Digital Data Packages for COVID-19 Surveillance & Response

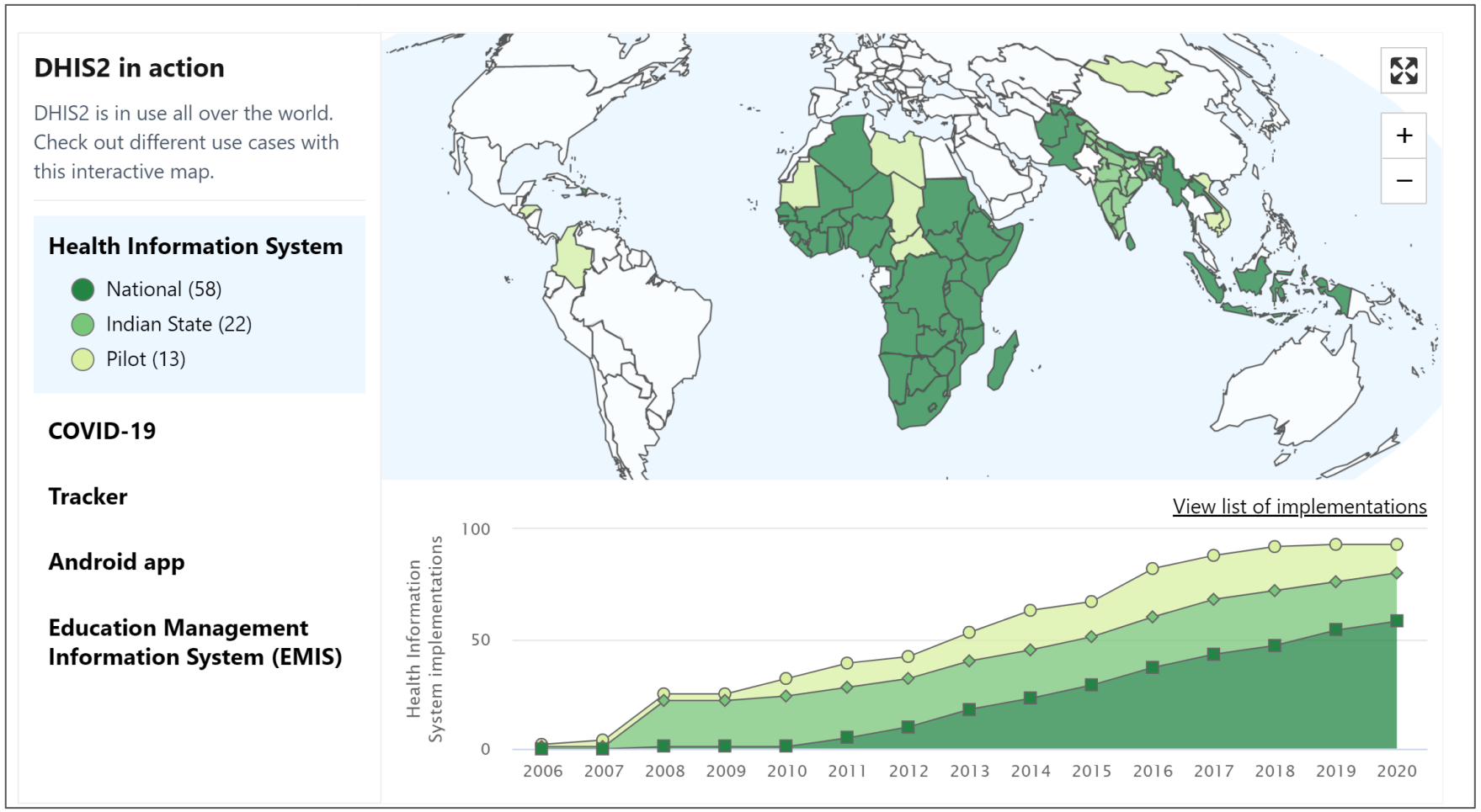
University of Oslo | 29-30 April 2020

Health Data Collaborative WebEx Event

Resources & Contact Information

Demo : covid19.dhis2.org/demo
Information page: dhis2.org/covid-19
Community page: community.dhis2.org
Contact us: covid@dhis2.org

DHIS2: a sustainable platform for health information



Supported as a Global Public Good

Open source, entirely free of licensing fees

Global footprint: used by 72 countries

Scalability: national scale in 59 countries

In-country ownership

Community-driven software roadmap

DHIS2 Digital Data Packages

Package of reference data standards for countries to improve data quality, analysis and use

STANDARDS FOR MEASUREMENT

- **Core indicators and metadata**
- **Data quality metrics**

HEALTH SYSTEMS AND DISEASE-SPECIFIC MODULES

- **Programme specific indicators and data elements**
- **Best practice dashboards, analyses**
- **Aggregate and case-based reporting**
- **Standard data entry forms/registers**

METADATA REPOSITORY
DOWNLOAD

DATA QUALITY REVIEW (DQR)
DQR
DOWNLOAD

MORTALITY
DOWNLOAD

MORBIDITY
DOWNLOAD

HIV
DOWNLOAD

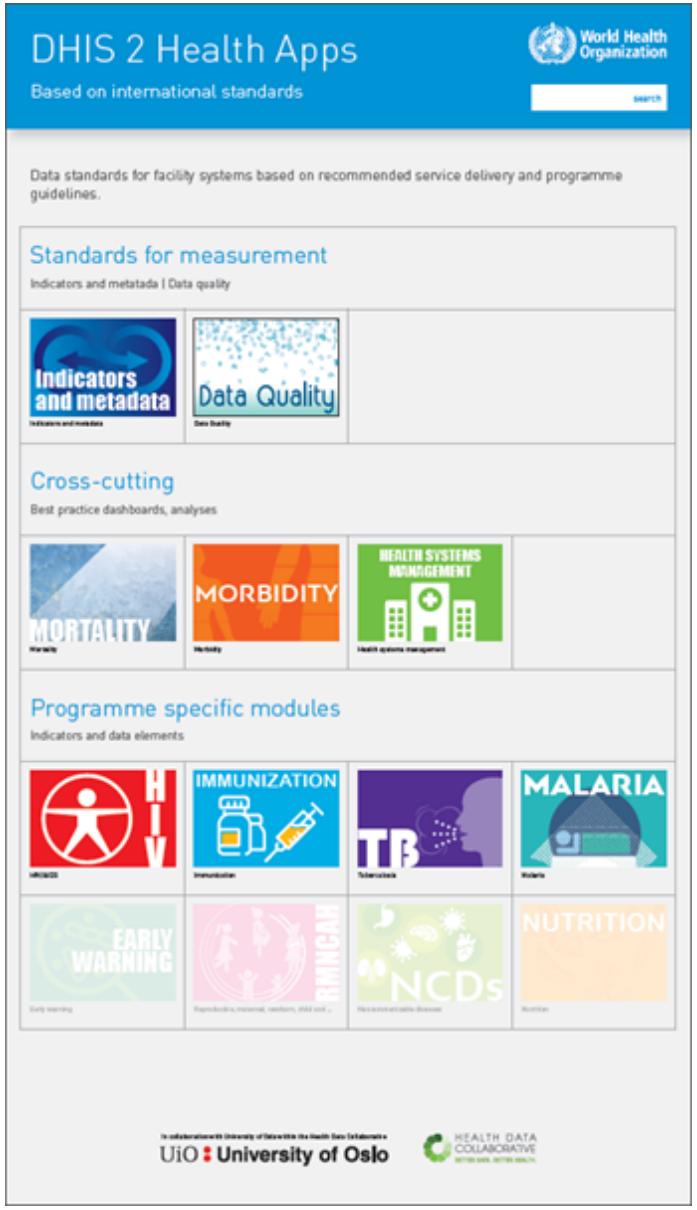
IMMUNIZATION
DOWNLOAD

TB
DOWNLOAD

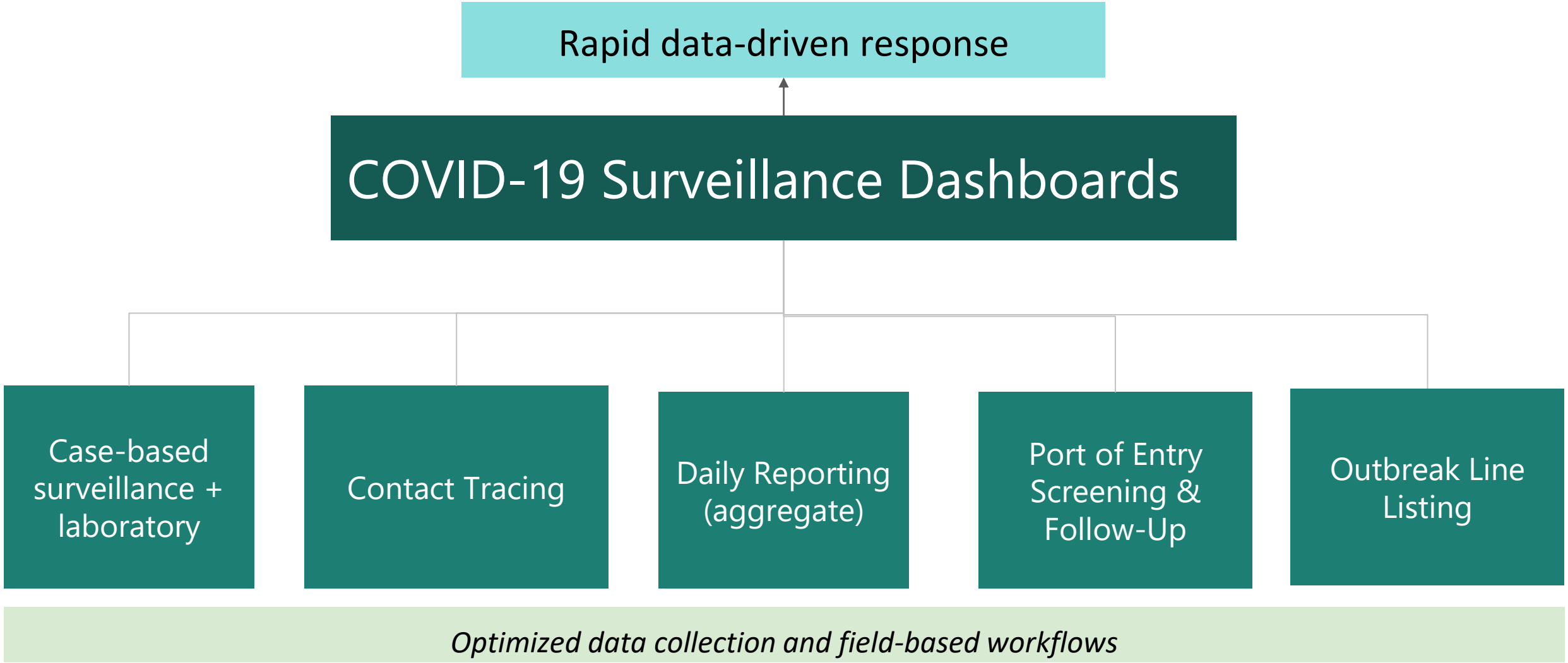
EARLY WARNING
DOWNLOAD

MALARIA
DOWNLOAD

RMNCH
DOWNLOAD



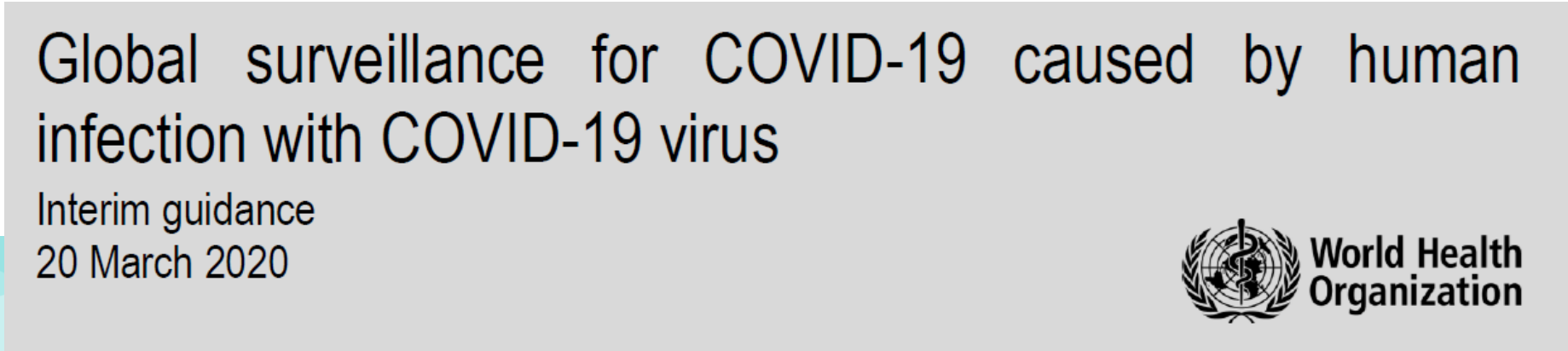
COVID-19 Digital Data Package



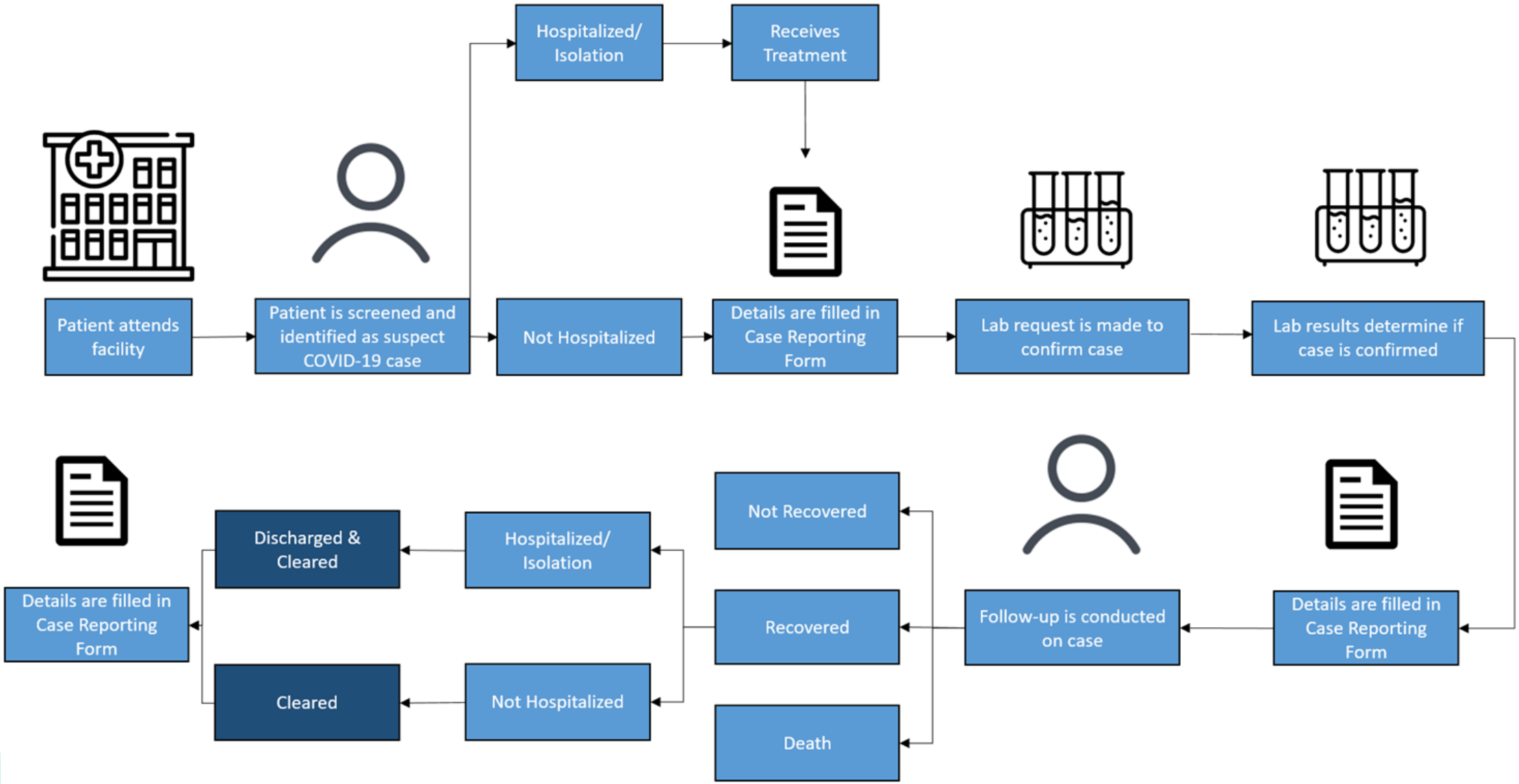
COVID-19 Digital Data Package Overview

Components are designed to install in combination or standalone according to country needs:

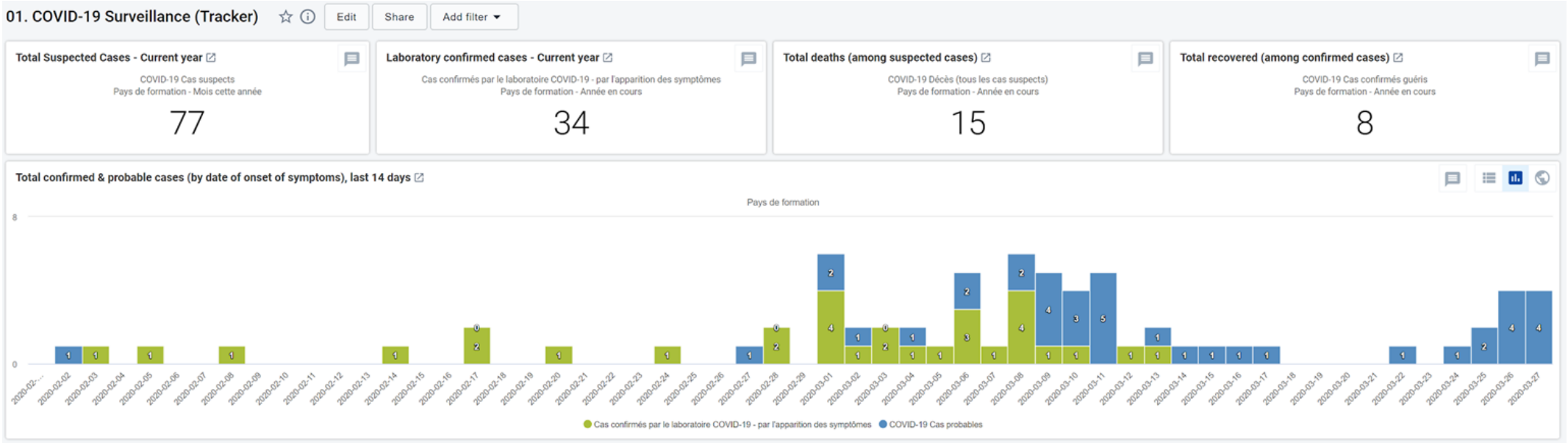
- **COVID-19 Case-based surveillance [tracker]:** enrolls & tracks suspected cases; captures symptoms, demographics, risk factors & exposures; creates lab requests; links confirmed cases with contacts; and monitors patient outcomes
- **Contact registration & follow-up program [tracker]:** strengthens active case detection through contact tracing activities, such as identification and follow-up of contacts confirmed COVID-19 case.
- **Ports of Entry screening & follow-up program [tracker]:** enrolls travelers who have visited high-risk locations at Ports of Entry for 14-day monitoring and follow-up.
- **COVID-19 Surveillance Event Program:** a simplified line-list that captures a subset of minimum critical data points to facilitate rapid analysis & response, particularly useful when caseloads or burden of reporting exceeds capacity for case-based surveillance tracker
- **COVID-19 Aggregate Surveillance:** an aggregate reporting dataset that captures minimum necessary data points for daily and weekly reporting

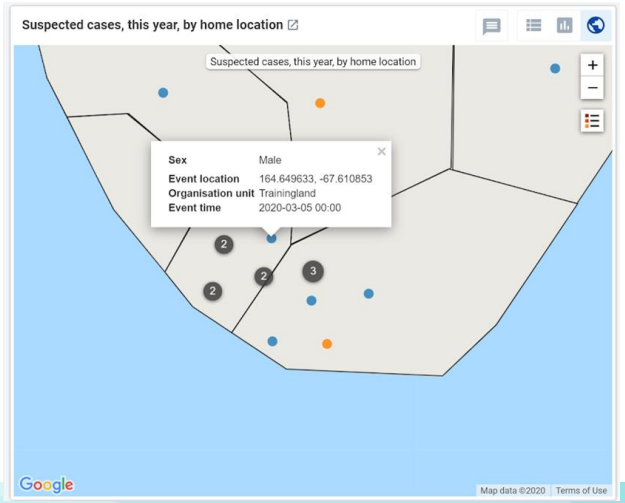


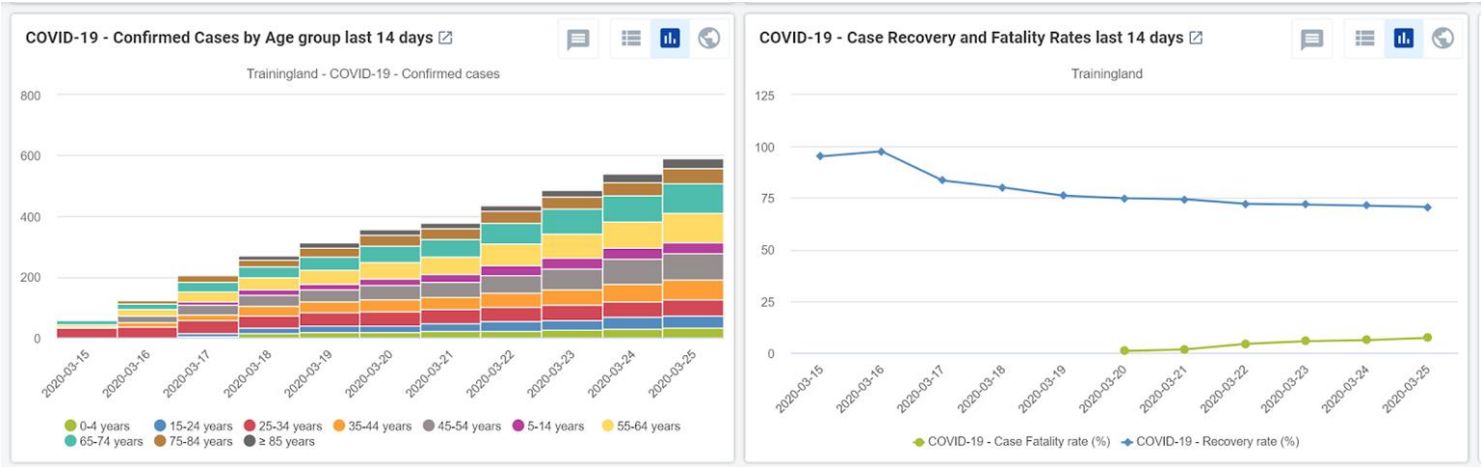
Support for local workflows



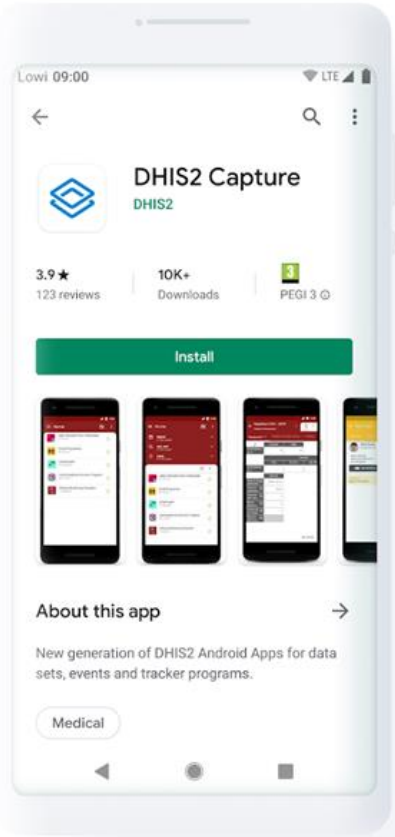
Automated dashboards





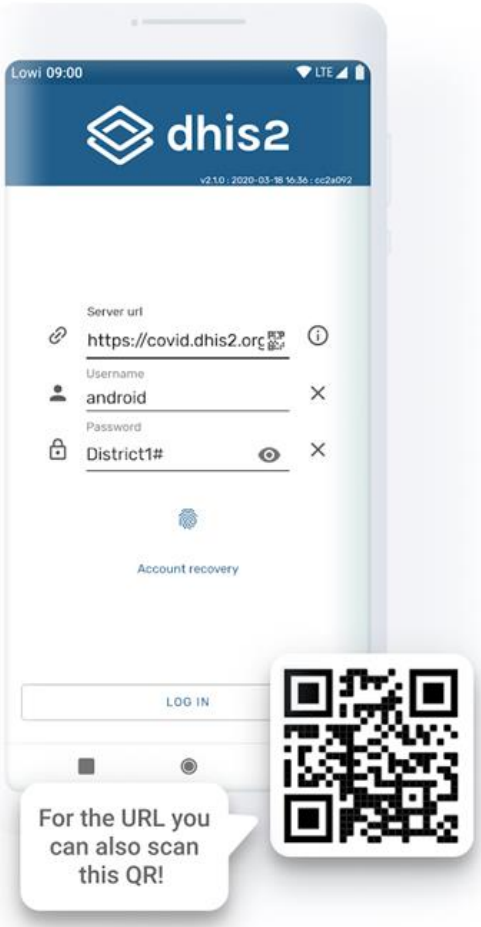


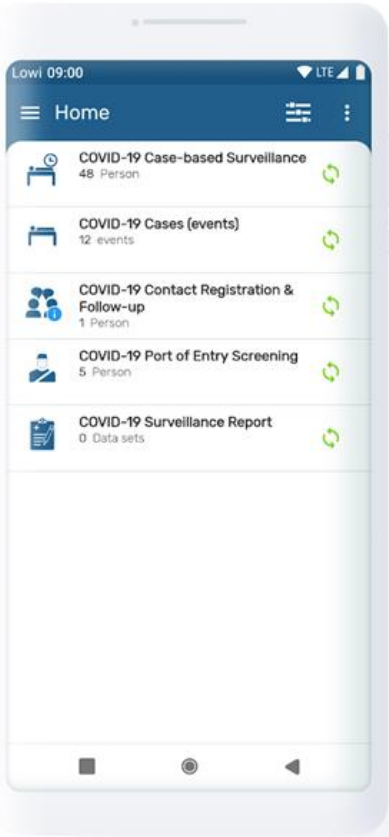
Natively integrated with DHIS2 Android App



Download

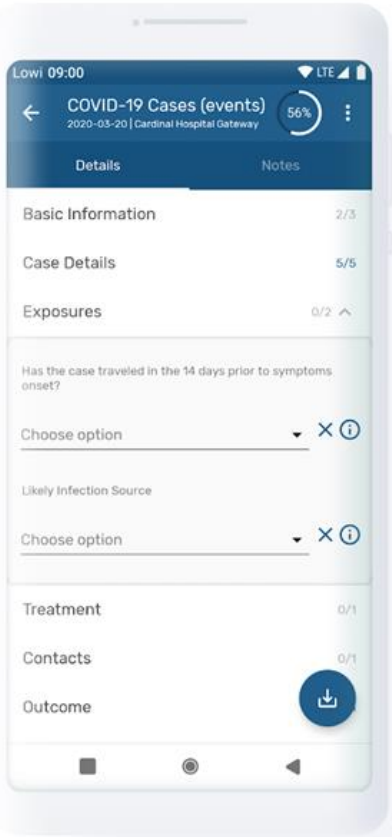
and Install the DHIS2 Android Capture App from Google Play





Log In and select your activity

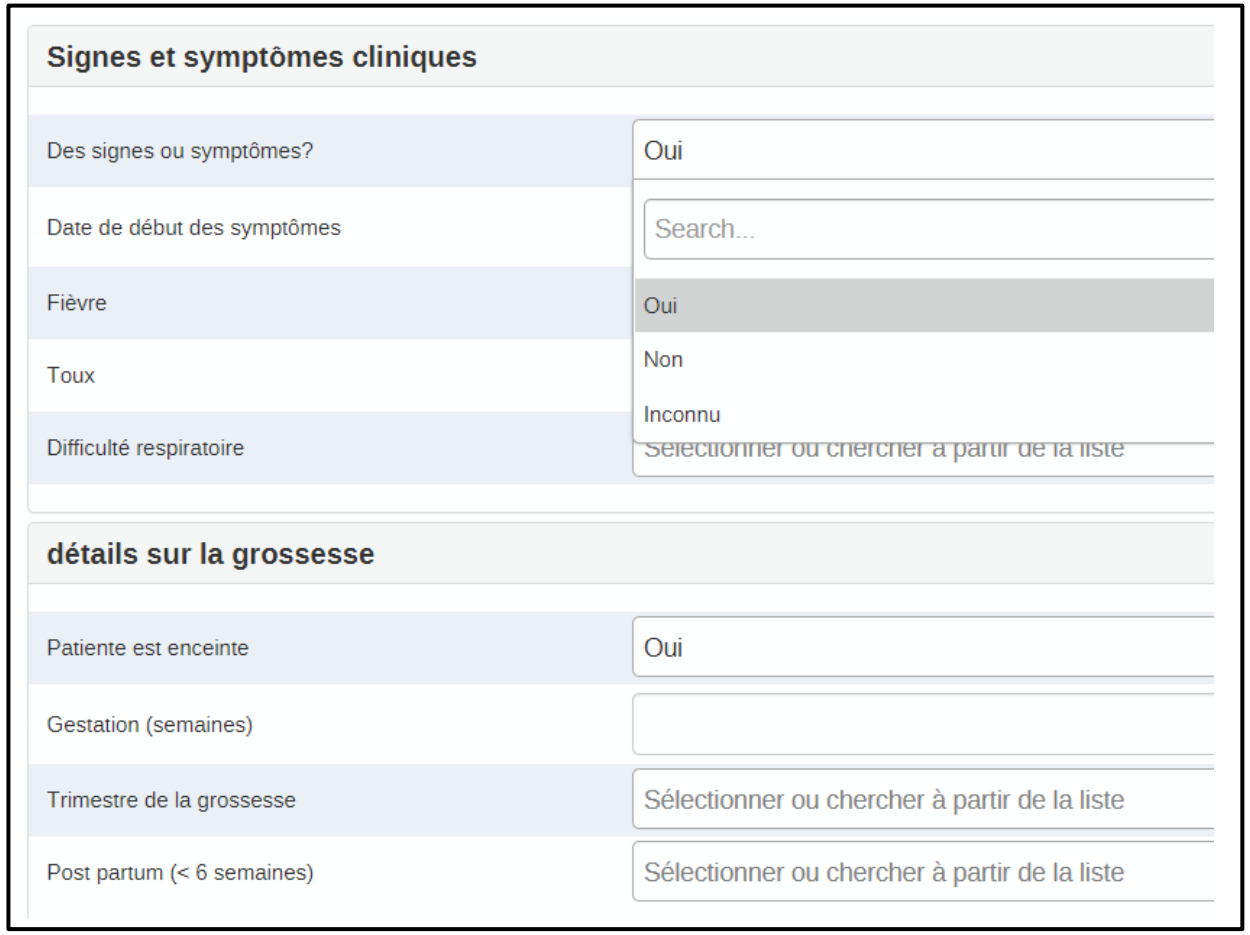
URL: https://covid.dhis2.org/demo
USER: android
PSW: District1#



Go!

Test it out by registering your own demo cases!

Multi-Language Support



Current translations:

- French
- Spanish
- Portuguese
- Russian

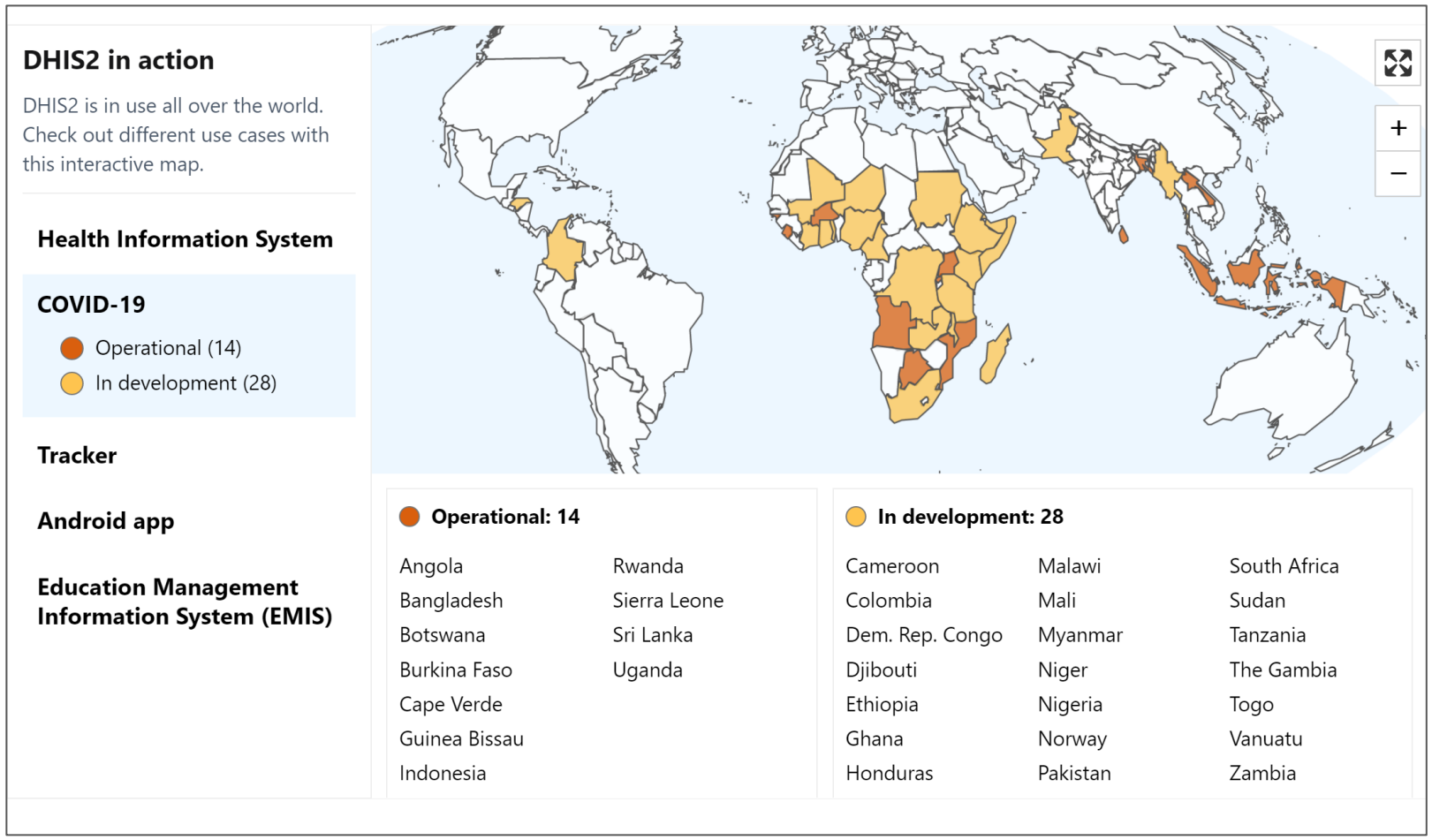
Languages in progress:

- Arabic
- Lao
- Burmese

Community-driven translation platform

- Contribute: translate@dhis2.org

Global deployment of COVID-19 data package



42 countries expressed interest in COVID-19 packages

24 countries have DHIS2 Android deployments

51 countries use DHIS2 tracker

71 countries use DHIS2 as HMIS (13 countries in pilot)

Supported by global HISP network located in 15 countries

Uganda COVID-19 Implementations Supported by HISP

HISP Uganda

Prosper Behumbiize, MPH, PhD
DHIS2 Implementation Adviser| HISP Uganda
prosper@hispuganda.org | prosper@dhis2.org | Skype: prospertb

East African COVID-19 Updates – 29th April 2020

Confirmed	Active	Recovered	Deaths
965	634	306	25
+24	+14	+10	–

Country	Total cases	Active	Recovered	Deaths
Burundi	11	6	4	1
Kenya	363	235	114	14
Rwanda	207	114	93	0
South Sudan	6	6	0	0
Tanzania	299	241	48	10
Uganda	79	32	47	0

More than half of the Active cases are Kenyans and Tanzanians who some in Uganda and otherwise returned back

Uganda Country COVID-19 implementation

- eIDSR has evolved with the launch of Global Health Security demo project in 2013 piloting the case notification, specimen tracking and linking of case to lab testing for VHF, Cholera and MDRTB

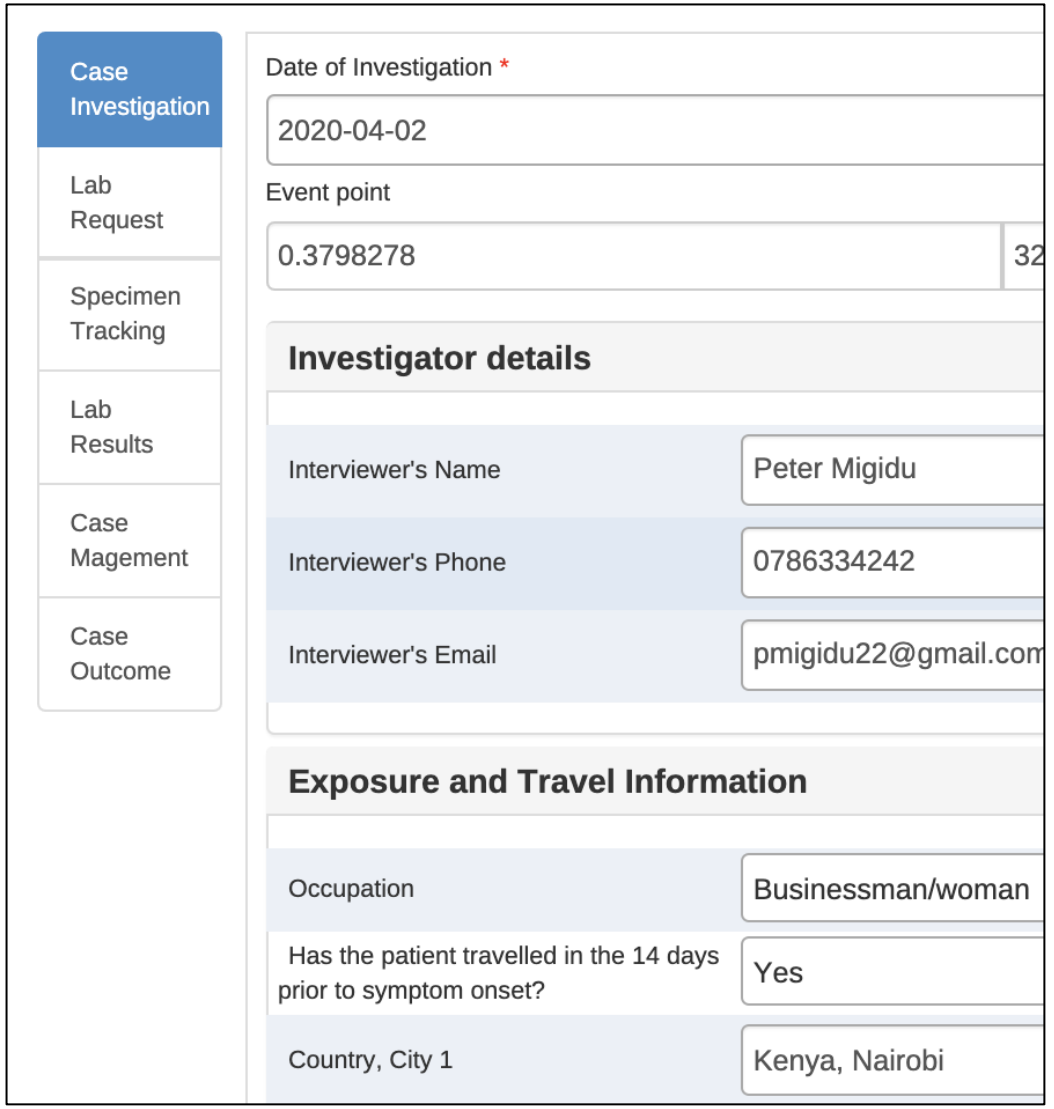
- HISP Uganda has been supporting a case based surveillance systems integrating human and animal in Uganda

- Uganda DHIS2 tracker based eIDSR has been configured to capture case notification, investigation, lab integration and case management for COVID-19

- Point of Entry data capture needs including travelers' tracking has also been added to eIDSR

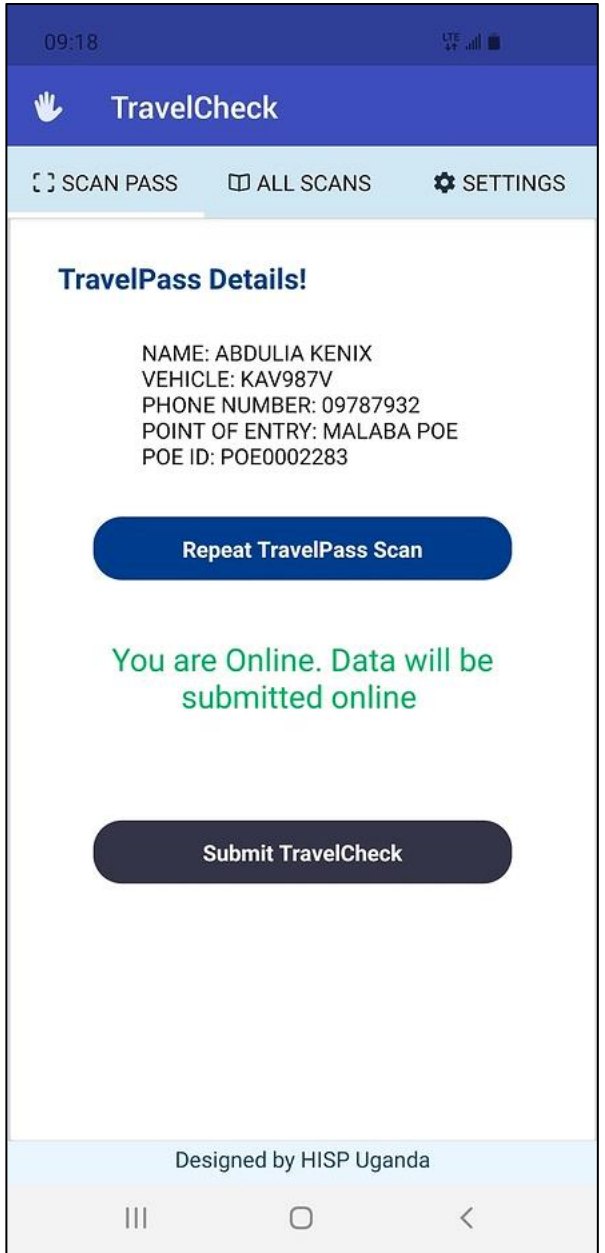
Uganda Country COVID-19 implementation

- eIDSR notifies on key human and animal notifiable diseases now including COVID-19
  - Notification – details about the notified COVID-19 suspects
  - Lab request – sample type and destination lab
  - Investigation – investigator details, travel history, signs and symptoms, underlying conditions, hospitalization and death if applicable
  - Lab results integration – test results, type of test and confirmed disease
  - Case management –daily physical exam, signs and symptoms, medication and test results
  - Case outcome – final outcome of the case

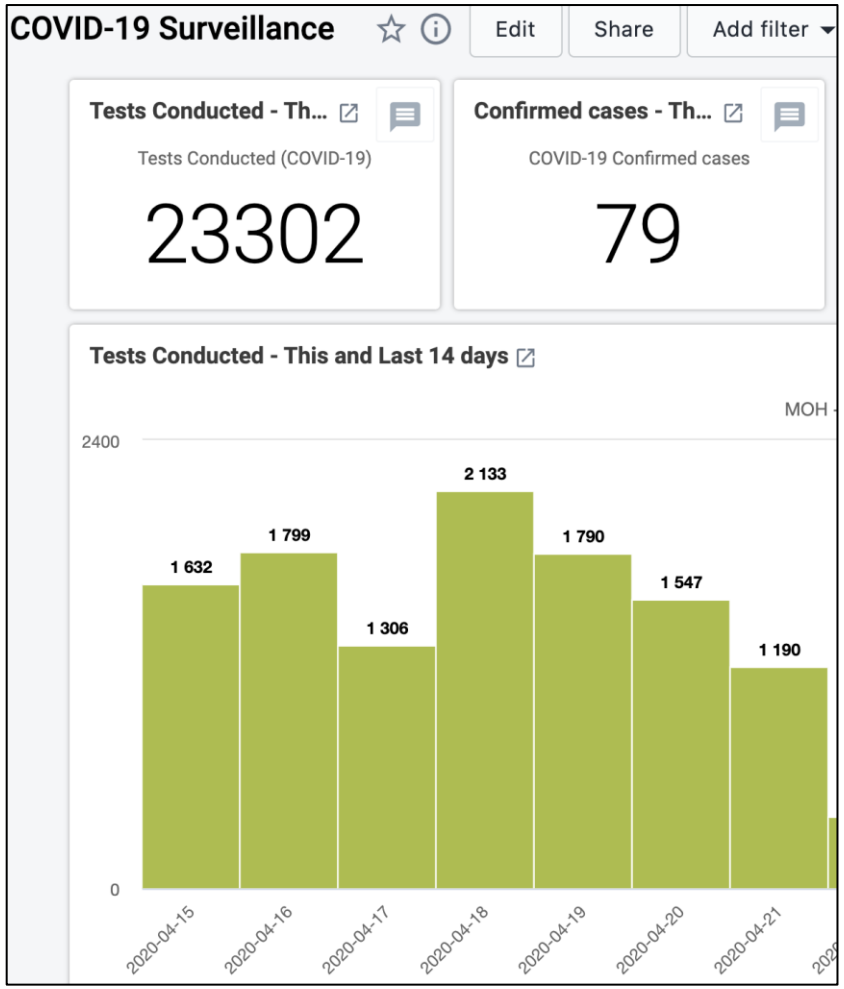


Local innovation use cases – POE Data capture

- Point of Entry - additional module to support screening and clearance of travelers added to eIDSR.
- Mobile app fully integrated with POE data capture in eIDSR added to track travelers:-
  - Capture– Bio data, Identification, Photo ID, country of departures and travels in the last 14 days, destination and address in Uganda, and if; sample was collection, in isolation and clearance for travel among others.
  - Print Paper Pass for the travelers bearing their photo, QR scanned at different check points for updating POE systems on whereabouts of the traveler



Uganda Country COVID-19 implementation



- Delays in deployment resulted in creating aggregate capture to eIDSR to support aggregate reporting
  - Daily COVID-19 Situation summary – Aggregate information on Alerts, contact tracing, POE screening, samples and results, quarantine summaries, hospitalization and outcomes
  - Point of Entry aggregate summaries– screening and traveler by different countries of departures
  - Integration of Aggregate data from individual systems/tracker with aggregate available in dashboards

Challenges

- Over changing tools and data demands as the pandemic advances
- Very many cases needing investigation (incomplete)
- Delays and process in the lab to complete the full cycle of notification to lab resulting timely
- Too many systems in place
- Data scattered

DHIS2 COVID-19 Package Implementation

Experiences from Saudigitus
(HISP Mozambique)

Countries supported with DHIS2 COVID-19 Package in Lusophone Africa

Saudigitus (HISP Mozambique) is supporting the implementation of the package in:

- Angola
- Cape Verde
- Guinea-Bissau
- Mozambique
- São Tomé and Principe

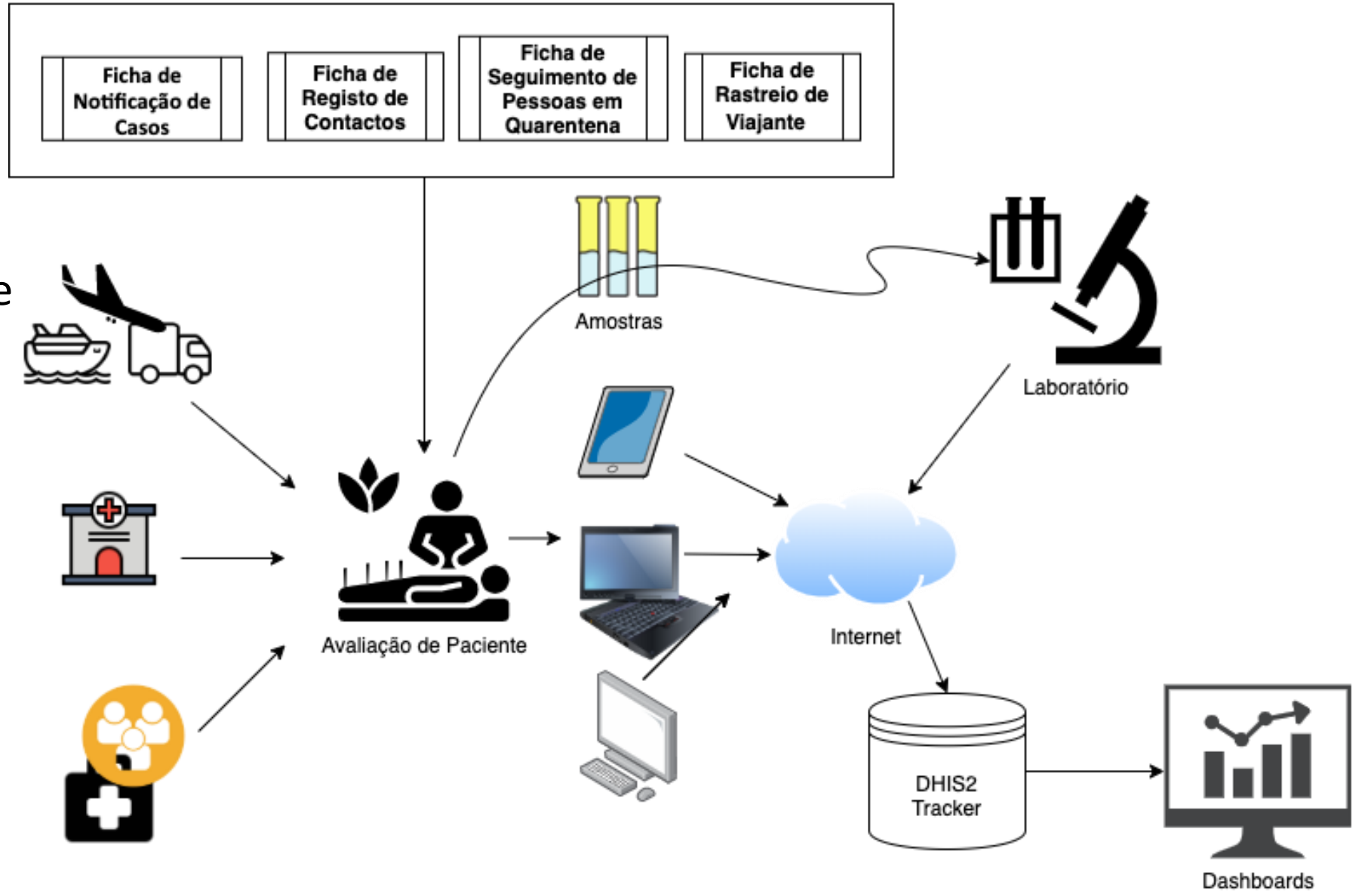
In each of the countries our support has focused mainly on the configuration of the package to capture case based surveillance data.

The DHIS2 COVID-19 Information System

Generic package was provided by HISP UiO;

In the countries the package was adjusted to meet MoH needs;

System captures data related to case notification, lab confirmation and screening in the points of entry.



COVID-19 implementation status

Angola

- Full operational
- Implementation partners:
  - WHO
  - PSI

Cape Verde

- Full operational

Guinea-Bissau

- Full operational
- Implementation partners:
  - UNDP
  - WHO
  - WB

Mozambique

- Full operational
- Implementation partners:
  - USAID
  - UNFPA

São Tomé and Principe

- Configured

DHIS2 COVID-19 packages implementation

Experience from HISP West and Central Africa

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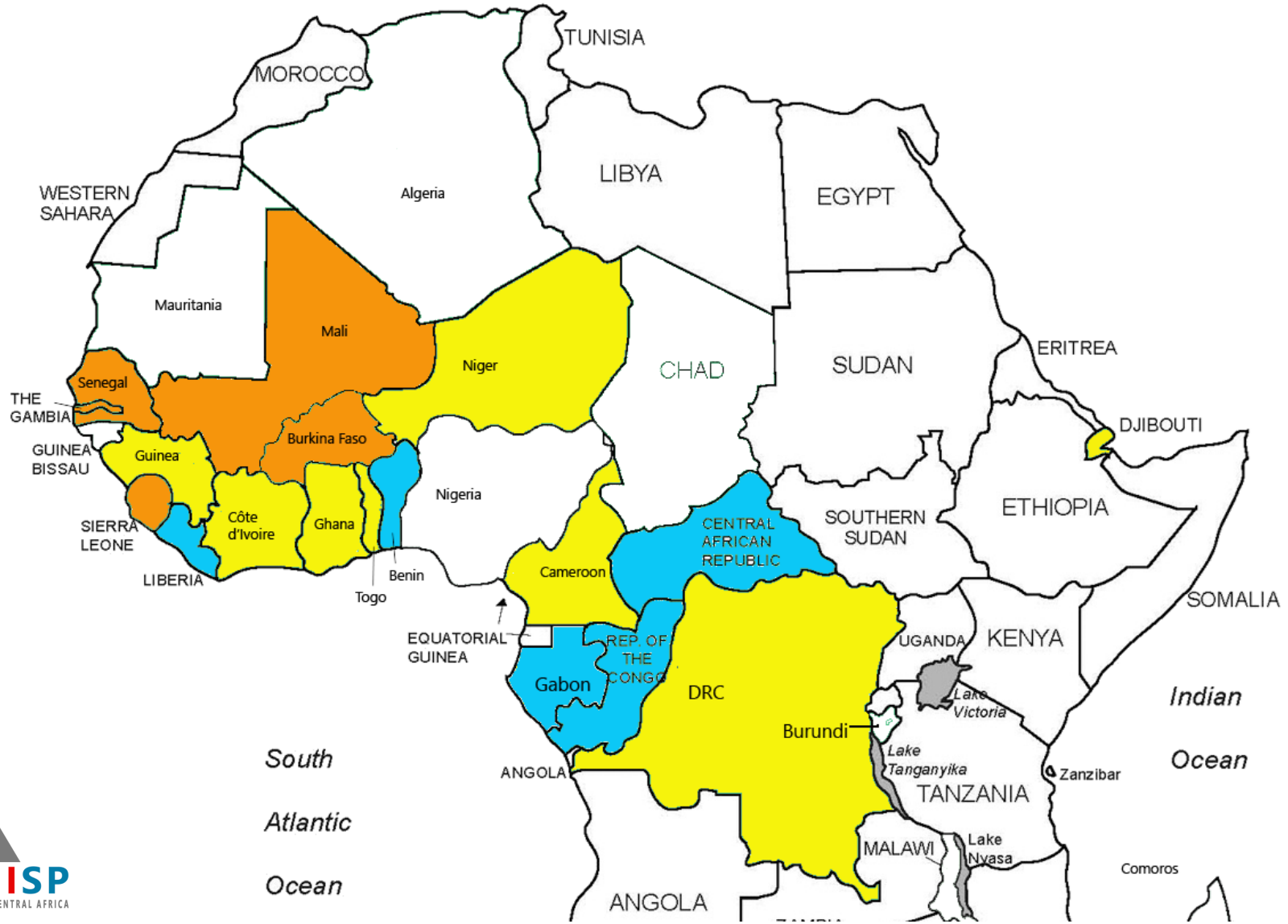
Status of countries in our region



Operational

Configured

Expressed interest

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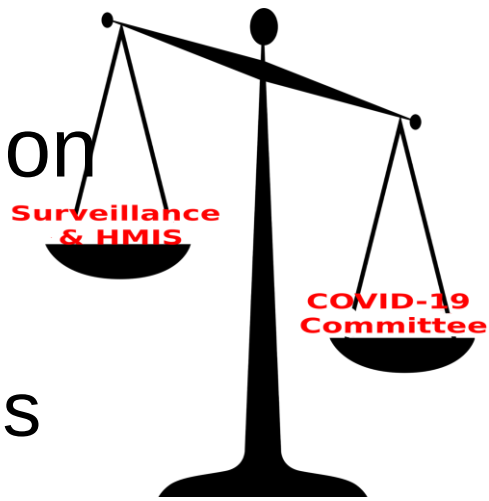
Lessons learned

- Rapidly changing requirements as countries try to stabilize their procedures
  - Additional changes may come if the magnitude of the outbreak changes
- Need to include new types of facilities: point of entries ..
- The packages have drastically shortened the customization time: from several weeks to 1 or 2
- Need to align partners to support the implementation
- New power dynamics:
  - COVID-19 committee vs surveillance and HMIS teams



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Local innovations

- Adaptation to new ways of working:
  - mixed online customization workshops
- More rules and action to contact tracing: testing
- Online clinical assessment to relieve call centers
- Involvement of new type of actors: CHW or Sentinel CHW

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Remaining challenges

- The belief of needing new systems and organization for every new outbreak
- Need to see every new outbreak as an opportunity to strengthen the system
- Competing initiatives that are distracting
- Some countries are reluctant to have online systems

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occupied Palestinian territory

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The Palestinian National Institute of Public Health

Palestine COVID-19 Surveillance System

DHIS2 | Palestine Country Team – PNIPH & MoH

dhis2 | Palestine country team

Who we are

- **WHO project** endorsed by the Palestinian government and president; will become an **independent governmental entity**
- **Evidence-driven institute** that aims to improve the health and wellbeing of the general public in Palestine
- Multi-sectoral **credible** source of **public health knowledge**

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Partners

- **Norwegian Institute of Public Health (NIPH)**
- **University of Oslo**
- **DHIS2 HISP**
- **DHIS2 Community**

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Vision

Better health and wellbeing for all in Palestine

Mission

Strengthening national efforts to generate and utilize evidence for improving the health and wellbeing of people in Palestine

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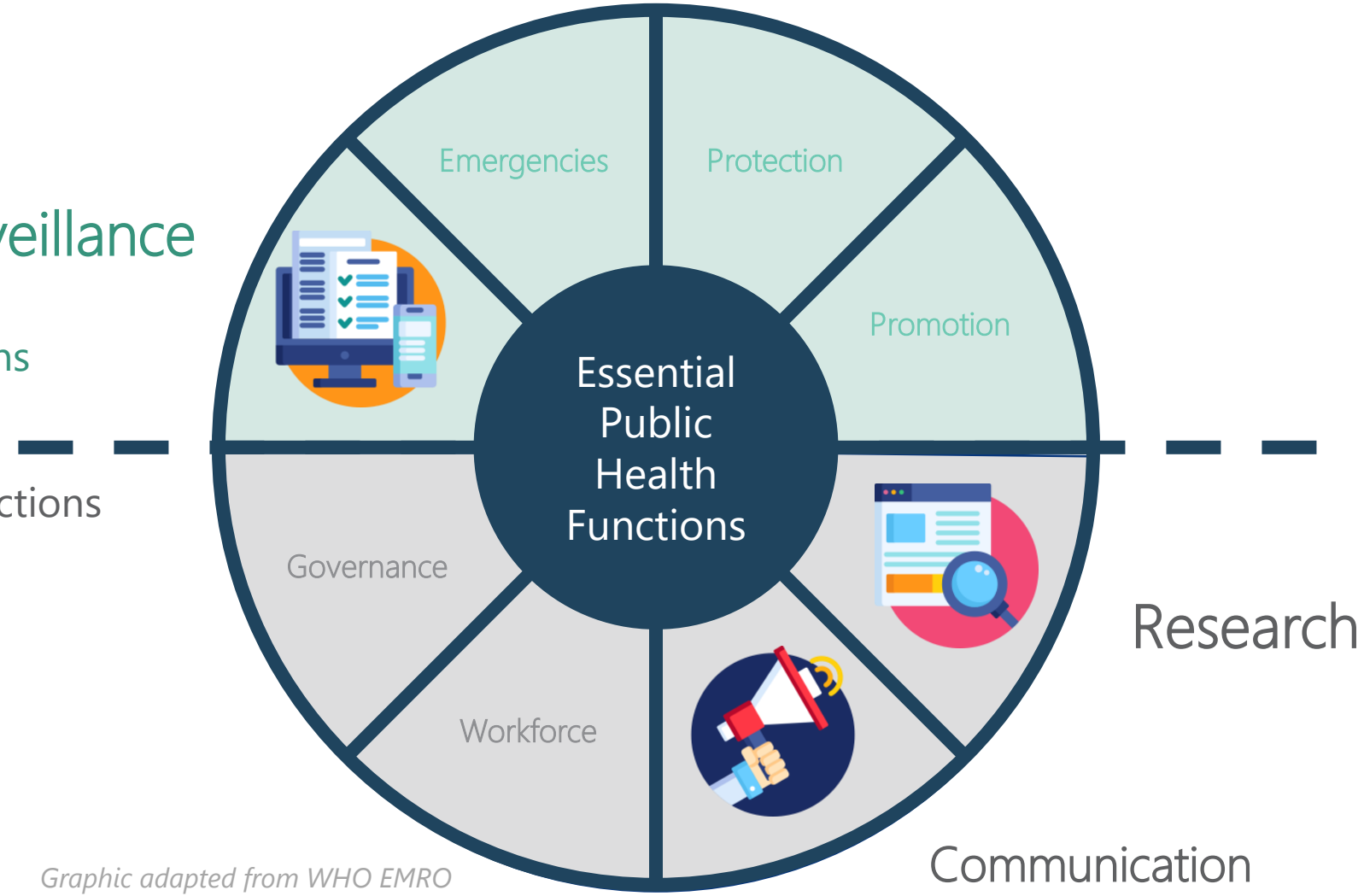
Strengthening Essential Public Health Functions in Palestine



Graphic adapted from WHO EMRO

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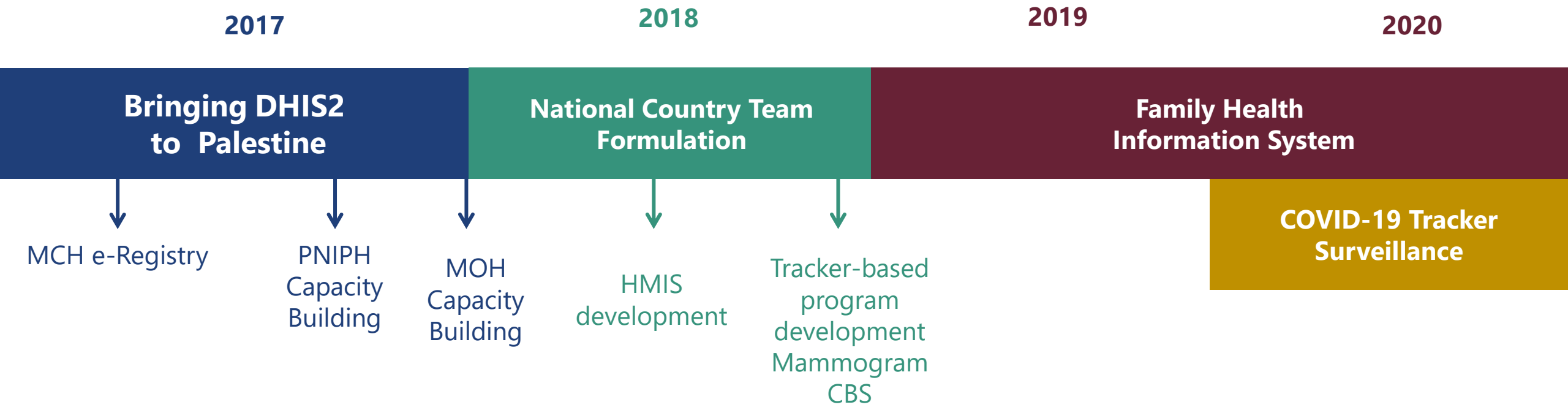
Palestine DHIS2 Milestones



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COVID-19 System: How it started

- PNIPH and MoH agreed on the need for a surveillance system
- DHIS2 programs were developed according to MoH needs, reflecting efforts to control the virus
- Programs took into account WHO case definitions and reporting for suspected and confirmed cases
- The DHIS2 Palestine Country Team helped shift the focus to COVID-19 crisis response
- The package was built with 4 Tracker Programs and 5 Event Programs

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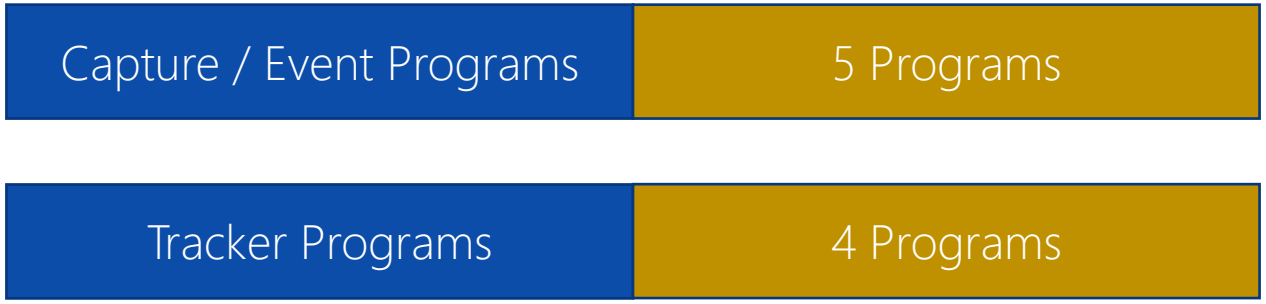
COVID19-Package Development

The package was built using two applications:

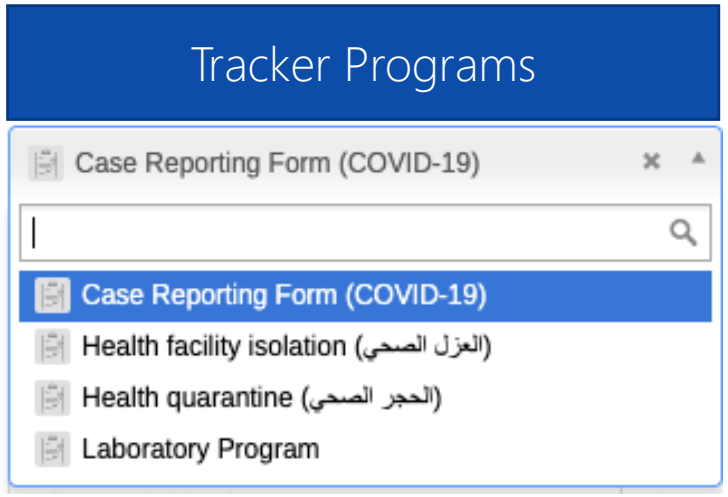


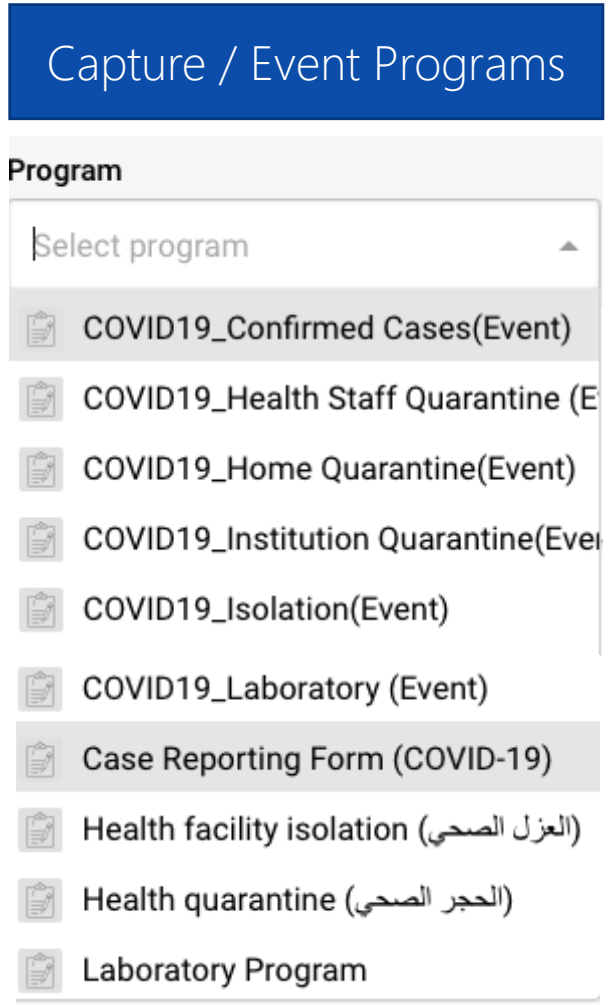
- Includes standard metadata aligned with WHO's technical guidance on COVID-19 surveillance and case definitions
- Supports surveillance workflows and automated analysis for key components of routine and active surveillance

COVID19-Package Development

The system covers the following areas:

- WHO suspected and confirmed investigation form
- Health isolation for positive cases
- Health quarantine for negative cases
- Laboratory testing





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COVID-19: Implementation & Training

PNIPH Role

- Supervised implementation
- Helped assign MoH focal points for each program at the district level
- Developed 6 online virtual training videos
- Conducted training for each focal point
- Continuing to provide remote follow-up and support to ensure data quality

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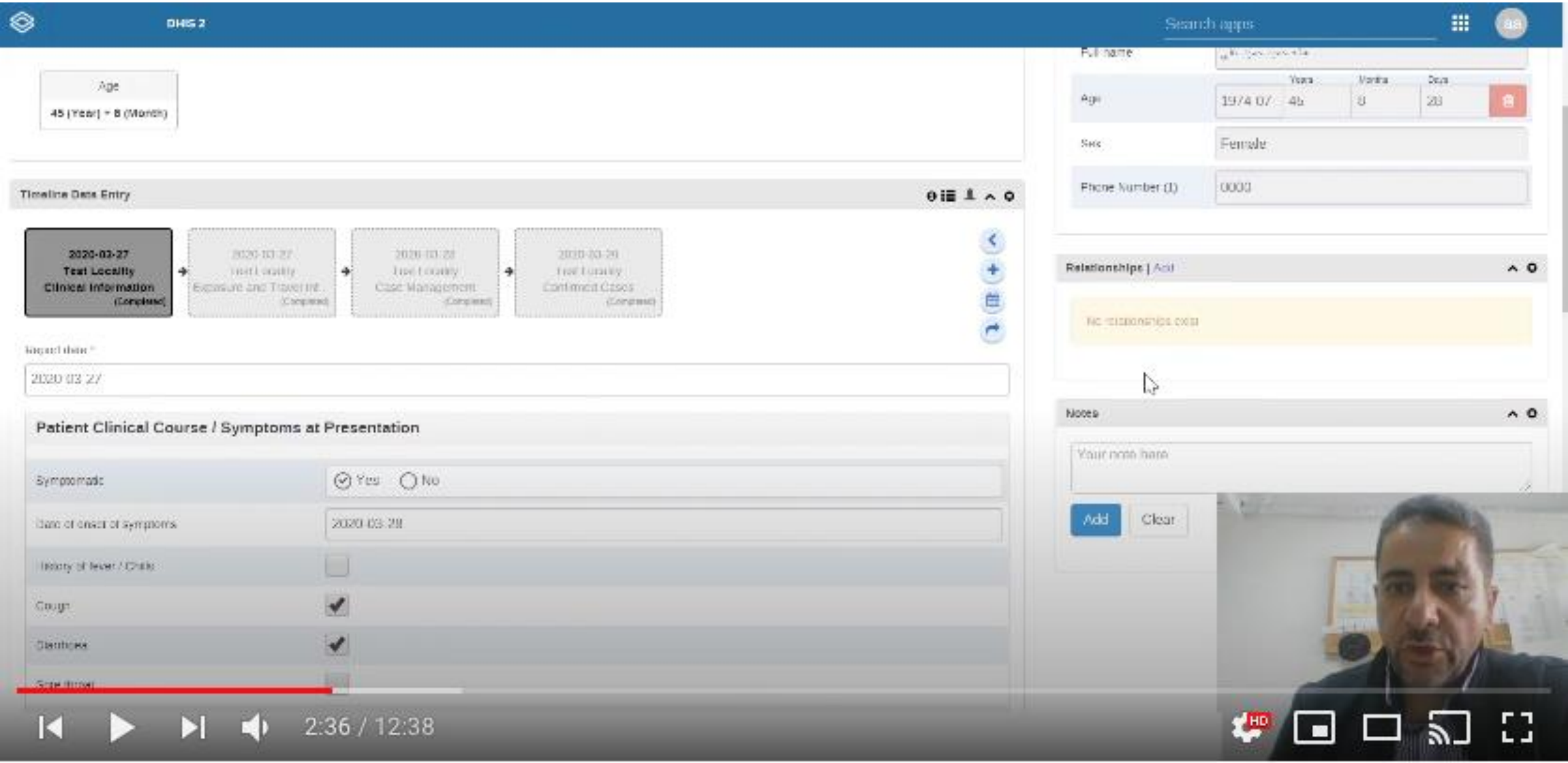
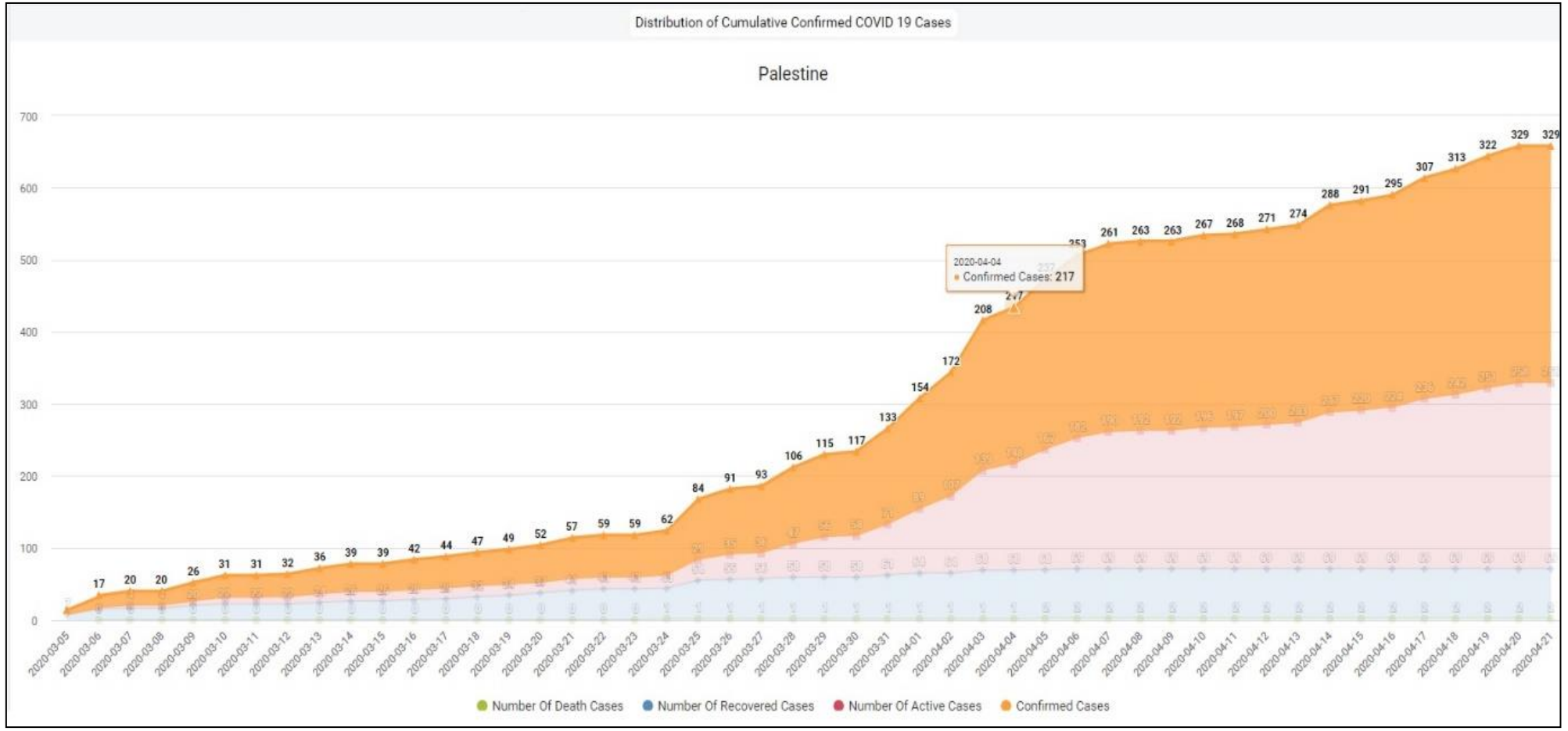
COVID-19 Surveillance System Training Video



Dashboard: Real-time Indicators

- 70+ indicators developed
- Indicators are presented through tables, charts, and maps
- Information will support decision-making process

Dashboard Samples



Distribution of confirmed, active, recovered, and death cases; generated by the Palestine COVID-19 surveillance system

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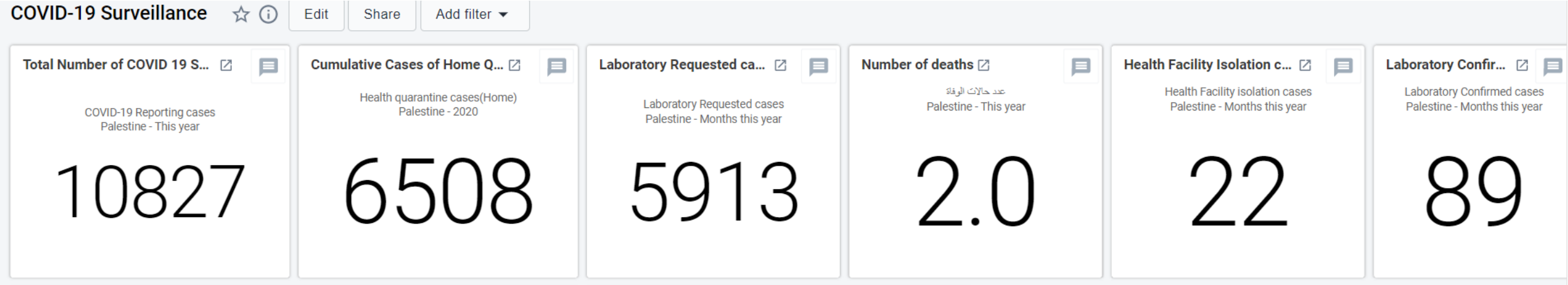
Dashboard Samples



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Confirmed Cases by Age Group 2020										
Organization Unit / Data	0 - 9 y	10 - 19 y	20 - 29 y	30 - 39 y	40 - 49 y	50 - 59 y	60 - 69 y	70 - 79 y	>=80 y	Total
Jerusalem	16	15	25	32	23	18	8	2		139
Tubas										
Bethlehem	2	4	21	10	6	10	5			58
Jericho						1				1
Jenin				2	1	1				4
Ramallah	7	14	16	10	17	1	3			68
Qalqiliah										
Salfit						1				1
Nablus			4	2		1				7
Hebron	1	5	10	13	6	1	5			41
Tulkarm			4	1	1					6
Gaza		2	6			3	3	1		15
Total	26	40	86	70	54	37	24	3		340

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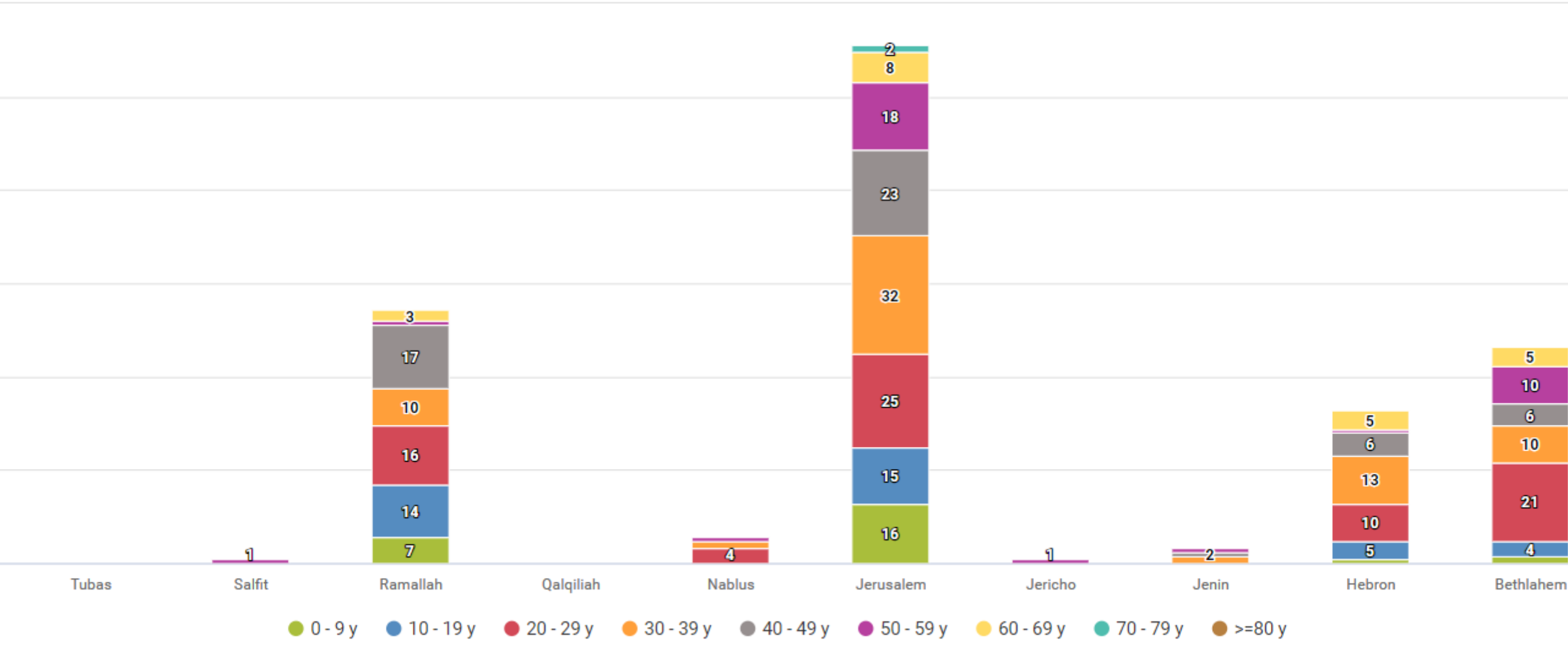
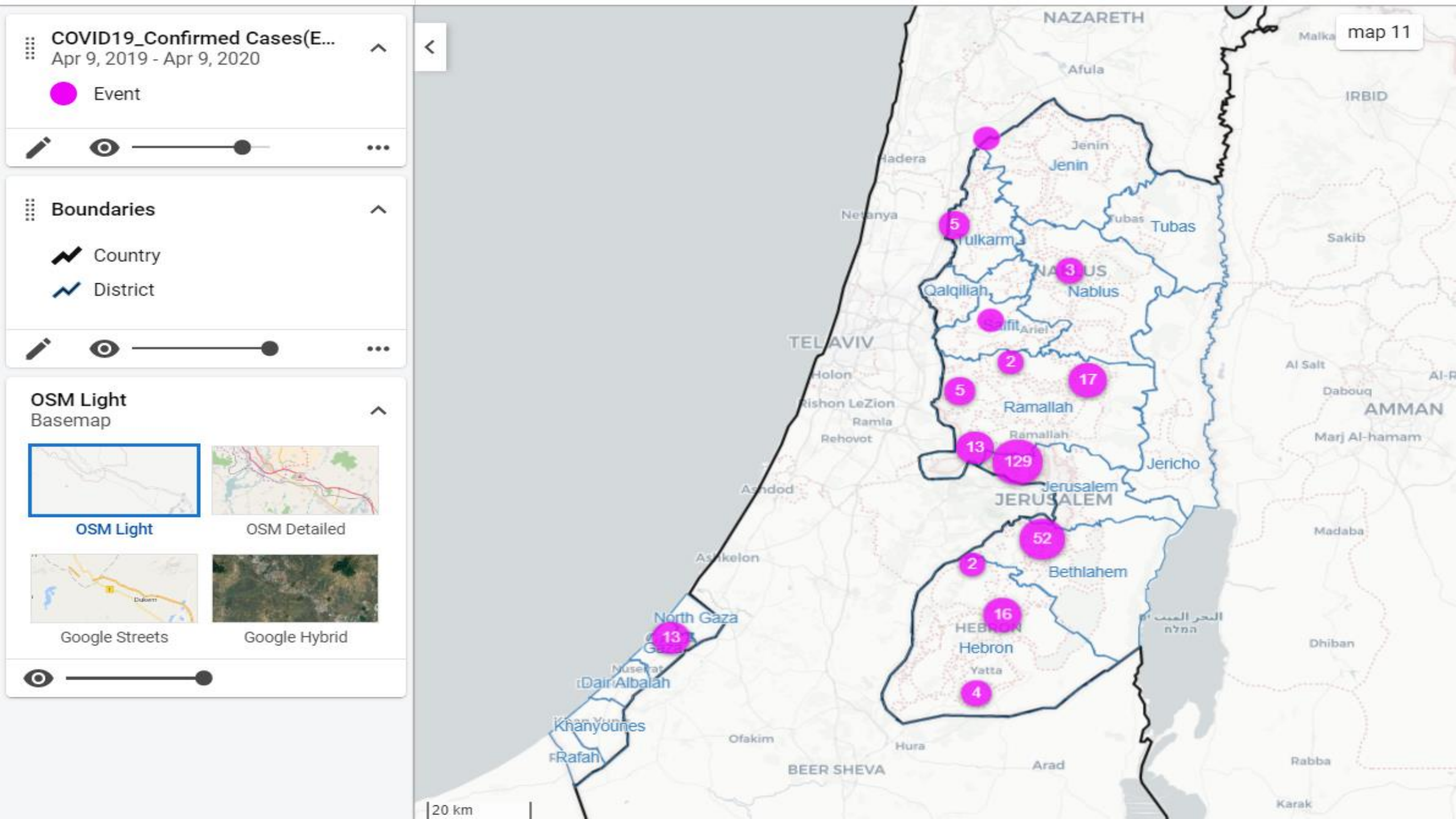
tion Unit: 12 selected •••

Distribution of Confirmed COVID19 Cases by Age groups and Districts

توزيع الحالات المصابة بفايروس كورونا حسب الفئات العمرية والمحافظة

This year




COVID19_Confirmed Cases(E...
Apr 9, 2019 - Apr 9, 2020
Event
Boundaries
Country
District
OSM Light
Basemap
OSM Light
OSM Detailed
Google Streets
Google Hybrid
map 11
NAZARETH
Afula
IRBID
Jenin
Tubas
Sakib
Qalqiliah
Nablus
TEL AVIV
Holon
Rishon LeZion
Ramla
Rehovot
Ramallah
Jericho
Jerusalem
JERUSALEM
Al Salt
Dabouq
AMMAN
Marj Al-hamam
Madaba
Dhiban
Ashkelon
North Gaza
Dair Albalah
Khanyounes
Rafah
Ofakim
Hura
BEER SHEVA
Arad
Rabba
Karak
Hebron
Yatta
Bethlahem
5
3
2
17
5
13
129
52
2
16
4
13
20 km

Thank you

World Health Organization
occupied Palestinian territory

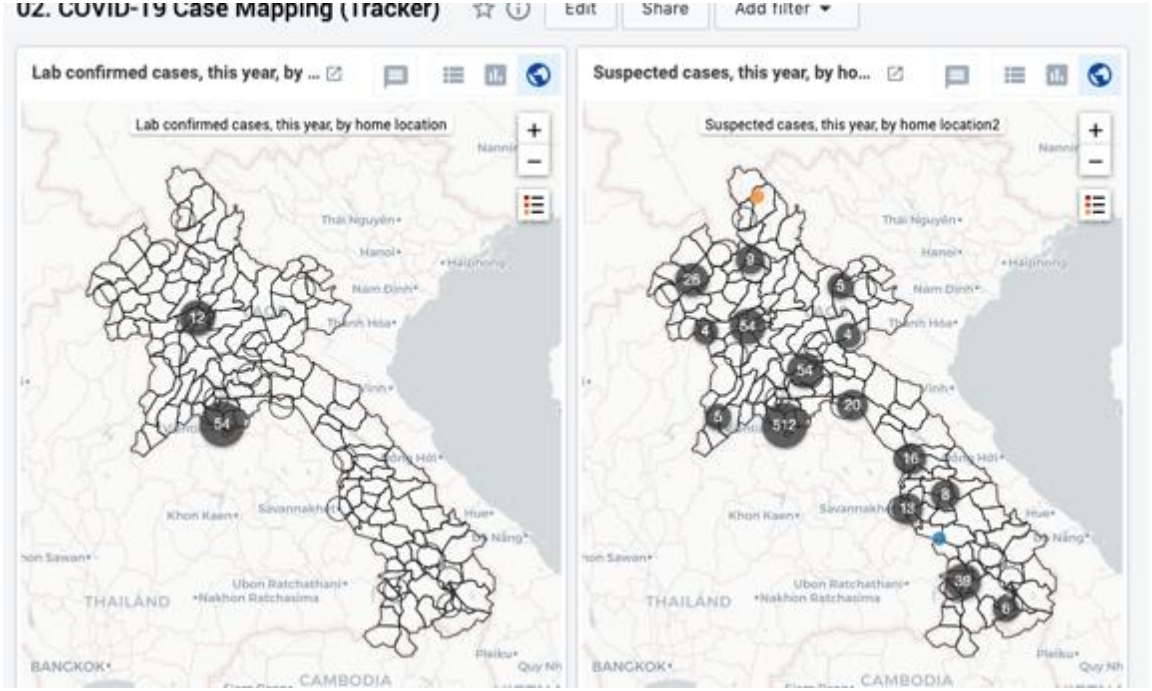
المعهد الوطني الفلسطيني للصحة العامة
The Palestinian National Institute of Public Health

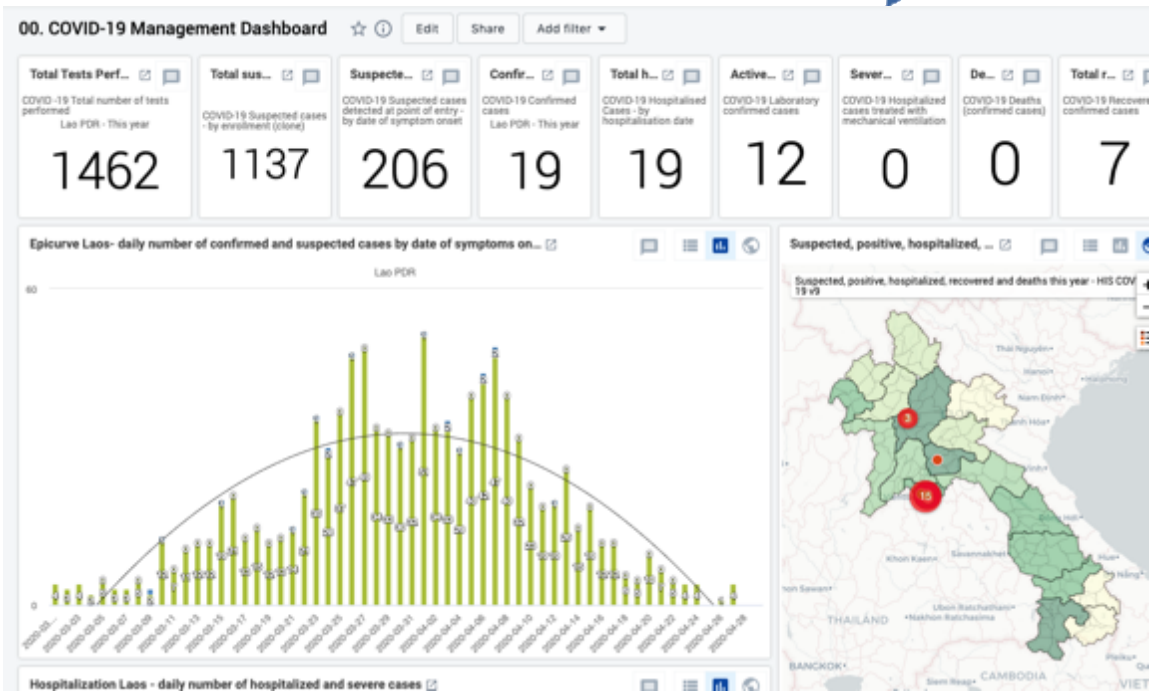
Lao PDR – COVID-19 Surveillance System using DHIS2

HISP Vietnam| 30 April 2020

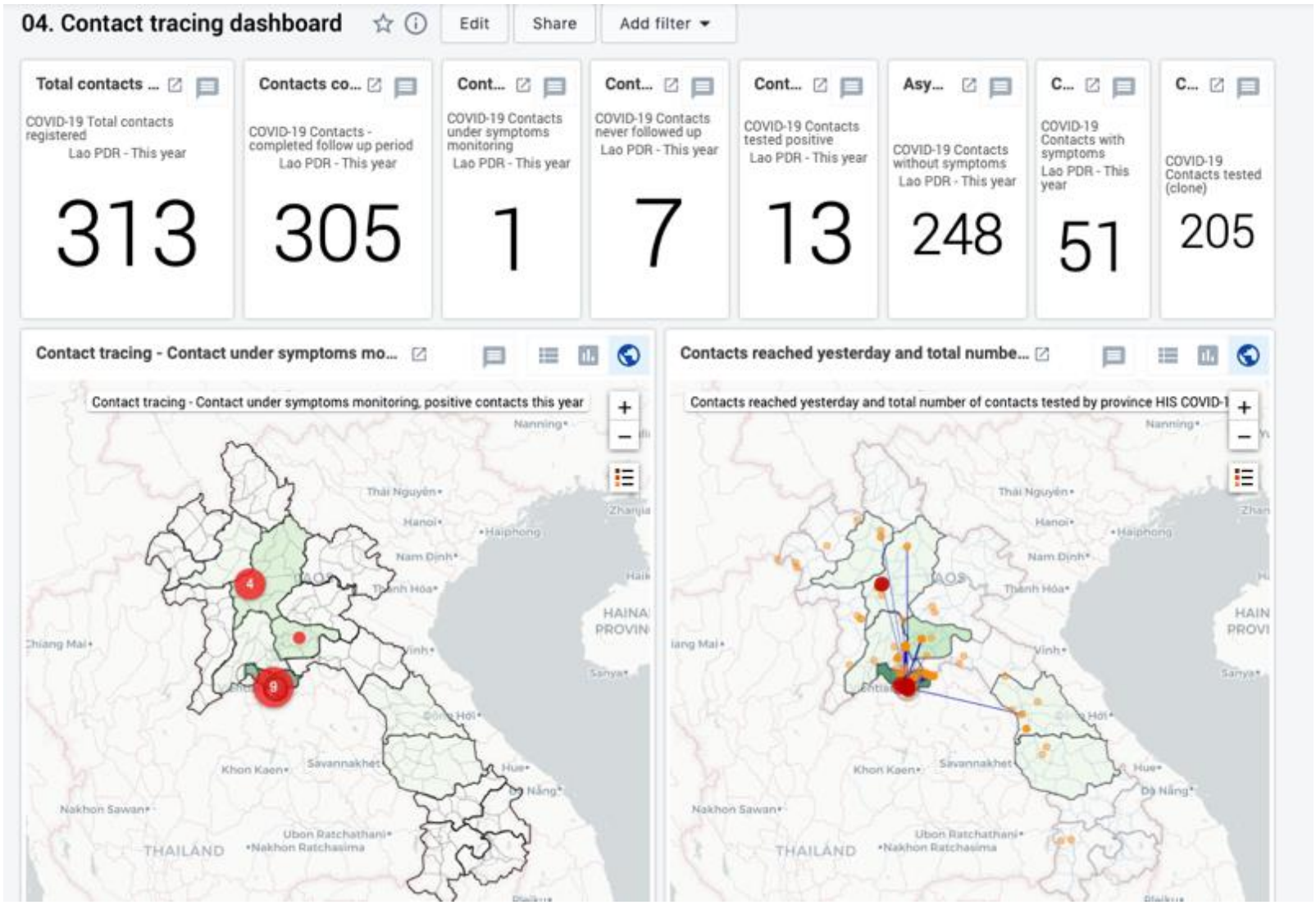
WHO Webinar for COVID-19 Response

HISP Vietnam





Covid -19 management dashboard



Contact tracking dashboard

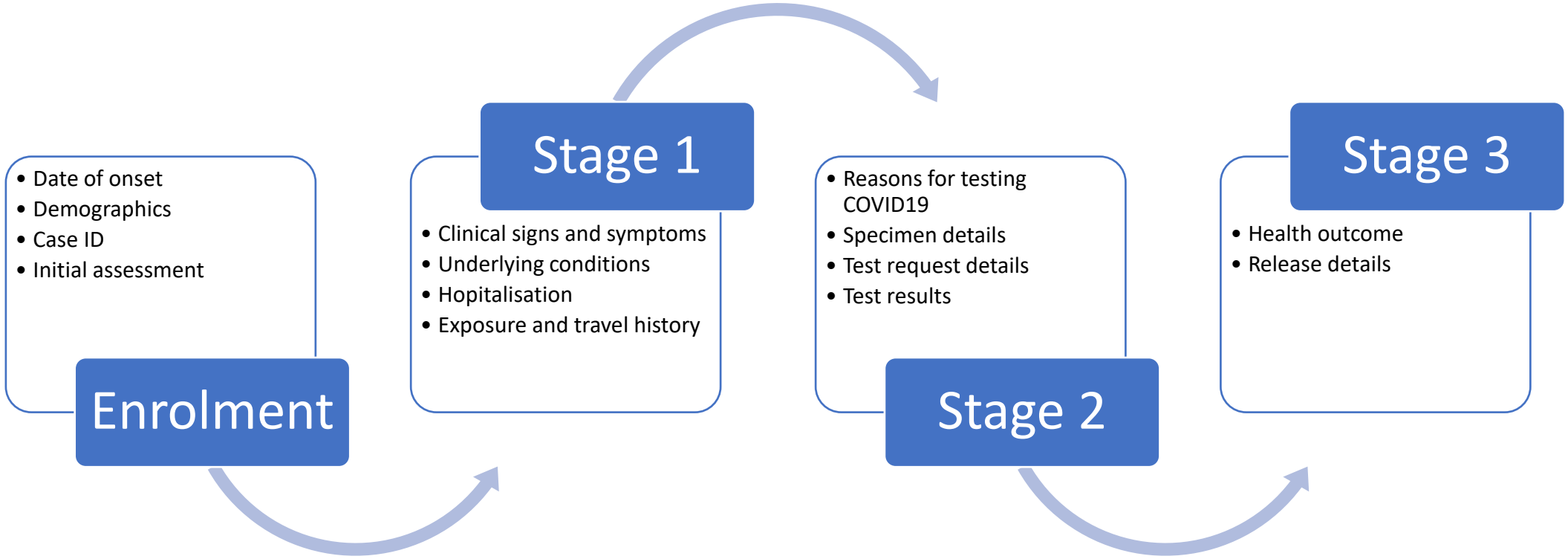
Background

- DHIS2 has been adopted as national HMIS system. Strong commitment from MoH and all health departments
- Active continuous support from WHO LAO and HISP Vietnam
- DHIS2 adopted Nationwide from 2014
- DHIS2 tracker program has been implemented since early 2018 for Malaria, TB and HIV ART program
- All villages and health facilities coordinates have been imported in DHIS2 to get location of patient address
- DHIS2 was adopted by National Centre for Laboratory and Epidemiology (NCLE) of the Ministry of Health for disease surveillance in 2019

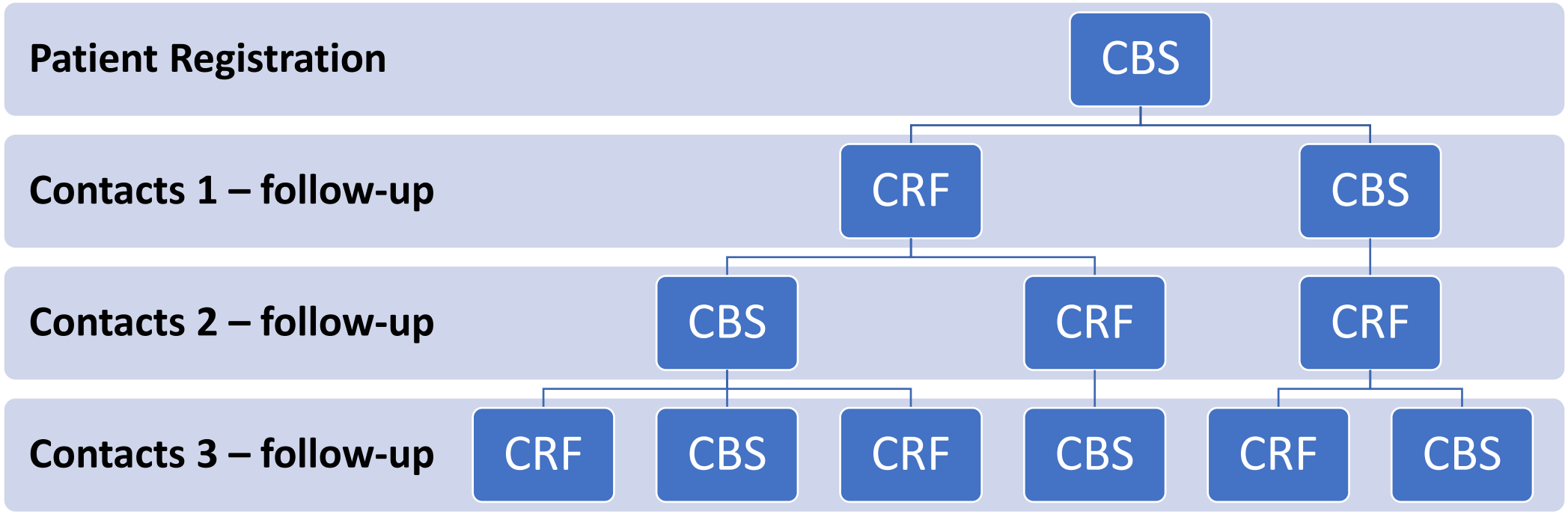
Process of adopting global dhis2 package to Lao-PDR

- WHO Lao team took initiative to demo global dhis2 package to NCLE, MOH
- HISP Vietnam in collaboration with NCLE, DPC and WHO Lao customized the global dhis2 packages to capture all paraments based on national case investigation forms
- Initial data collected in Excel was imported into DHIS2 to reduce workload
- SOP and Job aid manual was created and translated in Lao
- Capacity building done by WHO Lao and DPC.MoH Local DHIS2 core team
- WHO Lao along with NCLE created Covid Management and Contract tracking dashboard
- Data entry is centralized with Provincial Health Offices transmitting all case investigation forms to NCLE
- Currently: Completely used and owned by National Centre for Laboratory and Epidemiology (NCLE) of the Ministry of Health

COVID-19 Case Surveillance Tracker Program Structure



COVID-19 Case Surveillance Tracker Program Structure (Contacts & Relationships)



COVID-19 Case-based surveillance tracker: **CBS**
Contact registration & follow-up program**:** **CRF**

Challenges

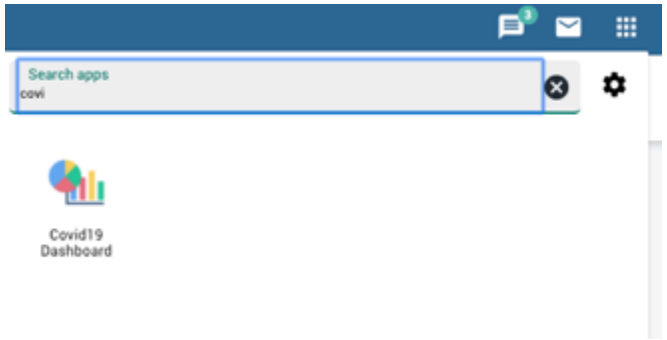
- Sustaining a heavily centralized system during a bigger outbreak would be challenging given the limited capacity at NCLE
- Quite a significant reporting burden given the comprehensiveness of the case investigation form
- Ministry of health seeking more visualization tools for contact tracing

Future Plans

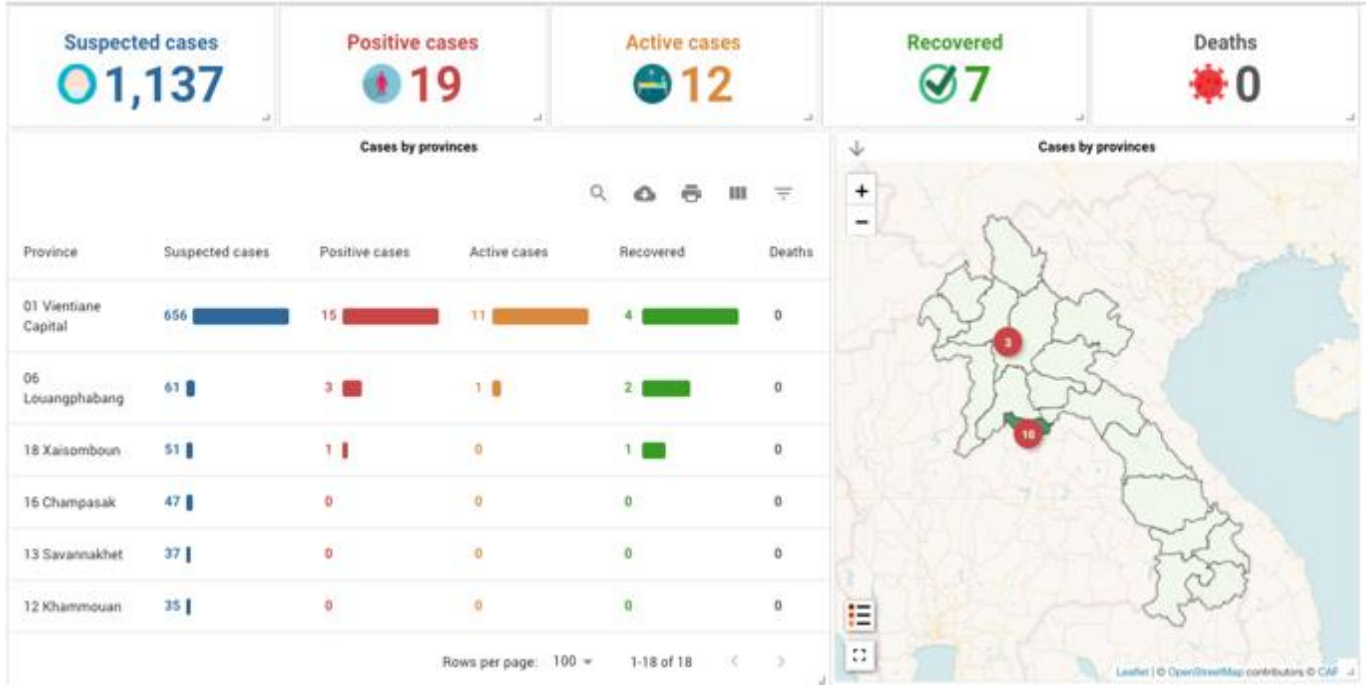
- Expand capacity at NCLE or expand to provincial data entry
- Introduce more advance visualization tools when available
- Build in additional treatment related data from hospitals
- Integrate SARI surveillance and triangulate SARI Surveillance, IPD/OPD data and notifiable diseases surveillance data as early warning system

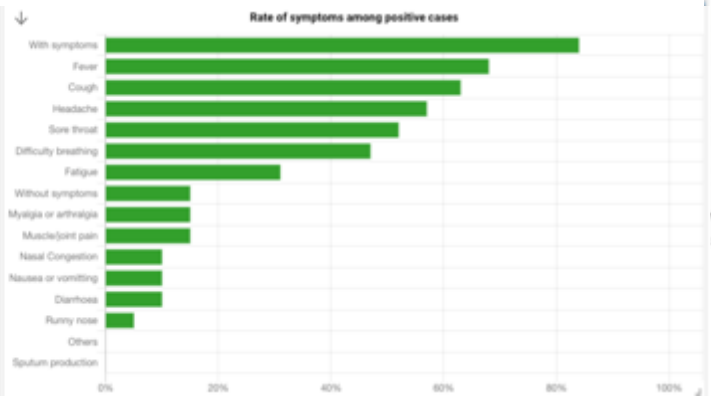
Addressing challenges on visualization tool

- HISP Vietnam in collaboration with WHO Lao designed and developed covid visualization app
- Learning from Lao use case towards building generic covid visualization app
- Combine covid case registration and contract tracking program
- Use of additional visulation tool and map to enance analysis capabitilty including download option for further follow up.



Covid-19 visualization app developed by HISP Vietnam





Covid-19 app – Postive case & their contact details

HISP Vietnam

Contact tracking

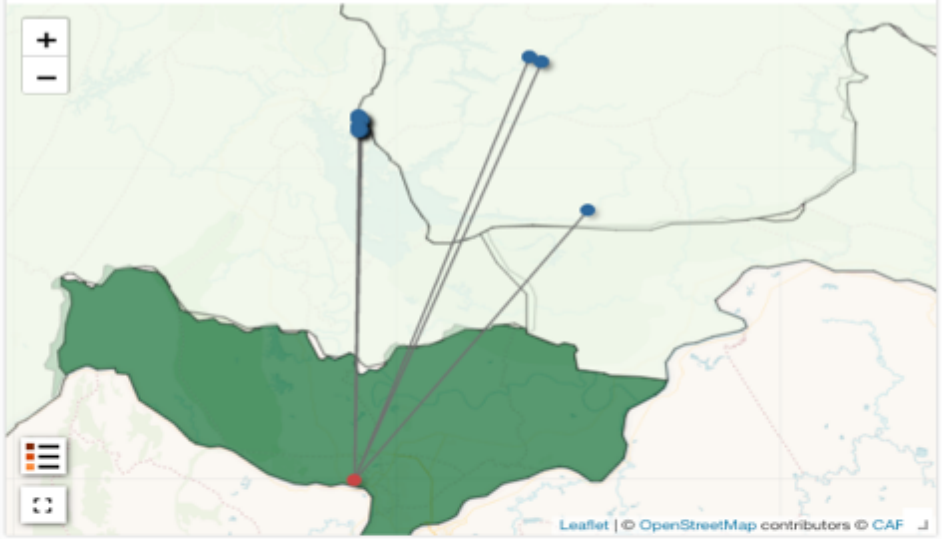
Patients table

SHOW ALL

Confirmed Case No.	Sex	Age	Nationality	Province	Contacts
19	Male	21	Laos	01 PHO Vientiane. C	4 contacts
18	Female	32	Laos	01 PHO Vientiane. C	7 contacts
17	Female	32	Laos	01 PHO Vientiane. C	7 contacts
16	Female	23	Laos	01 PHO Vientiane. C	9 contacts
15	Female	20	Laos	01 PHO Vientiane. C	6 contacts
14	Female	19	Laos	01 PHO Vientiane. C	10 contacts
13	Male	40	Laos	01 PHO Vientiane. C	26 contacts
12	Female	20	Laos	01 PHO Vientiane. C	3 contacts
11	Male	55	Papua New Guinea	18 PHO Xaysomboun	34 contacts
10	Female	20	Laos	01 PHO Vientiane. C	17 contacts
9	Female	22	Laos	01 PHO Vientiane. C	16 contacts
8	Male	18	Laos	01 PHO Vientiane. C	18 contacts
7	Female	50	Laos	06 PHO Luangprabang	23 contacts
6	Male	42	Laos	06 PHO Luangprabang	10 contacts

Rows per page: 100 1-19 of 19

Contact tracking mapping



Contacts Patients table

Positive Case Number: 11 **Sex:** Male **Age:** 55 **Nationality:** 18 PHO Xaysomboun

Total Contacts: 34

SHOW ALL

Local contact id	Sex	Province
1801-433-216	Male	18 PHO Xaysomboun
1801-433-238	Male	18 PHO Xaysomboun
1801-433-221	Male	18 PHO Xaysomboun
1801-433-245	Male	18 PHO Xaysomboun

Rows per page: 100 1-34 of 34

Thank you

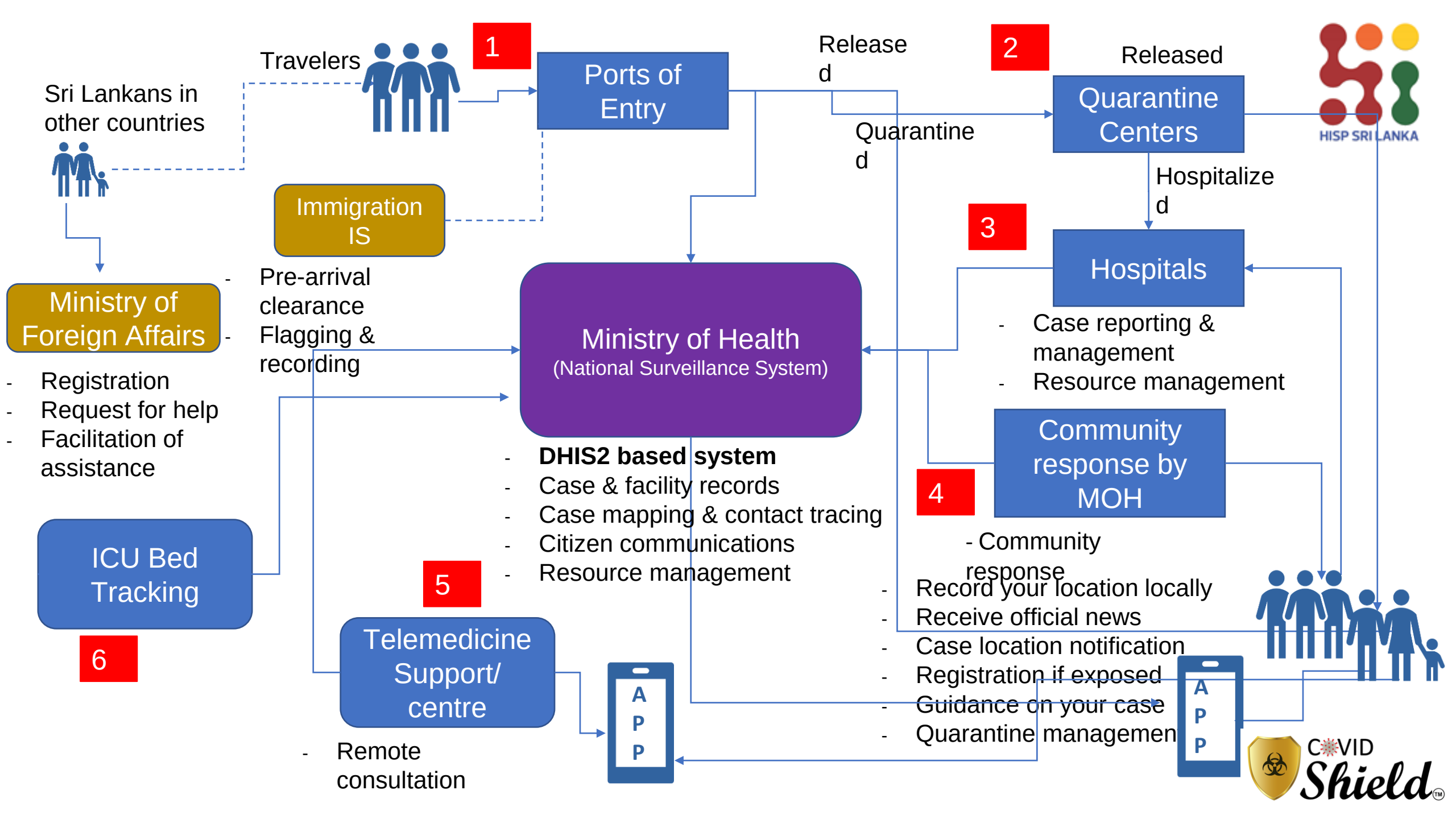
COVID-19 Packages and the Global HISP Network:
Rapid Innovation in Sri Lanka

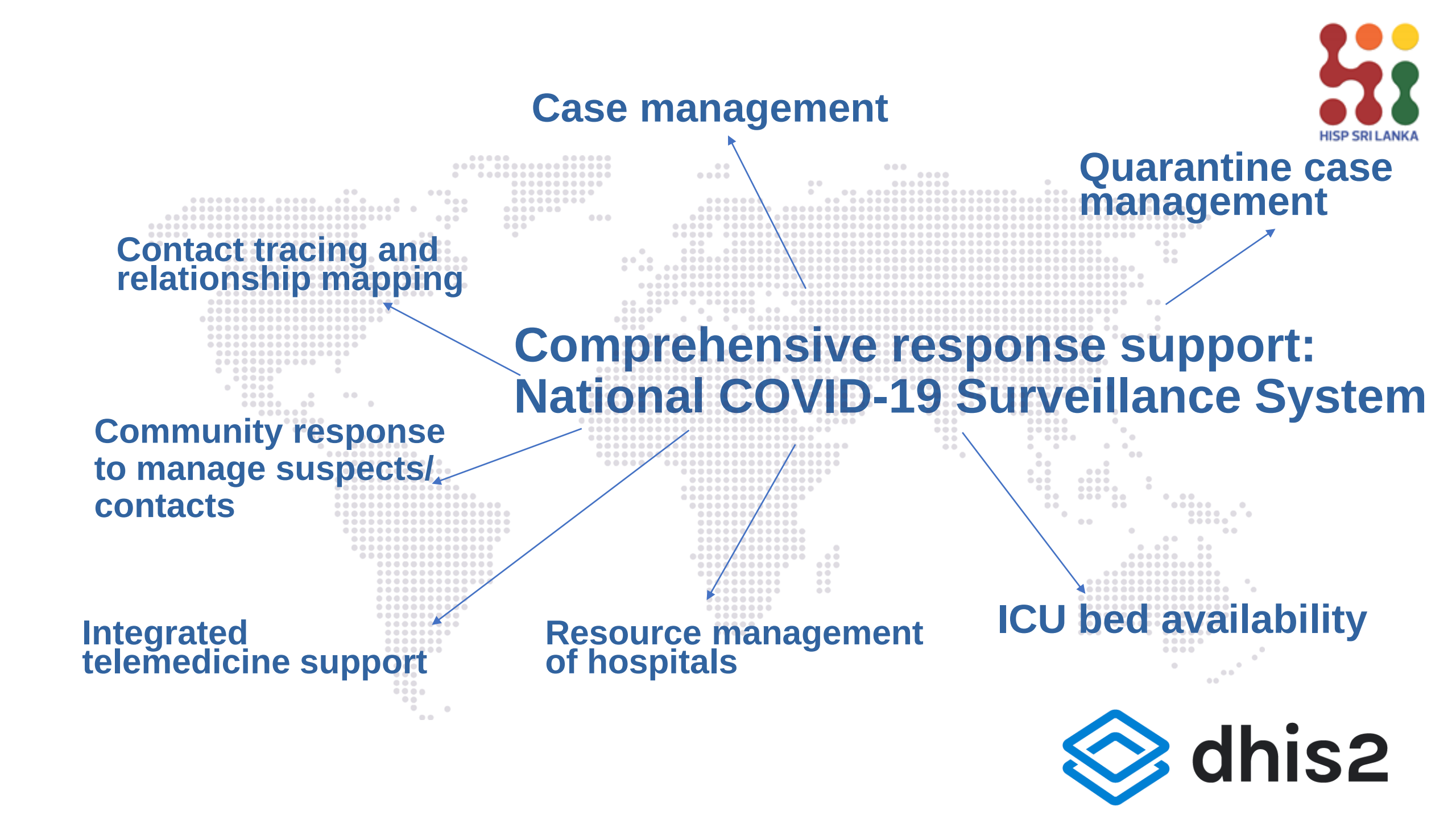
HISP Sri Lanka| 30 April 2020

WHO Webinar for COVID-19 Response

Principles in action

- Integration of existing solutions to solve the problem
- Cover all related needs by a single integrated system
- Rapid deployment
- Customization > new development
- Government initiative with multi sector stakeholders


Travelers
Sri Lankans in other countries
1
Ports of Entry
Released
Quarantined
2
Released
Quarantine Centers
HISP SRI LANKA
Hospitalized
3
Hospitals
Immigration IS
Ministry of Foreign Affairs
- Pre-arrival clearance
- Flagging & recording
- Registration
- Request for help
- Facilitation of assistance
Ministry of Health
(National Surveillance System)
- Case reporting & management
- Resource management
- DHIS2 based system
- Case & facility records
- Case mapping & contact tracing
- Citizen communications
- Resource management
4
Community response by MOH
- Community response
- Record your location locally
- Receive official news
- Case location notification
- Registration if exposed
- Guidance on your case
- Quarantine management
ICU Bed Tracking
6
5
Telemedicine Support/ centre
- Remote consultation
APP
APP
COVID Shield


Case management
Quarantine case management
Contact tracing and relationship mapping
Comprehensive response support:
National COVID-19 Surveillance System
Community response to manage suspects/ contacts
Integrated telemedicine support
Resource management of hospitals
ICU bed availability

HISP SRI LANKA

Collaborations

Local Innovations

Integrations

Integrations and New Developments

Integrations

- Immigration system
- Location info from telecommunication towers
- My Health Sri Lanka app
- COVID shield

Developments

- Contact-case mapping tool
- Tool to supporting addresses into community org unit assignment
- My Health Sri Lanka app
- ICU bed availability management

Tracking case dependency in the Disease Surveillance system

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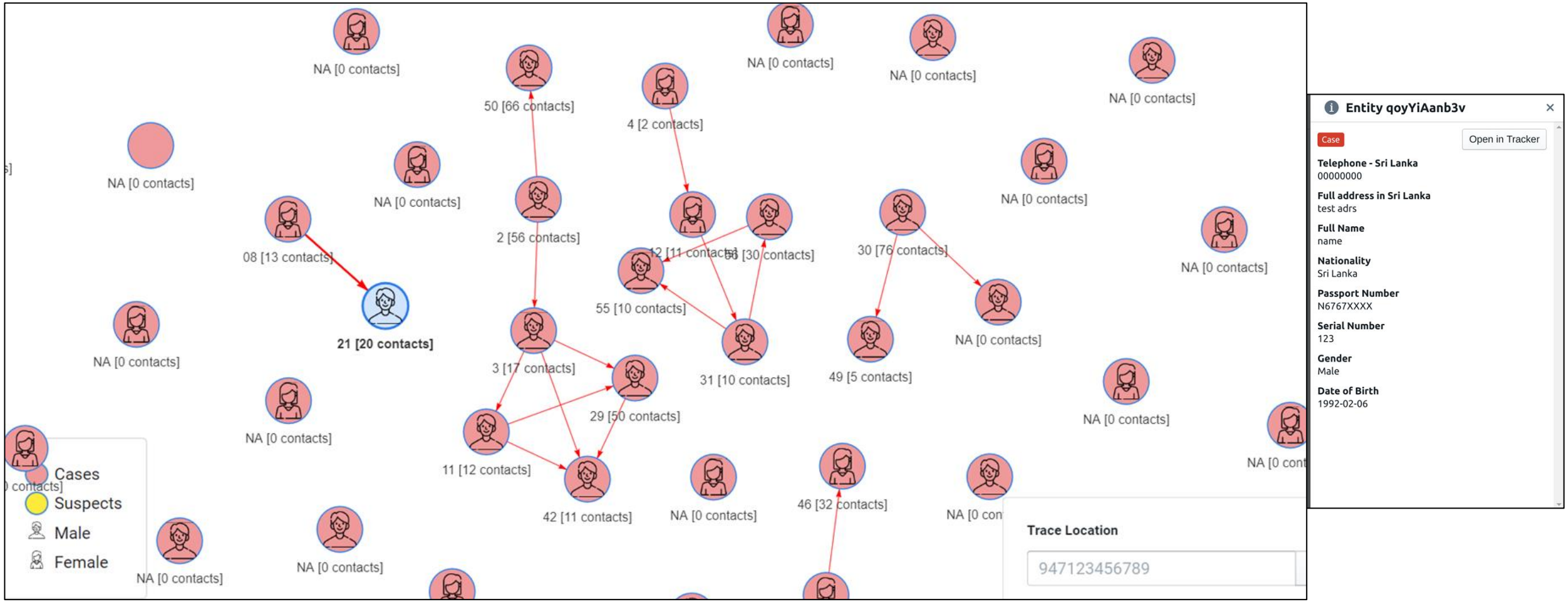

Tracing the places case/s travelled: integrated to tower information

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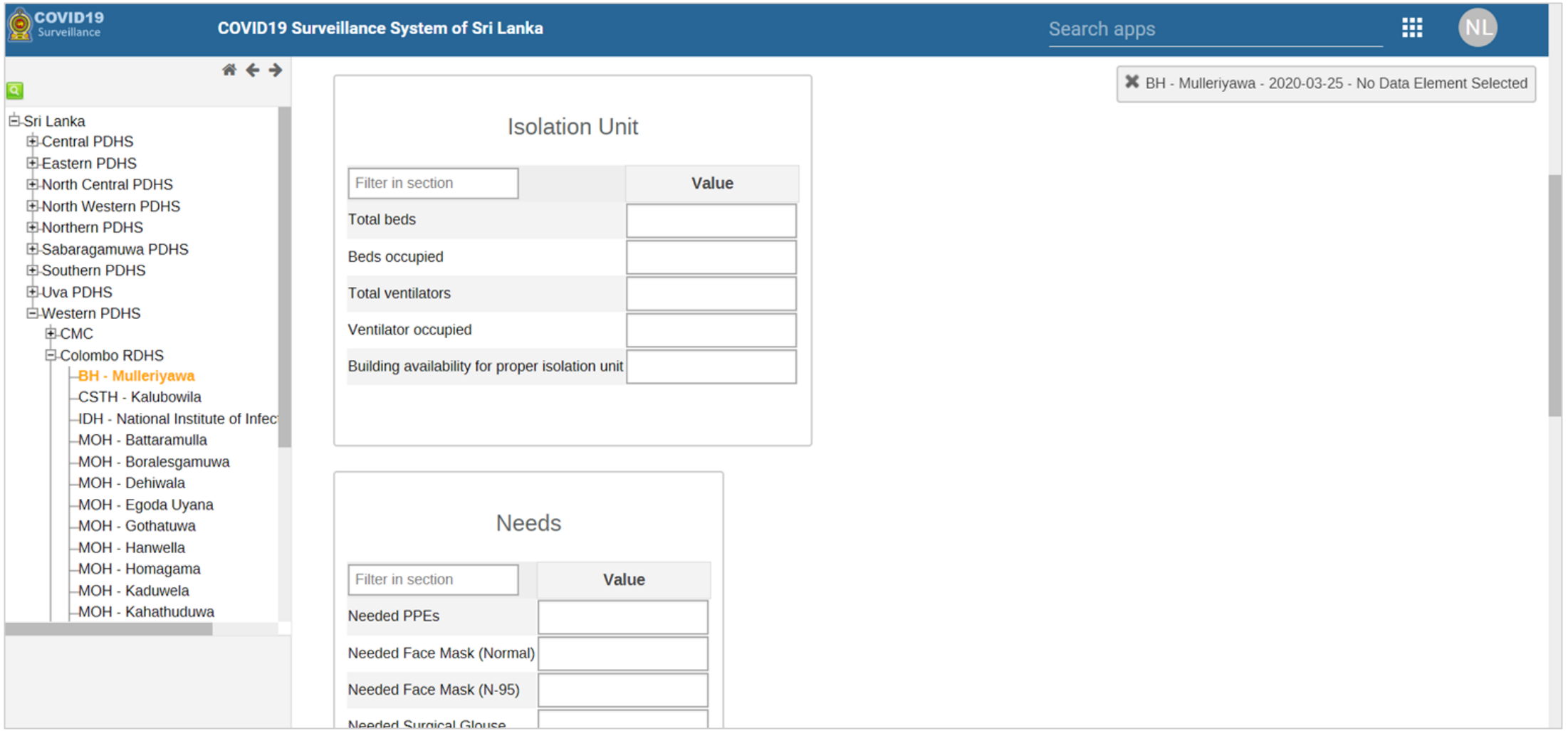
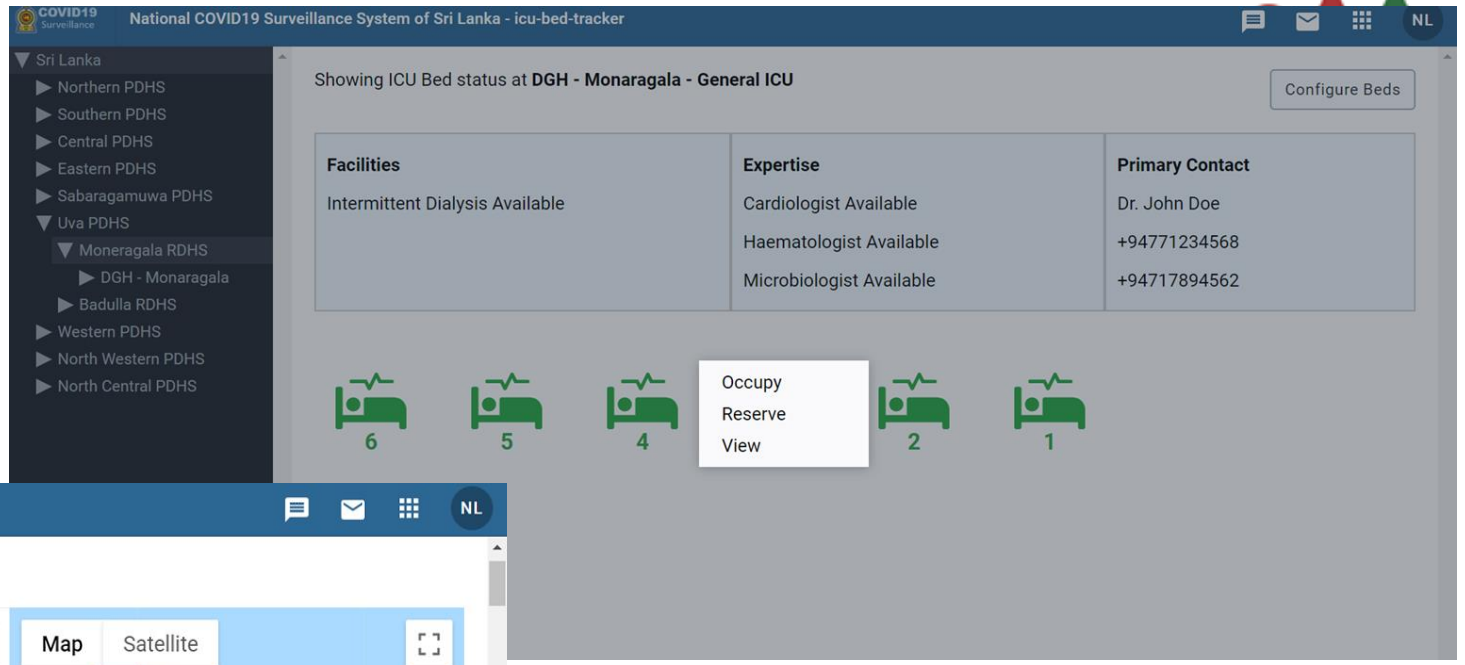
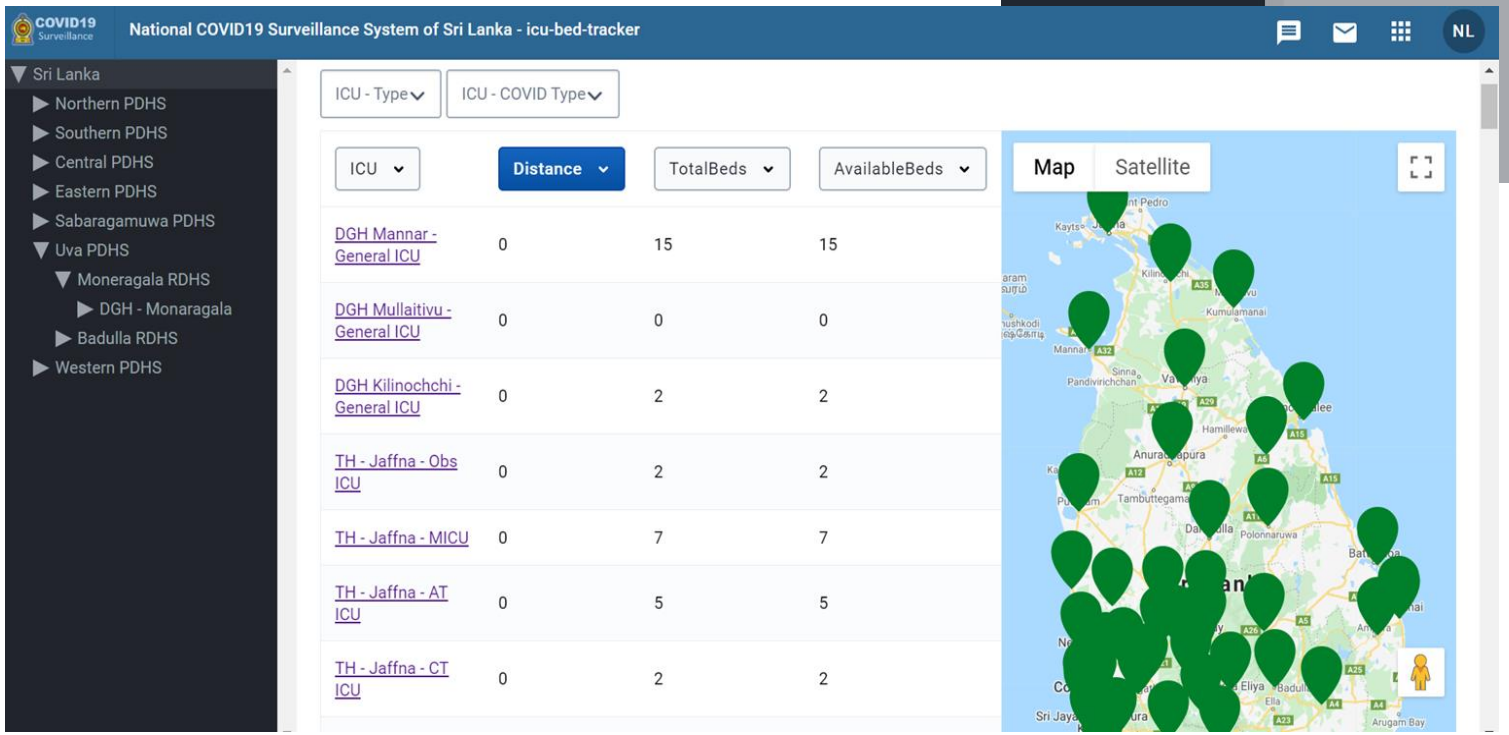
Resource management



ICU bed tracking





Integrated Mobile application

COVID-19 tracker

My Health Sri Lanka app

ICTA
ideas actioned

FUNCTIONALITY

What happens after installing

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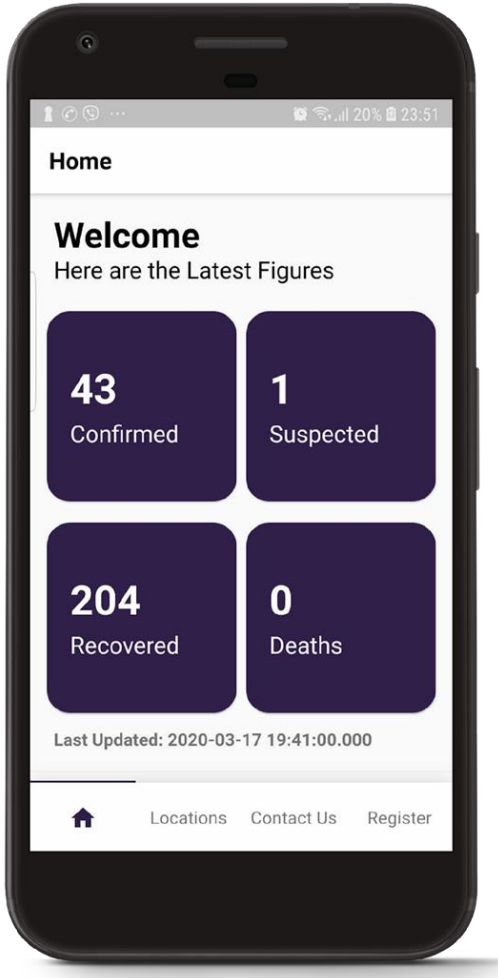
Receive official updates and notifications from Health authorities

Track your location & update locally

Self-register in to the COVID19 System



Provide personalized messages

- Patients
- High risk

Emergency contacts

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Thank You!
dhis2

Q&A

Resources & Contact Information

Demo : covid.dhis2.org/demo

Information page: dhis2.org/covid-19

Community page: community.dhis2.org

Contact us: covid@dhis2.org