One health surveillance data management system

January 2020
FIND- Foundation for Innovative New Diagnostics

Catalyse development
- Dynamic needs definition
- S4S: Support programme for manufacturers

Guide use & policy
- Clinical trials
- WHO evidence & guideline development

Accelerate access
- National policy
- Roll-out planning
- Gap analysis and solutions
- QA tools and strategies

Shape the agenda
- Impact of diagnostics
- Diagnostic ecosystem changes
- Emerging diagnostics topics

SCIENCE
PRODUCTS
SOLUTIONS
PATIENTS

Tuberculosis
Emerging Threats
Neglected Tropical Diseases
Hepatitis C & HIV
Malaria & Fever
Digital Health
Effective AMR surveillance requires reliable data from different sectors

Global and regional surveillance programmes

In-country AMR surveillance programme

Human health

Animal health

Agriculture and food

Images courtesy: Integrated Surveillance Of Antimicrobial Resistance In Foodborne Bacteria, World Health Organization, 2017
This, in turn, needs multiple data systems to exchange information, which can be a challenge.

Illustrative data flow in a surveillance programme

In-country AMR surveillance programme

- Clinics in relevant programmes
- Labs in relevant programmes
- Field level entities in relevant programmes
- Labs in relevant programmes
- Field level entities in retail food sector
- Labs testing retail food isolates

Challenges in aggregating AMR related data

- No reusable technical solution or service available for interconnecting data systems
- Connecting in-country data systems directly to surveillance databases is resource intensive
- This form of interconnection also increases the security risk of the entire data system network
The One Health surveillance data management system plans to leverage technological solutions to address these challenges.

In-country AMR surveillance programme

- Interoperability middleware
  - Clinics in relevant programmes
  - Labs in relevant programmes
  - Field level entities in relevant programmes
  - Labs in relevant programmes
  - Field level entities in retail food sector
  - Labs testing retail food isolates

Currently being explored

- Human health
- Animal health
- Agriculture and food
General design of a One Health surveillance solution

One health AMR surveillance data management system

Data In - Source Data

Connectivity and Interoperability Toolkit

Data Out - End Points

Data Warehouse

Network

Data input interface

Routing and data sharing
Device and Connectivity management
Alerts and notifications
Interoperability system management

Data output interface

Data connector

Local WHONET

Lab IT system

Data store

Animal Labs

Food Chain

API

HIS/LIS Standard Interface

Human Health Labs

Source Data

DHIS2

WHONET

One Health Surveillance

Global surveillance

Other health care systems
Current status of digital information flow

GLASS

Zambia One Health surveillance platform

DHIS2 – Dashboards, Reports

Open Interop – Middleware

Human health

Animal health

Data Sources

WHONET

DISA-LIS

OpenLDR

SILAB - LIS

API

Residue Data

Animal Study Data

Permits

Drug Distribution

Permits Veterinary

Permits All Import and Export

DVS

ZAMRA

Medical Stores

Data Sources

Lab software

Project Components

Currently available

Automated data collection
Sample Dashboards

AMR IN HUMAN: Isolates & Specimens Summary

Antimicrobial Resistance (AMR-ZM) - Dashboard

Pathogen Summary

2018 - Is University Teaching Hospital

[Pie chart and radar chart showing pathogen distribution and isolates]
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Hosting Smart Zambia
23 JANUARY 2020
19:00–21:00
INCLUDING A NETWORKING RECEPTION
BAOBAB HALL,
TAJ PAMODZI, LUSAKA

ONE HEALTH SURVEILLANCE
Lessons from Zambia
Thank You
## Middleware components that have completed the development phase

<table>
<thead>
<tr>
<th>WHONET data connector</th>
<th>Diagnostic device data connectors</th>
<th>DHIS2 integration</th>
<th>ODK functionality</th>
<th>Alert functionality</th>
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</thead>
<tbody>
<tr>
<td>• This is a software component that collects data from WHONET and routes it (in near real-time) to the middleware layer</td>
<td>• These connectors collect diagnostic results (and optional demographic data) from diagnostic devices and route them to the middleware</td>
<td>• A tight integration of DHIS2 with the middleware layer, supporting automatic integration of input data sources into DHIS2 has been completed</td>
<td>• The middleware layer is integrated with ODK (Open Data Kit) to provide a method to easily build data collection apps that feed data into the middleware layer</td>
<td>• User configured messages triggered by input data can be sent via the middleware</td>
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