Integrated Health Information Platform

*for Integrated Disease Surveillance Program*

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World Health Organization

Training of Trainers Workshop
Use of Integrated Health Information Platform in
Integrated Disease Surveillance Programme

The Taj Mahal Hotel, New Delhi, India
26 - 27 June 2018
What is Integrated Health Information Platform

• IHIP is an information platform that integrates data from various “registries” to provide real-time information on health surveillance from all across India for decision-makers to take action.

• All data contained in IHIP has the public health surveillance attributes: Person, Place, Time and all data has geocoded for geographic reference

• The design and development of this platform found are attributed to the strengthening of India’s Public Health Surveillance System
Why is IHIP needed?

• As part of IHR core capacity building and to strengthen public health surveillance system, India needs a comprehensive information system to monitor emerging and emerging public health threats, disasters and mass events.

• IHIP provides the Union health ministry, State health ministries, local governments, municipalities to real-time information on health surveillance from anywhere on any electronic device.
Geospatial Epidemiology and Health Surveillance

• The IHIP platform will provide the ability to:
  – describe and analyze geographic variations in diseases in the context of demographic, environmental, behavioral, socioeconomic, genetic, and infectious risk factors
  – interpret geographic correlations of persons with their socioeconomic and demographies attributes
  – conduct public health surveillance in the context of One Health
What are the essential differences between previous and new IDSP portal

- **IDSP was designed to:**
  - Capture aggregate data only
  - Paper-based data collection
  - Not to link data from S, P and L forms
  - Weekly surveillance
  - Monitor only 13 health conditions

- **IHIP is designed to:**
  - Capture disaggregate data of persons at all levels
  - Link data from S, P, L, EWS 1 and 2 forms
  - Capture real-time or daily surveillance data
  - Provide analysis on mobile and electronic devices
  - Monitor more than 33+ health conditions
  - Integrate with ongoing surveillance programs
IDSP’s Workflow in India’s Geographic Context

State (36 States/UTs)

District (707)

Sub-district (6267)

Village (655075)
# IDSP’s Data Collection Process at State-level

## Block PHC or Community Health Center
- **Weekly household visits to collect data**
- **One consolidated “p” form/PHC/week + “L” forms**
- **Medical Doctor + helper**

## Sub Center
- **Primary Health Center**
- **Auxiliary Nurse Midwife, or Male Health Worker**

## District Surveillance Unit
- **District Surveillance Officer, Data Manager, Data Entry Operator**

## State Surveillance Unit
- **State Surveillance Officer, Data Manager, Data Entry Operator**

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**Village**
- (655075)

**Sub-district**
- (6267)

**District**
- (707)

**State**
- (36 States/UTs)

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**Laboratory Presence**

**Spreadsheets**
- Paper forms are converted to electronic data
- Electronic data, kept in the form of XL sheets or on a DB / Portal
- IDSP Database

**Weekly visits**
- Hand deliver
- Paper Forms
- Paper forms are converted to electronic data
- Email/Web Entry
- Electronic data, kept in the form of XL sheets or on a DB / Portal
- IDSP Database
IDSP’s Access to ICT Infrastructure at State-level

**Proposed System:** Portal access allows reporting of all data from DSU, CSU, SSU to CSU/IDSP in near real-time. Mobile reporting is both store and forward and near real-time. Data analytics and results will be accessible at all levels for action.
One Health

*the interconnectedness of human health, animal health and the ecosystem*
One Health

Source: OIE, 2016; http://www.oie.int/for-the-media/onehealth/
One Health

- 60% of existing human infectious diseases are zoonotic
- At least 75% of emerging infectious diseases of humans (including Ebola, HIV, and influenza) have an animal origin
- 5 new human diseases appear every year. Three are of animal origin
- 80% of agents with potential bioterrorist use are zoonotic pathogens

Source: OIE, 2016; http://www.oie.int/for-the-media/onehealth/
HEALTH IN THE SDG ERA

3 GOOD HEALTH AND WELL-BEING

ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES

World Health Organization
WWW.WHO.INT/SDGS
MoHFW Health Data Collection – Simplified View

**IDSP**
Population-based Surveillance of select conditions
(data collected from reporting units)

**HMIS**
Health Management Information System
(data collected from health facilities)

**Population**
Weekly

**Other MoHFW Programs**
Population-based Surveillance of select conditions
(data collected from reporting units)

**Personal Health Records**
EHR (Electronic Health Record) or Paper-based Record
(person’s record at hospitals and healthcare facilities)

Daily

**Central Level Data Collection**

**State Level Data Collection**

**Need to move to near real-time web-based reporting and public health action**

Monthly
Major Milestones in the Evolution of Integrated Health Surveillance Platform
Articulation of IDSP ICT Masterplan

Four Conceptual Pillars

- Envision integrated near-real-time eSurveillance
- IDSP Functional Needs
- IDSP Data and Information Products
- IDSP Portal Users
- Embed innovation for data quality, accessibility
- Ensure sustained financing and continued leadership
- Empower public health surveillance workforce
Articulation of Integration Health Surveillance Platform

Four Conceptual Pillars

**Pillar 1:** Envision IDSP’s integrated near-real-time eSurveillance

**Pillar 2:** Embed innovation and ensure quality data for decision-making

**Pillar 3:** Empower public health surveillance workforce

**Pillar 4:** Ensure sustained financing and continued leadership
Timeline for development of integrated health surveillance platform

**Landscape Analysis**
- Identify stakeholders to conduct structured interviews for data discovery and review background documents

**Phase 1: 3 Weeks**
- April-May 2017

**Requirements Gathering & Design**
- Conduct data integration exercise to finalize *systems requirements document*;
- Finalize tender for bidding and commission prototype development

**Phase 2: 4 Weeks**
- September 2017

**Validation**
- Field test and finalize the IDSP information platform, and phase-based system deployment; staff training

**Phase 3: 8 Weeks**
- December 2017
IDSP Data-linked Information System
(simplified view)

Select number of data fields from considered for integration

MoHFW entities

- Revised National TB Control Program (RNTCP)
- National Vector Born Disease Control Program (NVBDCP)
- National AIDS Control Program (NACP)
- National Leprosy Eradication Program (NLEP)
- Health Management Information System (HMIS)
- Emergency Medical Relief (EMR)
- International Health and Point of Entry (IH & PoE)

Non- MoHFW GoI entities

- National Animal Disease Reporting System (NADRS)
- Geospatial Data from National Informatics Center (NIC)
- Civil Registration System (CRS)
- Public Assets (Airport, Seaport, Transportation datasets)

IDSP Reporting Platform
(secure access to all reporting units)

Platform access provided to all registered public and private reporting entities and contributing MoHFW Programs

IDSP Dashboard
(secure access to all reporting units)

NHP Dashboard
(Selected number of indicators made available to NHP Dashboard)
India’s Integrated Health Information Architecture

Integrated Health Surveillance Platform

Linking Surveillance Data Records
- Facility NIN; Geocoded PIN; Reporting Unit ID; Reporting Person ID; Person Aadhar or other IDs

Near real-time feedback
Secure Access

Web-enabled Software interface

Government Registry
Facility Registry
RRT Registry
Link Listing Registry

Geospatial Imagery Data
Case Definition Registry
International Health
Photo and Image Registry

Geospatial Boundary Data
Diseases & Pathogens Registry
User Registry
SOP Document Registry

Earth Observation Data
ICD-10 Registry
Patient Registry
Population Registry

Synchronize
NHPS Data warehouse
Health Information Exchange

Training of the Trainer Workshop – Use of IHIP for IDSP
New Delhi | INDIA | 25 June 2018
National Health Programmes

Programmes for communicable diseases

- National Centre for Disease Control
- Integrated Disease Surveillance Programme
- Antimicrobial Resistance
- National Vector Borne Disease Control Programme (NVBDCP)
- Viral Hepatitis
- Human Rabies
- National Public Health Surveillance Programme
- National AIDS Control Programme (NACP)
- Revised National Tuberculosis Control Programme (RNTCP)
- National Leprosy Eradication Programme (NLEP)
- Universal Immunization programme

Programmes Non-communicable diseases, Injury and Trauma

- National Tobacco Control Programme (NTCP)
- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke (NPCDICS)
- National Programme for Control Treatment of Occupational Diseases
- National Programme for Prevention and Control of Deafness (NPPCD)
- National Mental Health Programme (NMHP)
- National Programme for Control of Blindness (NPCB)
- National Nutritional Programmes (NNP)
- National Iodine Deficiency Disorders Control Programme (NIDDCP)
- Mid-Day Meal Programme (MMP)
- National Oral Health Programme (NOHP)
- National Programme for Prevention and Control of Fluorosis (NPFC)
- Reproductive Maternal Newborn Child and Adolescent Health (RMNCH+A)
- National Rural Health Mission (NRHM)
- National Urban Health Mission (NUHM)
- National Mental Health Programme
- National Water Supply and Sanitation Programme
- Department of Animal Husbandry Dairying & Fisheries (DADF)
- National Animal Disease Reporting System (NADRS)
- Environment, Forest and Climate Change (MoEFCC)
Integrated Health Information Platform
Integrated Disease Surveillance Programme
Ministry of Health and Family Welfare

Near real-time, web-enabled, person-centric, national health surveillance portal to track data for routine surveillance, early warning signals, outbreak investigation, special surveillance, facility and lab reporting status, media scanning, customized dashboards.

Data entry from phone or computer

Nation-wide monitoring for compliance

System generated reports

Lab confirmed cases

GPS Location of cases
Aggregate report

Near real-time data gathering ability from 36 States, 707 districts, 6267 sub-districts, and 655075 villages.
MoHFW Integrated Health Surveillance Dashboard
Strategic Health Operations Center
Thank you

For further information

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WHO Headquarters, Switzerland

Dr Pavana Murthy, MurthyP@who.int
National Professional Officer
WHO Country Office, India
Module 1
Layout of IHIP Technical Architecture and IDSP Data Structure
# High-level Architecture

Based on Health Surveillance Informatics Principles and Best Practices

<table>
<thead>
<tr>
<th>Application Module</th>
<th>Approach and Capabilities</th>
<th>Data Integration</th>
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<tr>
<td>Data Collection</td>
<td><strong>IDSP App</strong> on handheld devices</td>
<td><strong>Automated geo-tagging</strong> of all appropriate fields</td>
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<tr>
<td></td>
<td><strong>IDSP web portal</strong> /store-forward <strong>Line listings and aggregate</strong></td>
<td></td>
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<tr>
<td>Data Management</td>
<td><strong>Near real-time</strong> <strong>Lossless data storage</strong></td>
<td>Integration of IDSP data with relevant datasets from GoI/CRS, NIC, and other entities.</td>
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<td>Data Analytics and</td>
<td><strong>Location based alerting algorithm</strong> for analysis and projection</td>
<td><strong>Automated</strong> alert generation <strong>Automated</strong> Geospatial trend analysis and visualization</td>
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<td>Forecasting</td>
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<tr>
<td>Data Visualization</td>
<td><strong>Results displayed on navigation maps, satellite imagery, and other modes</strong></td>
<td><strong>Dynamic dashboard</strong> <em>(mapped to Time, Place, Person and Custom rules)</em></td>
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<td>Business Intelligence</td>
<td><strong>Automated outputs</strong> <strong>Custom Summary, PDF, on-screen display</strong></td>
<td><strong>Custom reports</strong> made available at all levels on relevant reports to ANM; DSU, CSU, SSU and CSU</td>
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<tr>
<td>and Reports</td>
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<td>Documentation and</td>
<td><strong>Cloud server (NIC + BSNL)</strong> Standalone server</td>
<td><strong>Scalability</strong> to all states and within each state; API based data exchange</td>
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Minimum Requirements Implementing IHIP for IDSP
User Access Roles
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Responsibilities, Privacy, Security and Confidentiality
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<td>1.1 Facility Name:</td>
<td>HEGGERE</td>
<td>1.9 Contact Number:</td>
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<td>1.11 Sub District:</td>
<td>Tumkur (548)</td>
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<td>1.5 Officer in Charge:</td>
<td>Dr. Srikhar</td>
<td>1.12 District:</td>
<td>Karnataka (29)</td>
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<td>+91-9404940944</td>
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<td>1.7 Data Entry Personnel:</td>
<td>Prakash M Rao</td>
<td>1.14 Reporting Date:</td>
<td>Tuesday, June 26 2018</td>
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<td>stateadmin</td>
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<tr>
<td>1.20 Sub District Surveillance Officer:</td>
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<td>1.21 Contact Number:</td>
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<tr>
<td>1.22 Medical Officer PHC:</td>
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<td>1.23 Contact Number:</td>
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Understanding Document Number and User Authentication
Understanding Document Number and IDs

*Examples only*

Document Number: 29-548-5539-0-3551535564-26062018-P-1

1. State
2. District
3. Sub district
4. Village
5. Facility ID
6. Transaction Date
7. Document Type
8. Document Sequence

Patient Health Id
29-548-5539-612020-157499-NaN

Patient Transaction Id
157499-03042018-1

Specimen Id
157499/03042018/33/106/1

Event Outbreak ID
29548201826013O
Interlinkages of S, P, L data, Event Alert and Outbreak Data
Integration: IHIP <-> IDSP Data Linked Record System*

*Based on IDSP Surveillance Standards and Minimum Data Set
Thank you

For further information

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