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## HIV Case Surveillance Implémentation Expérience in Ethiopia

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*EPHI and CDC Ethiopia*





## Outline

Background on HIV CS in Ethiopia

Implementation status

Coordination Mechanism

Capacity building

**Health Information systems for HIV CR**

Data flow

REDCap

Matching and Deduplication

Power BI

Data security and confidentiality

Data use



## Background on HIV Case Surveillance in Ethiopia

- Implementation as HIV case reporting started since June 2019, with support from PEPFAR CDC
- Lead Institute: Ethiopian public health institute (EPHI)/MOH
  - established by the council of minister regulation No. 301/2013 and re-established by regulation No. 529/2023
  - Accountable for the MoH and mandated to *lead and coordinate PHEM, capacity building of labs, Undertake research on priority health and nutrition issues, training public health researchers*
- It's considered as part of routine surveillance and being scaled-up in phased approach
  - Included in the national PHEM/IDSR guideline as one of the reportable diseases
  - Now transitioning from HIV case reporting to the longitudinal HIV case surveillance
- Case reporting rolled out in more than 750 high volume HIV public and private health facilities and community drop-in centers – serving more than 90% of the HIV cohort
- About to initiate the next phase, full fledged, HIV case surveillance in 50 facilities this year



## Guidelines and Capacity building

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- Guidelines, SOPs and training materials developed
- Trainings include CBS, data management, data quality assurance (DQA) and data visualization (PBI) and data use/response
  - For national, regional, zonal, woreda officers and HFs
- HIV track FETP residents at EPHI field base
- *Major challenge – attrition of trained staffs at facility*



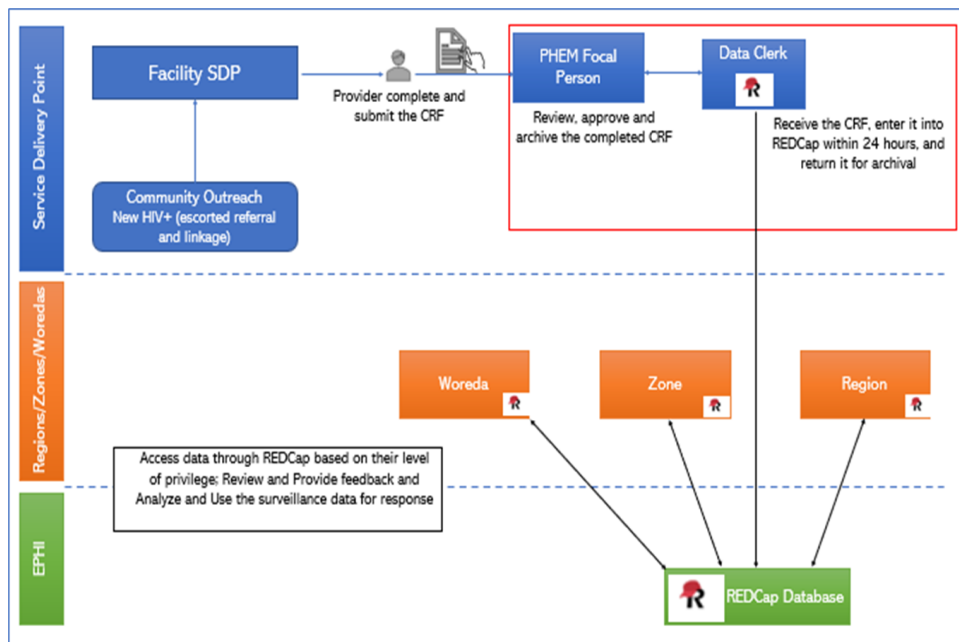
## Health Information systems for HIV case reporting

- Web-based electronic data capturing and reporting platform - REDCap
- Data storage and management - REDCap server
- Matching and de-duplication of records – Python/anaconda record linkage tool
- Data analysis and visualization - Power BI
- Procedures for selection and deployment of the HIS:
  - Iterative processes
  - Participatory – all stakeholders engaged starting from requirement gathering to deployment
  - Pilot tested before deployment
  - Maximum effort to take measures ensuring data security and confidentiality



## Diagram of data flow from health facilities to the EPHI

- Data: collected using paper-based CRF at HIV testing points
- Health facilities enter the CRF into a web-based application (REDCap), within 2 weeks of the date of HIV diagnosis.





## HIV CS Information System (REDCap)

- A Multi-site, Multi-tier on-premises REDCap-based system is being used for reporting and storage of HIV CS data
  - Phase 1: HFs collect data using a CRF and enter into the REDCap
  - Phase 2: Sentinel events of the cases extracted from the EMR-ART
- Created and hosted on a physical server, virtualized onto a database and web servers
- To secure the system
  - SSL certificate installed and configured;
  - Role-based access: Data Access Group (DAG); custom report; a REDCap hook; system time out; back-up
- Being used also for reporting: HIV CS, RTRI QC and PT

### REDCap application installation and configuration information

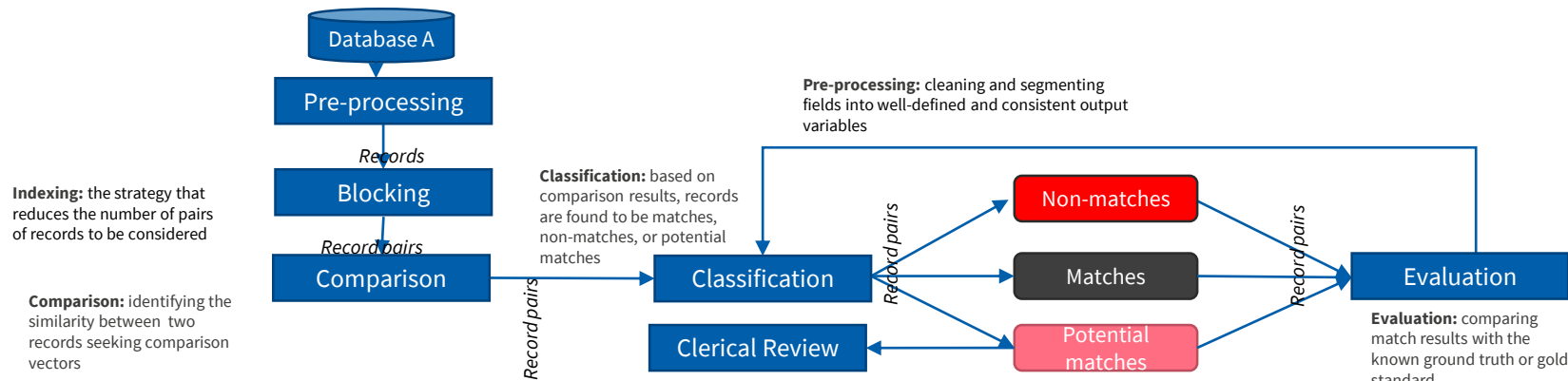
- Operating System
  - Ubuntu 20.04
- Application Version
  - REDCap Application version: 10.9.0
  - Wamp server version: 3.1.4 64 bit
  - MySQL version: 7.4.3
  - Apache version: 2.4.41
  - PHP version: 7.4
- Web Access and Communication
  - Public Domain Name:  
<https://cbs.ephi.gov.et/redcap>





## Matching and Deduplication for CBS

- Python Record Linkage Toolkit is being used for HIV CS data matching and de-duplication
- Comparison made using Jaro-Winkler scoring and being done twice in a year
- Matching variables (8): *Name, Father's name, Grand father's name, Mother's first name, mother's father's name, DoB, Sex, and Mobile phone number*



(Christen et al. 2002, 2004, 2012).





## HIV CS Information System (Power BI)

Admin/Data Manager



Export deidentified HIV CS Data

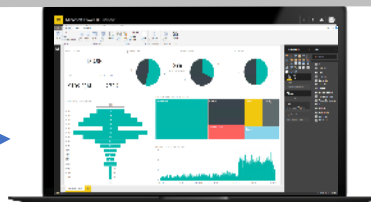
Power BI Report Desktop



Get Data, Data Shaping, Data Model, Create Report

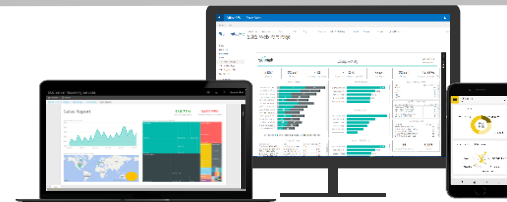
Data Manager

Publish



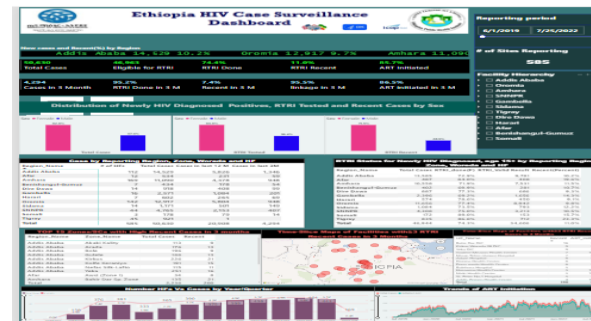
Publish to Power BI Report Server

Users



View and interact in Power BI Mobile or web browser

- Web based PBI dashboard established and hosted at EPHI
  - Access was granted to
    - National and international teams who are supporting the program.
    - Regions, Zones and selected Woredas and HFs.





## HIV Case surveillance Data Use

- HIV CS Guideline
  - Site Level response : Site level Response Tracking Dashboard
    - Identifying Service Gap (Linkage, ART initiation and ICT) and facilities with Highest Recent infection
  - Above site response: Hot spot identification, using **CDR Dashboard**
- CBS publication advisory committee:
  - a sub-team from TWG, facilitating scientific writing for result dissemination using CS data



HIV Case Based Surveillance System in Ethiopia

Guideline for Response to Newly Identified HIV  
Positive Cases

Ethiopian Public Health Institute  
February 2021  
Addis Ababa, Ethiopia



## Coordination Mechanism

Led by:

EPHI General Director

HIV Directorate Director

Surveillance Directorate  
Director

Surveillance Coordinators

Steering Committee

Technical Working Group

Regional TWG/Task Force

Sub-Regional Level

HF level

Provides oversight, coordination, and technical guidance to the HIV case surveillance and public health response

Plays a key role in the design, planning, implementation, technical oversight, and dissemination of results

Coordinates and guides the regional implementation

HIV CS coordinators or focal person:  
Oversee the implementation in their area

PHEM focal or ART personnel:  
Coordinate the HF level implementation



# Thank you!