Functional Requirements for Successful Configuration of DHIS2 Tracker for HIV Case Surveillance Based on 2017 WHO Guidelines

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WHO HIV Strategic Information Guidelines: Comprehensive Aggregate and Individual-Level Metadata
Global Reporting

National Reporting

Data Use-Cases

Program Management (including Case Surveillance)

Patient Care and Monitoring
Fig. 1.1 Links between HIV patient monitoring and case surveillance in a comprehensive strategic information system for HIV

HIV patient monitoring system

- HIV + status
  - Linkages to HIV care, TB, HBV/HCV, MNCH, and ART start
- ART monitoring, adherence, short and long-term outcomes
- ART retention
- ART viral suppression
- Death

Captures routine data for patient and programme management and monitoring

1. HIV diagnosis
   - 1st CD4 test
2. Initiation of ART
3. 1st VL test
4. VL suppression
5. Death

Laboratory, vital statistics and other data sources

6 sentinel events

Case surveillance

Extracts data on individual sentinel events for disaggregate reporting

Aggregate and disaggregate data reporting facility, district and national
- 90–90–90 targets
- 18(35) key patient monitoring indicators
- HIVDR EWIs

Strongening HIV care and treatment cascade
8 Key Recommendations on HIV Case Surveillance

Summary of key recommendations in this chapter

1. Standardization of sentinel events and indicators. Countries should collect core information on a standardized set of sentinel events and indicators, including at a minimum, the six key cascade events described in these guidelines. **WHO provides guidance on key indicators for primarily paper-based patient monitoring systems and additional indicators for electronic systems or periodic review, especially of patient monitoring tools.**

2. De-duplication of records to support facilities and improve data quality. HIV case surveillance should provide de-duplicated counts of diagnosed persons and people on treatment for reporting, to be shared with facilities. **WHO provides guidance on such approaches.**

3. Country situation analysis. Improvements to HIV case surveillance, patient monitoring and unique identifiers should be based on a country situation analysis that identifies and costs incremental improvements. **WHO provides a tool for country situation analysis.**

4. HIV diagnosis and building on patient monitoring. HIV case surveillance should start with a diagnosis of HIV infection and build on existing patient monitoring systems. **WHO provides guidance on HIV case definitions.**

5. Key population (KP) data. Routinely collected data can be used to describe access by key populations to services; however, confidentiality and security issues are paramount when collecting data related to KP, whether in patient monitoring or case surveillance systems. In most settings, patient records should not include the KP category and any information collected should be used to support patient management and referral to care. The probable route of transmission can be assessed at the point of diagnosis and used to disaggregate data in HIV case surveillance systems. **WHO provides guidance on how to address issues around KP data collection and reporting.**

Additional recommendations relevant to this chapter

6. Transition progressively from paper-based to electronic patient information systems. Countries should use a tiered approach to when and how patient and case monitoring data from paper tools are entered electronically based on resource availability by site or setting, starting with high-volume sites, e.g. with more than 2000 patients. **WHO provides an example of a tiered approach.**

7. Strengthen and establish different data security levels. Countries should assess and establish different security levels for data elements, and invest in robust databases and policies to protect security and confidentiality based on risks and benefits in individual settings. **WHO provides the major headings to be included and provides reference to additional specialized guidance.**

8. Invest in data systems and ensure interoperability. Countries should invest in robust and secure data systems. As this is done, strengthen the interoperability of electronic databases and select open-source standards for data systems. **WHO recommends that 5–10% of programme budgets be used to strengthen monitoring and evaluation.**
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Common Misconception #1

• If we have a digital health information system/application (e.g. electronic medical record or individual level reporting system) which reflects the complete patient monitoring system and metadata, including PUID, then we have an HIV case surveillance system.
HIV case surveillance focuses on a priority subset of metadata, referred to as “sentinel events”, within the care cascade. A critical aspect of the Program Management data use-case which case surveillance data address is their relative simplicity which facilitates data management, analysis and use.
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3. HIV CASE SURVEILLANCE

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Common Misconception #2

• If we have a digital health information system which includes longitudinal data capture and PUID which is specific to the health facility-level (but not unique at higher administrative levels) then we have an HIV case surveillance system.
Ability to de-duplicate client-level records at all relevant administrative levels (facility to national) is the single most essential characteristic of case surveillance functionality, enabled by a robust national health PUID standard.
Patient transfer from SouthEast to SouthWest
Centralized data capture

Use case

- If patient John was tested positive in Facility A and move in district 13 and is tested positive in Facility D

- If patient John was on treatment in Facility A and move to South West to be enrolled in Facility D
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7. Strengthen and establish different data security levels. Countries should
Common Misconception #3

• If my system employs patient unique identification (PUID) and captures longitudinal clinical data - for example, starting at treatment initiation - then this represents HIV case surveillance functionality.
Case surveillance functionality is DEFINED by the inclusion of case reporting of new HIV diagnoses. Any system that does NOT include case reporting of new HIV diagnosis does not reflect case surveillance functionality.
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Common Misconception #4

• If my digital health information system with HIV case surveillance functionality includes a PUID which represents a national standard then my HIV case surveillance solution is sufficiently “interoperable” with regards to broader health information exchange needs and requirements.
HIV case surveillance solutions, like all digital solutions, are ideally based on the most generic and universal data standards, e.g. HL7 FHIR, ICD, etc., in order to enable robust health information exchange within a health information system architecture.
**Configuration of DHIS2 Tracker capture for HIV Case surveillance**

**Patient Registration**
- HIV Case based surveillance
- Register Diagnosed HIV Patients
- Enroll patient in the Program

**Program Stages**
1. Initial case report
   - Patient Demographic
   - Marital Status
   - Risk Factors
   - Patient Testing information
   - Recency Testing Information
   - Clinical Information at diagnosis
2. Follow Up case report
   - Reporting Facility
   - CD4 Count and Test date
   - Viral results and Test date
   - WHO Stage
   - Pregnant and Infant PCR
   - Lost to follow up
   - Treatment Stop
   - Transfer
3. Death
   - Death
   - Date of Death
   - Cause of Death

**Date of HIV Diagnosis**
- Report entered
- First Name
- Last Name
- Place of Birth
- Date of Birth
- Reporting Clinic
- National Identifier
- Facility Identifier
“Added Value” of HIV Case Surveillance

• De-duplication provides enhanced data quality over aggregate data

• Key clinical outcomes can be more effectively assessed, e.g. cohort analyses

• Added epidemiologic utility due to case reporting

• In LIC settings, may represent an elegant solution to support the program management data use-case in a robust manner but without the data management burden posed by complete patient monitoring metadata
The tools and recommendations for HIV case surveillance in the 2017 WHO Consolidated guidelines on person-centred HIV patient monitoring and case surveillance should be adopted and

ASSESS THE HIV SURVEILLANCE SYSTEM USING A SITUATION ANALYSIS TOOL (ANNEX 3.5.2)

- Review and identify the gaps in policies for notification and relating to data use, i.e., confidentiality, consent, and informed participation.
Fig. 4.7 Internal and external attributes of system architecture

National health information systems blueprint (the architecture)

A health information exchange (HE) makes the sharing of health data across information systems possible

1. Client registry
2. Provider registry
3. Health facility registry
4. Terminology service
5. Shared health record

6. Health interoperability layer

Clinical systems (i.e. Open MRs)
Laboratory information systems
Hospital record systems
Community health worker systems (i.e. Rapid SMS)
Pharmacy systems

Point of service

1. Who received health services
2. Who provided those services
3. Where did they receive the services
4. What specific care did they receive

Source: [Link to source material]
Adoption of HIV-specific Individual-level Information Systems in WHO AFRO Region

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