data via the app to the NDWH and then these data are pulled to the CBS database.
Resources Required	
1. Internet bundles 2. Security of the tablets 3. Power and backups	

Scenario 2: Facilities with EMRs, and document HTS data in paper registers

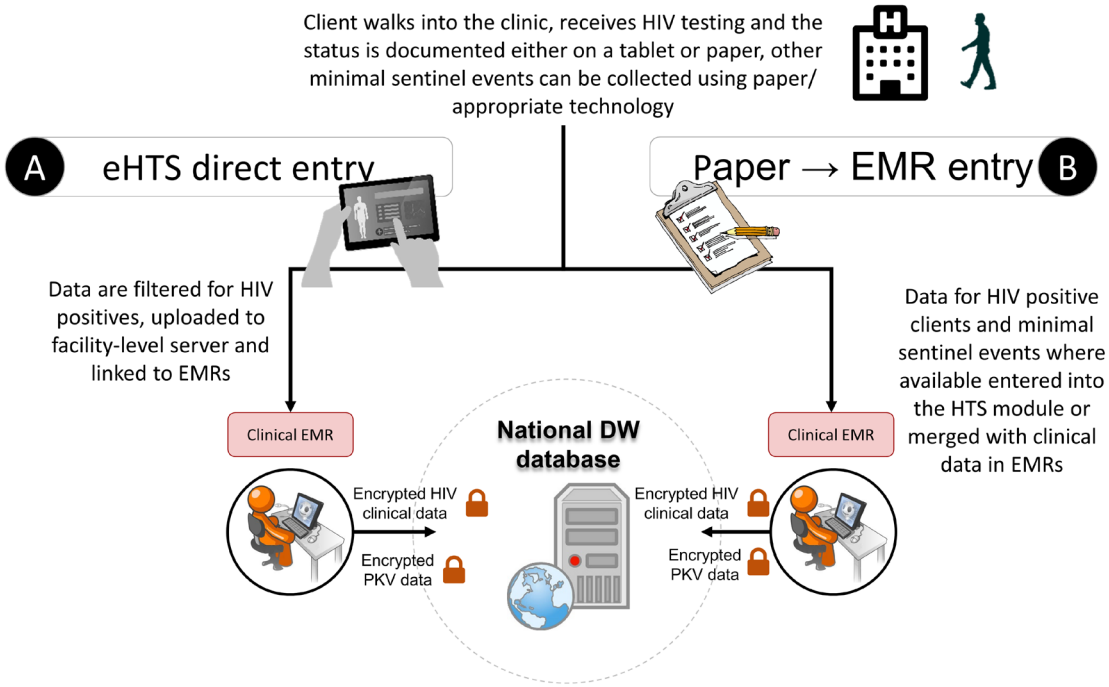
Overall, these facilities use EMRs for documentation of clinical service delivery, however their HTS service delivery data are documented on paper registers (MOH 362). In this scenario, data are not transferred from the paper register into the EMR client file in the facility. Table 11 below illustrates who, what, when and where CBS data for these facilities should be collected.

Table 11: Roles and Responsibilities for facilities with EMRs and paper register for HTS data collection

Who will collect CBR and CBS data?	**CBR:** These data will be collected by HTS provider **CBS:** These data will be collected by a person assigned to enter data into the EMR at the facility.
What CBR and/or CBS-relevant data will be collected?	**CBR:** Refer to CBR Form sections A, B and C **CBS:** Refer to CBR Form sections D, E and F
Where are data captured?	• For CBR, data are captured into facility paper registers documenting HIV testing service delivery. These include HTS, ANC, PNC, Maternity, TB, HEI etc. • For CBS, data are captured in the EMR as part of the patients' clinical record.
When are data captured?	• For CBR, data are captured at time of HIV testing service delivery. • For CBS, data are captured into the EMR either at POC or back entry of client information after service delivery.
How (who/when) are data received by CBS database?	**For both CBR & CBS** (See Figure 2) • There will be a HIV CBS focal person(s) at each facility to review the different registers (HTS, ANC, TB, PNC, HEI, Maternity etc.) in the facility, and abstract data on HIV positive persons into the HTS module in the EMR. • This update will be done, on a weekly basis.
Resources Required	
1. EMRs **must** have an HTS module 2. Internet bundles 3. Power and backups	

Figure 2 below summarizes data movement in the scenarios 1 & 2 above

Figure 2: Data flow for facilities with EMRs for clinical data and either eMobile HTS applications or Paper HTS systems.



Scenario 3: Facilities with no EMR, but using HTS mobile application

Facilities which do not have an EMR will focus on case-based reporting. If a facility does not have an EMR but is using an eMobile HTS app at their HTS service delivery points, case-based reporting of new HIV diagnoses using HTS mobile application will be required. Table 12 below describes the reporting procedures for facilities that meet these criteria.

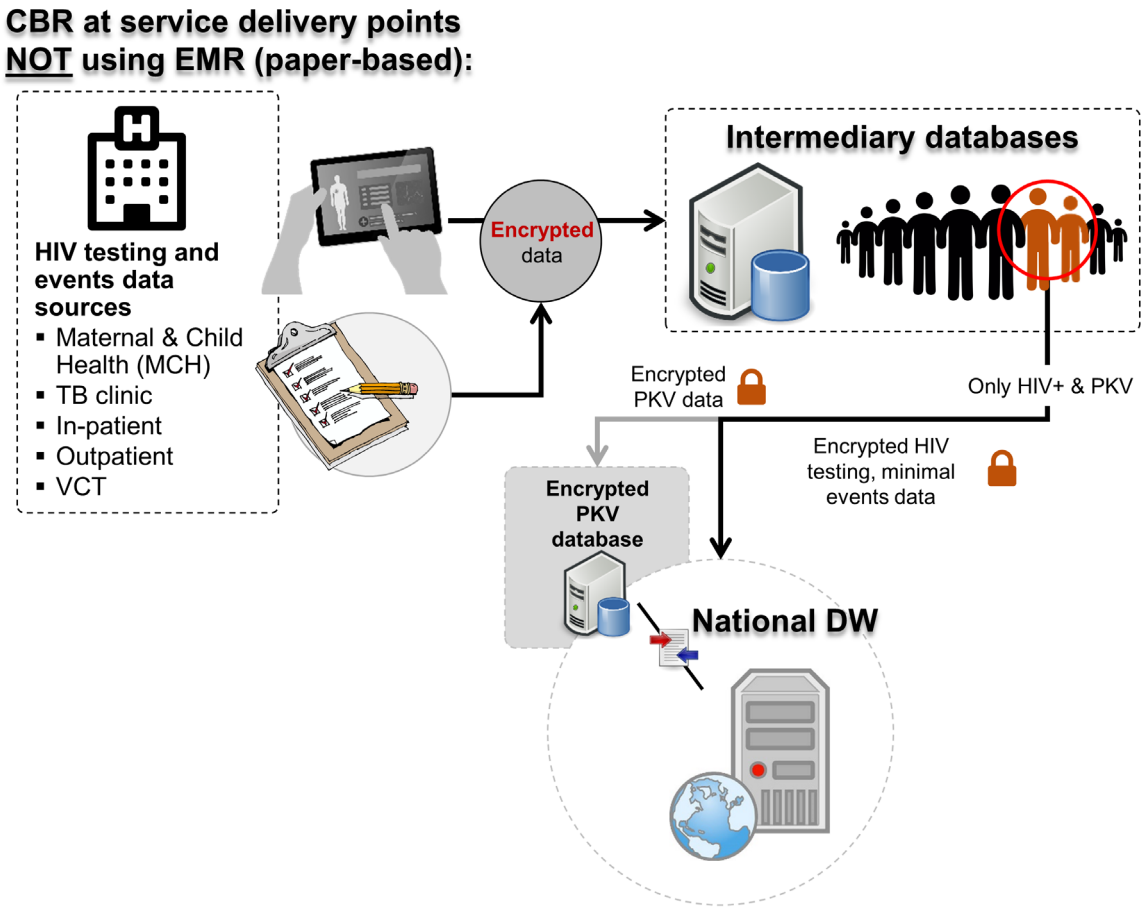
Table 12: Roles and Responsibilities for facilities without EMRs but using eMobile HTS applications for HTS data collection

Area	Description
Who collects CBR-relevant data at site level?	• At service delivery points that use eMobile HTS app, this should be the HTS counselor. • For the service delivery points not using the eMobile HTS app, the facility in-charge should designate a CBS focal point (generally an HTS counselor is recommended) to collect data from these data sources.
What CBR-relevant data are collected?	Refer to CBR form section A, B and C • Section A – Facility details • Section B – Expected to be nearly complete • Section C – HIV diagnosis and linkage to care

Where are data captured?	• In service delivery points where an eMobile HTS app is in use, data are captured in the app. Data may also be collected simultaneously in the paper register(s). • Service delivery points not using an eMobile HTS App data are captured using standard MOH registers (e.g. MOH-362, ANC register, HEI register)
When are data captured?	• Data are collected during service delivery into the eHTS mobile app. Of note, is that sites can conduct retrospective data entry from register to the app. • For service delivery points not using an eHTS mobile app, the CBS focal person abstracts all HIV positive cases on a weekly basis using an eHTS mobile app. • It is recommended that reporting be conducted on Monday for cases diagnosed in the prior week (from previous Monday to Sunday), in alignment with IDSR.
How (who & when) are data received by CBS database?	**See figure 3**: For eHTS service delivery points: • HTS counselors collect data on Tablet with eHTS mobile app • HTS counselors submit all HTS events to intermediary server/ eHTS server • The CBS focal person filters and pulls **only** HIV positive cases from intermediary server and submits them to the national CBS database. This will be done on a monthly basis (to coincide with MOH731 reporting) For non-eHTS service delivery points: • HTS counselors collect testing data on standard MOH registers. • The CBS focal person visits all service delivery points weekly to abstract only new HIV diagnoses using an eHTS mobile app • The focal person electronically submits data via the app to the CBS database. Note: Abstraction onto a paper CBR form is **not** recommended, hence no storage of forms is required.
Resources required	**1.** Equipment and infrastructure for eHTS mobile app. a. Tablets b. Data bundles/internet access c. Stable electricity **2.** Staff time for: a. Weekly data abstraction into the mobile app b. Monthly transmission of case data to the CBS database **3.** Training of CBS focal persons on reporting **4.** Recommended to work with partners to provide/support acquisition of mobile devices needed for CBR.
Alternate scenarios	Very-low incidence regions can elect to have a selected SCASCO collect cases for several facilities for efficiency.

Figure 3 below summarizes data movement in facility scenarios where EMRs are not in use for patient management, however, HTS applications are in use for documentation of HIV testing service delivery.

Figure 3: HIV case-based reporting for health facilities without an EMR but using eMobile HTS applications



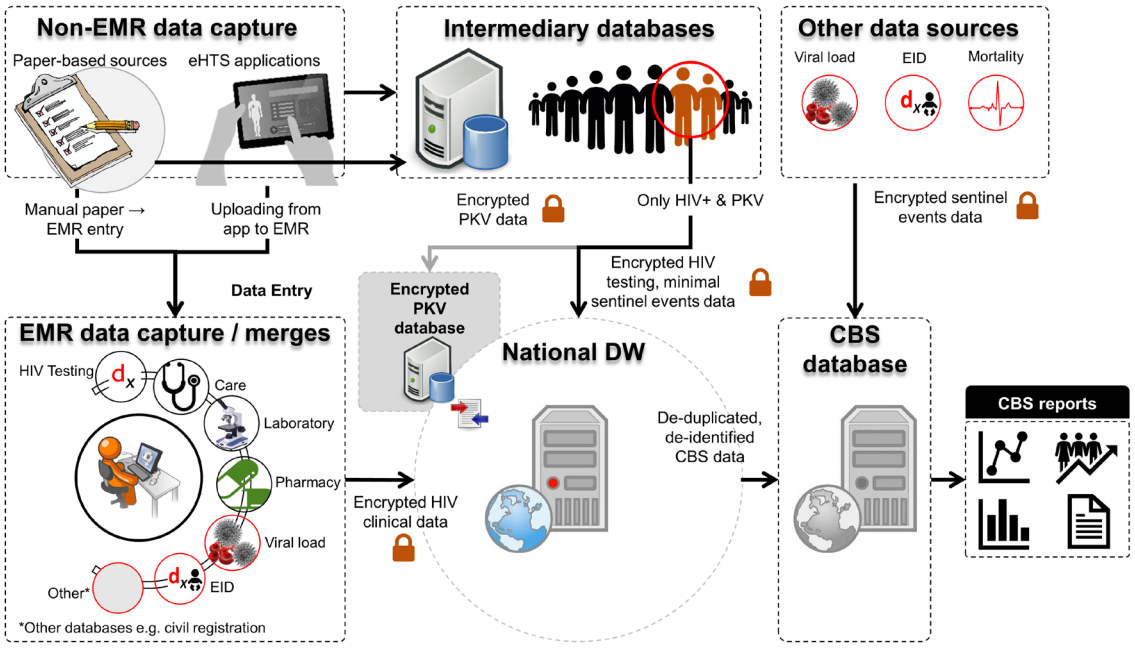
Scenario 4: Paper only Facilities

Facilities that are paper only both at HTS and CCC service delivery points are also required to implement CBS. Ideally, at minimum such sites should do case-based reporting of new HIV diagnoses. Such sites will be required to invest in plan electronic data reporting solutions (such as the HTS mobile applications) to submit cases to a designated server. From here, data for HIV positive persons will be pushed to the NDWH. Sentinel events beyond HIV diagnosis are not practical in this facility scenario. Table 13 describes the reporting procedures for facilities that meet this criterion.

Table 13: Roles and Responsibilities for facilities using paper only registers or files

Area	Description
Who collects CBR-relevant data?	Initial HIV diagnosis is documented on standard MOH tools by HTS counselor (person performing the HIV test that leads to HIV+ diagnosis), MCH nurse (for EID + new DX in PMTCT) at point of care
What CBR-relevant data are collected?	Section A – Facility details Section B – Expected to be nearly complete Section C – Date HIV diagnosis, recency of infection (if testing for recency being performed)
Where are data captured at the site level?	• Data are captured at all HIV testing service delivery points in the facility e.g. VCT, ANC & TB clinic, Maternity etc.
When are data captured at site level?	• On a weekly basis, data on HIV positive cases diagnosed at all service delivery points will be abstracted weekly from paper registers onto an eMobile HTS application or another electronic data capture application • Reporting will be conducted on Monday for cases diagnosed in the prior week (from previous Monday to Sunday), in alignment with IDSR.
How (who & when) are data received by CBS system?	1. Service provider documents HIV positive diagnoses as per routine procedures in routine registers 2. CBS focal person visits all service delivery points weekly to abstract new HIV diagnoses 3. Data submitted electronically via CBR app by CBS focal person at the health facility to CBS server (depending on the functionality of app) 4. Facility in-charge to delegate reporting to a CBS focal person (e.g. HTS counselor) 5. CBS focal person visits all service delivery points on a weekly basis and abstracts and reports new HIV positive cases onto an eMobile HTS application or another electronic data capture application 6. Focal person also reports any community-based new HIV positive cases from catchment area reported to facility **Note**: no paper-based abstraction recommended so no storage of forms required
Resources required	**Site-level**: • Proposal is for partner to provide/support mobile device for HTS/CBS reporting (devices for other programs could be leveraged). • Capacity building on CBS reporting and application • Accessibility of both electricity and mobile network for uploading reports. • Integration between application and designated server **Partner level**: • Application or other solutions would need to be created/modified to implement features needed for CBR at paper-based sites.

Appendix 4: Data Transmission and Storage Illustration



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