



HEALTH CLUSTER COORDINATION TRAINING

May 2019, Brazzaville

Global EWARS

Early Warning, Alert and Response in Emergencies

The Operational Importance

- During emergencies, existing national public health surveillance systems may be underperforming, disrupted or non-existent; they may quickly become overwhelmed¹
- Crucial to immediately establish an early warning system to detect and react rapidly to suspected disease outbreaks²
- Early Warning, Alert and Response (EWAR) is one of the cornerstones of PHIS

¹ Outbreak surveillance and response in humanitarian emergencies. WHO guidelines for EWARN implementation. WHO, 2012.

² Toole, MJ and Waldman, RJ. Refugees and displaced persons. War, hunger and public health. JAMA. 1993; 270: 600–605



STANDARDS FOR PUBLIC HEALTH INFORMATION SERVICES

in Activated Health Clusters and other Humanitarian
Health Coordination Mechanisms



May 2017

The World Health Organization is the
Cluster Lead Agency and provides
secretariat support.

Problem

- We continue to rely on ad hoc, largely excel-based systems
- No agreement on common, standardised information tools that can be rapidly deployed
- Many tools not comprehensive enough, do not address requirements in the field, and lead to proliferation and fragmentation of data collection at the frontline
- This can lead to delays in detecting and responding to disease outbreaks

The Global EWARS Project

- An initiative to strengthen early warning, alert and response in emergencies
- Supports Ministries of Health and partners
 - Field-based tools
 - Training
 - Technical support
- Includes online, desktop and mobile application, that can be rapidly configured and deployed



- Aim is to reduce cases and deaths that occur during emergencies

We're built to support you during emergencies.

Suppose one day you need to...



Strengthen surveillance during an emergency



Be alerted to suspected outbreaks



Rapidly respond to a disease outbreak

EWARS provides support across a continuum of early warning, alert and response.



Early Warning

Always on the look out



Alert

Quickly raise the alarm



Response

React when you need it most



EWARS

IN A BOX

Everything you need in the field.

EWARS in a box is a kit containing the essential equipment needed to establish surveillance and response in emergencies.



Requires

- Mobile network coverage



Does not require

- 24 hour electricity supply
- Internet connection



What Does a Kit Contain?

Transport & Security

- x1 Ruggedized pelican case
- x2 Secure Locks

Data Collection

- x60 Mobile Phones
- x1 Laptop

Data Hosting & Storage

- x1 DataHub

Power Supply

- x30 Solar Chargers

One kit can support

📈 Early Warning

- 1 coordination office to manage data and publish bulletins
- 50 fixed or mobile sites covering 500,000

🔔 Alert

- 1 reference laboratory to support verification and confirmation of alerts
- 10 rapid response teams (RRTs) to verify alerts and conduct risk assessments

📍 Outbreak Response

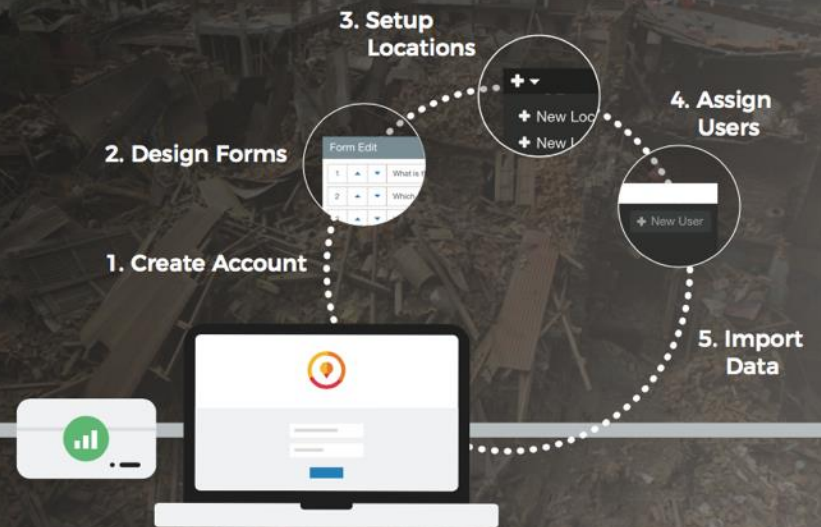
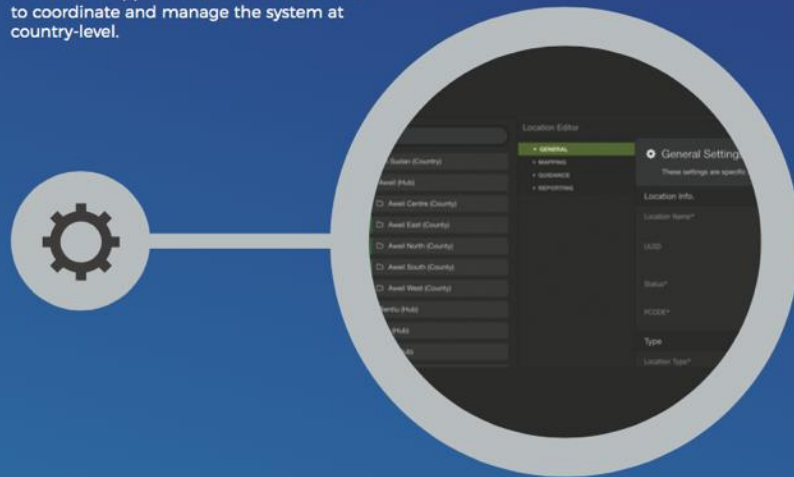
- 1 coordination office to manage line list and publish analysis
- 50 fixed or mobile sites conducting active case finding and line listing of cases

Configuration

Rapidly adapt to needs in the field

Users need to feel in full control of their own tasks and reporting deadlines. They also need to be constantly aware of how they are performing and where improvements need to be made.

Account administrators need higher level views of the application, in order to be able to coordinate and manage the system at country-level.



Key Requirements

Features

1. Create account

Setup a new country account rapidly within 24 hours of an emergency being declared.

Define custom features such as language, time zone, user types and account theme.

2. Design forms

Use form manager to design forms to collect aggregate or case-based data.

Define form options such as frequency and level of reporting, validation rules and language requirements.

3. Setup locations

Create custom location hierarchies based on the specific admin levels in a country.

Add geometry to support mapping of data.

Add GPS points for health facilities (or crowd source using **EWARS Mobile** if none are available).

4. Assign users and permissions

Rapidly onboard users through a simple registration process or via direct invitations.

Assign account types to define roles and responsibilities, depending on where users are working.

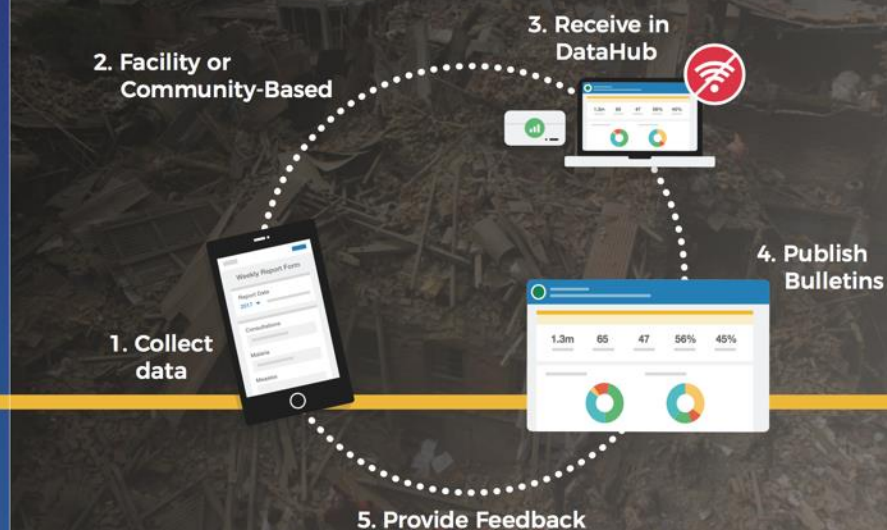
5. Import data

Import existing data from Excel through a user interface, to ensure continuity with previous trends.

Early Warning

Always on the look out

Early warning is a key function of any surveillance system. This is the ongoing collection, analysis and interpretation of health data. It helps to ensure early reporting of cases and monitoring of trends.



Key Requirements

Features

1. Collect data in remote field settings

Use **EWARS mobile** to collect data offline.

Battery chargers are provided to keep phones charged if electricity is unreliable.

2. Submit facility or community-based reports

Deploy forms to collect data from formal and informal sources (e.g. media and community).

Queue reports offline and submit via 2G/3G or SMS networks, depending what is available.

3. Receive and manage reports at sub-national level

Synchronise **Datahub** to receive reports even in sub-national offices with limited internet.

Use **Datahub** to work fully offline to manage reports.

4. Publish automated bulletins and analysis

Work offline in **Datahub** to prepare customised analysis in tables, charts and maps.

Publish data to automated information products such as weekly epidemiological bulletins.

5. Provide regular feedback to users

Send automated feedback via SMS to health facilities to confirm receipt of reports.

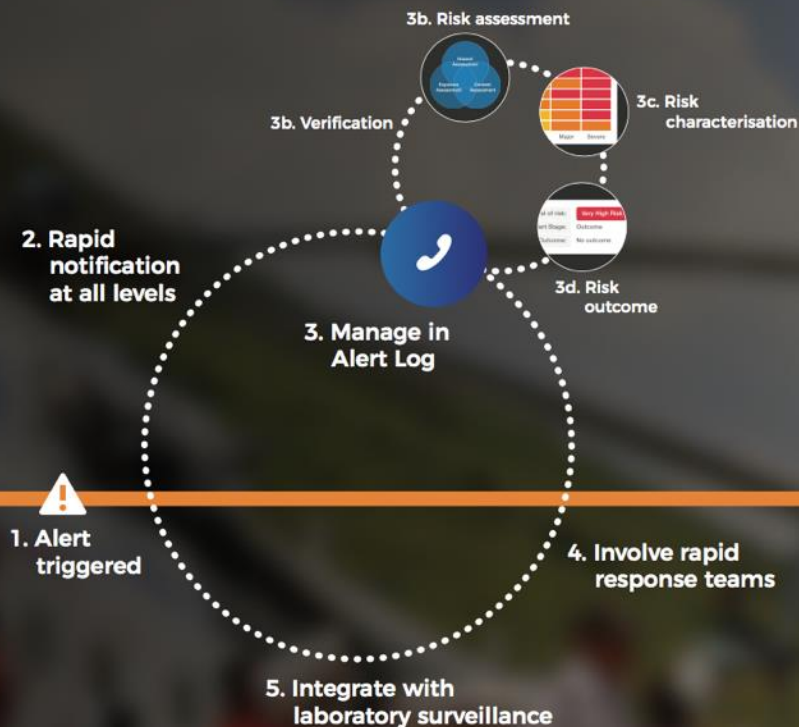
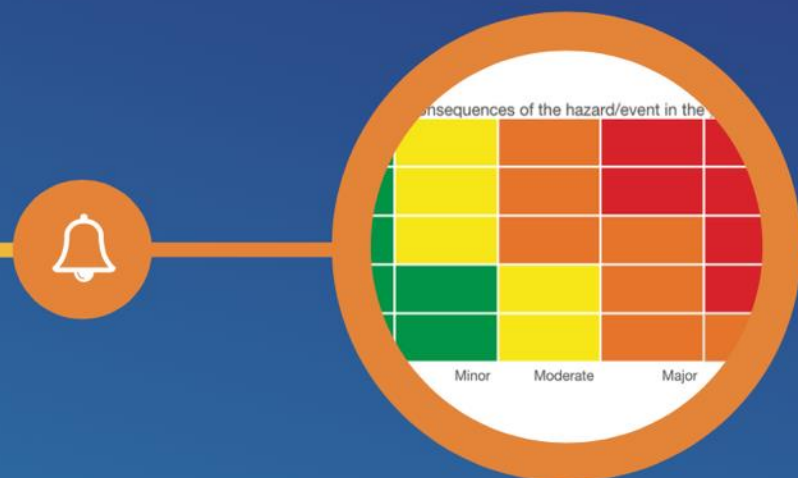
Send automated reminders when reports are upcoming or overdue.

Send immediate notifications when alerts are triggered.

Alert

Quickly raise the alarm

A key role of early warning is to trigger alerts to potential disease outbreaks at the earliest possible interval. This is strongly linked with laboratory surveillance to confirm the cause of any potential outbreak.



Key Requirements

Features

1. Trigger alerts when thresholds are exceeded

Define alert thresholds that automatically trigger alerts when exceeded.

Define complex rules to configure alert thresholds to your specific needs.

2. Rapidly notify users of alerts at all levels

Send immediate alerts via SMS, email, within the app when alert triggered.

Define who needs to view alerts based on user type and location where they are working.

View any related alerts in nearby health facilities.

3. Document and manage alerts in an alert log

All alerts are added to a common alert log.

Alerts are managed via a common workflow, based on WHO guidance.

Active and closed alerts can be visualised in a table or on a map.

4. Involve rapid response teams at field level

Rapid response teams (RRTs) are often first responders to alerts. Teams can manage alerts on phones at field level using EWARS Mobile.

Alerts can also be viewed and update alerts in DataHub when indepth risk assessments are needed.

5. Integrate with laboratory surveillance

Results of case investigations can be collected and appended to alerts.

If laboratory samples are collected, results can be updated by lab users with immediate notification back to the field.

Outbreak Response

Reacts when you need it most

An effective, well-coordinated response is crucial to saving lives in the event of a disease outbreak. Tools need to be rapidly deployed to monitor the course of the outbreak and to guide control measures to stop the outbreak from spreading.



Key Requirements

Features

1. Collect case-based data in remote field settings

Use the **EWARS mobile** to collect line list data offline.

Battery chargers are provided to keep phones charged if electricity is unreliable.

2. Submit facility or community-based reports

If cases are reported at community-level, use **EWARS Mobile** to submit GPS coordinates with each line list record.

Queue reports offline and submit via 2G/3G or over SMS, depending what is available.

3. Receive and manage reports at sub-national level

Receive reports in **Datahub**, even in sub-national offices with limited internet.

Synchronise **Datahub** to receive updated reports, and then work fully offline.

4. Publish automated bulletins and analysis

Edit case records whilst offline to update lab results or outcomes in **Datahub**.

Synchronise results when **DataHub** is connected. Work offline in **Datahub** to prepare customised analysis in tables, charts and maps.

5. Share results in realtime

Publish data to automated information products such as daily outbreak bulletins.

Redact identifying fields to share anonymised raw data with partners.

EWARS is made up of 3 components



DataHub

Fully offline. Ready to collect, submit and analyse data. All in a single, easy-to-use box.



Mobile

Collect and submit data anywhere. Even in remote and insecure environments.



Exchange

Choose what data you wish to share with others and when. Manage interoperability with other databases. Receive regular upgrades for free!

How does it work?



1. Data collected offline in **EWARS Mobile**.



2. Data received in real-time in **DataHubs** at subnational level.



3. **DataHubs** synchronise data to county level.



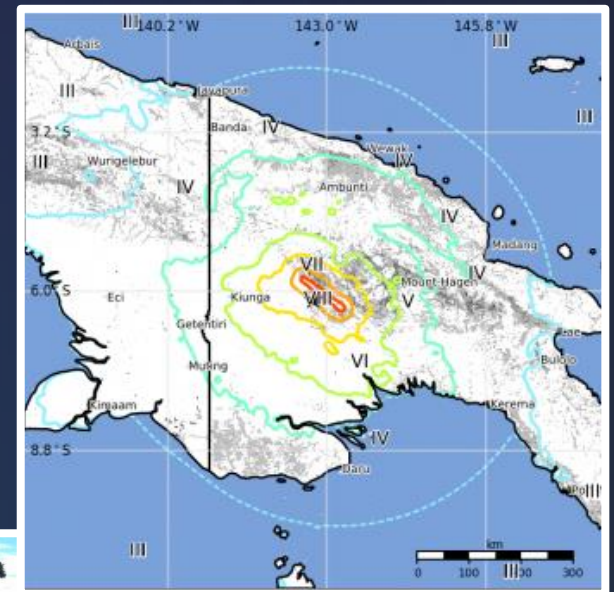
4. Immediate alerts and feedback shared with field users when needed.



5. Data analysed and shared for rapid action. System updates and data sharing moderated via **Exchange**.

Example of EWARS in a Box Implementation – Papua New Guinea Earthquake 2018

- M7.5 EQ occurred on 26 February 2018 at 3:44 am local time
- Numerous M6.5+ aftershocks over weeks
 - Severe psychological toll of repeated tremors
- Multiple highlands areas (rural>urban) impacted
- ~550,000 persons affected



Need for Urgent Surveillance System in Impacted Areas

- Existing sentinel paper-based urgently notifiable conditions (UNC) system virtually non-functional prior to EQ
 - e.g. <5% typical completeness
- Mobile-phone-based sentinel UNC system stalled for years due to vendor issues
- Low baseline health status, major displacements and congregation



- Request to use EWARS in a Box in two most affected provinces
 - Hela
 - Southern Highlands Province (SHP)

Implementation of EWARS in a Box in PNG

- Developed surveillance strategy (~2 days)
 - Reporting by all Hospitals, Health Centres and sub-Centres in EQ zones or near IDPs
 - Community event-based surveillance in affected communities
 - Using 8 existing validated UNC diseases (with minor changes)
 - Reporting by phones to Provincial EOC then entry into EWARS
- In each province (Hela and SHP) in series:
 - 1-day training for health workers (21/31 facilities in Hela, 26/43 in SHP) and community leaders (19 communities in Hela only)
 - 1-day training for RRTs to respond to alerts
 - 1-day training + ongoing mentoring for 2 EWARS officers each
 - Concurrent development of forms and bulletins

EWARS Components Implemented

- Urgent Reports (alerts) from health facilities
- Weekly indicator-based reports from health facilities
 - Generation of alerts based on Weekly Report thresholds
- Urgent Reports (alerts) from the community
- Weekly active callouts to community
- Uploading of forms by **provincial surveillance staff** (not frontline HCW)
- Rapid Risk Assessment of all alerts
- Alert (investigation) management
- Automated generation of weekly bulletins

Not Implemented

- Line listing
- Integration with laboratory

PNG EWARS Home Screen

EWARS - Dashboard

ewars.ws

EWARS

Tasks

DASHBOARDS

Overview (Admin)

Overview (Admin)



Welcome to PNG EWARS

You are logged in as an Account Admin

Supporting the National Department of Health in Papua New Guinea

Strengthening early warning, alert and response



Documents

SHP Province - Weekly EWARS Bulletin
Hela Province - Weekly EWARS Bulletin
Country - Weekly EWARS Bulletin
APEC - Daily EWARS Bulletin

Metrics

Form submissions	947
Reporting locations	0
Users	42
Open alerts	318
Devices	37
Forms	0

Activity Feed

 **Nine_mile_uc** submitted a new report 13 hours ago

 APEC Daily Surveillance Form
Nine Mile UC
2018-09-27

 **Tokarara_uc** submitted a new report 16 hours ago

 APEC Daily Surveillance Form
Tokarara Urban Clinic
2018-09-28

 **Tokarara_uc** submitted a new report 16 hours ago

 APEC Daily Surveillance Form
Tokarara Urban Clinic
2018-09-27

Tasks

You currently do not have any tasks available

Logged in as Boris Pavlin

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Facility Reporting Form

Health Events & Syndromic Surveillance Weekly Tally Sheet

District _____ Province _____ Health facility: _____ Reporting period: Monday dd/mm/2018 – Sunday dd/mm/2018

Events		Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Total
		Cases	Cases	Cases	Cases	Cases	Cases	Cases	Cases
Weekly reporting	1. Total daily consultations	0	0	0	0	0	0	0	
	2. Acute watery diarrhoea in a patient aged 5 years or more At least 3 watery stools in a 24 hour period with dehydration in a patient aged 5 years or more (Suspected cholera)	0	0	0	0	0	0	0	
	3. Acute flaccid paralysis in a child under 15 years of age Acute flaccid paralysis in a child under 15 or in anyone whom a clinician suspects polio (Suspected polio)	0	0	0	0	0	0	0	
	4. Acute fever and rash Acute fever with rash (Suspected measles and other outbreak prone rash illness such as dengue)	0	0	0	0	0	0	0	
	5. Outbreak, or any cluster of unexplained severe disease or deaths An outbreak or any unexplained severe disease in your health facility caused by a syndrome not in the list above, OR an event in humans or animals within your district that has the potential to affect human health (such as a chemical spill). This may include a cluster of deaths.	0	0	0	0	0	0	0	
	6. Acute fever with cough / ILI Acute onset of fever with cough in any age. (Suspected influenza) If rash present, report as "acute fever and rash."	0	0	0	0	0	0	0	
	7. Prolonged fever of 3 or more days (no rash or cough) Acute onset of fever for 3 or more days (no rash or cough). If rash is present, report under "acute fever and rash"; if cough but no rash, report under "acute fever with cough"	0	0	0	0	0	0	0	
	8. Bloody diarrhoea Diarrhea with visible blood in stools. (Suspected dysentery, such as shigellosis).	0	0	0	0	0	0	0	
	9a. Malaria tests performed	0	0	0	0	0	0	0	
	9b. Malaria test positive	0	0	0	0	0	0	0	

Report to PHA every Monday before 12 noon

Report any suspicious conditions in category 2 to 5 urgently when you suspect any

36° H+ R 78% 13:23

← Form →

Assignment Location*

None Selected ▼

Record Date*

2018 ▼ Week ▼

Contact number of reporter

Name of Reporter from Health Facility *

1. Total Weekly Consultations *

2. Acute Watery Diarrhea *

Connected

Rapid Assessment Form

Outbreak/ Event Report and Assessment Form

Information about source of report	
What is your name?	What is your phone number?
What is your position?	
If report is second-hand information, what is the original source of the information? (Name, contact info)	
Location of event	
What is the name of the village/ specific location where the event took place?	
What is the district?	
What is the province?	
Description of event	
What do you want to report? (What happened / Who is affected / What are the symptoms?)	
Number of cases among children:	Number of deaths among children:
Number of cases among adults:	Number of deaths among adults:
When did problem begin?	
Is problem ongoing? YES / NO	
What do you think is the cause of this event?	
What are the controls measures being implemented?	
What support do you need from us?	
Is there any other information you wish to share?	

Thank You.

For Office Use Only:

ASSESSMENT - If ANY of these conditions are met, a response is REQUIRED	
Is the disease unusual/unexpected in this community?	YES / NO
Can the suspected disease cause outbreaks with a high potential for spread (e.g., cholera, measles)?	YES / NO
Is there a higher than expected mortality or morbidity from the suspected disease?	YES / NO
Is there a cluster of cases or deaths with similar symptoms (e.g., bloody diarrhoea, rashes)?	YES / NO
Could the disease be caused by a contaminated product used by many people (e.g., food item)?	YES / NO
Is there suspected transmission within a health care setting?	YES / NO
If the event is a NON-HUMAN EVENT (e.g., animal disease or chemical spill), does the event have KNOWN or POTENTIAL consequence for human health?	YES / NO

ACTION TAKEN BY NATIONAL SURVEILLANCE UNIT:

Name of person filling out this form:

Date: Record No. (complete after entering into database):

36°
H R 79% 13:24

Form

What support do you need from us?

Is there any other information you wish to share?

FOR OFFICE USE ONLY

ASSESSMENT - If ANY of these conditions are met, a response is REQUIRED

Is the disease unusual/unexpected in this community *

None Selected

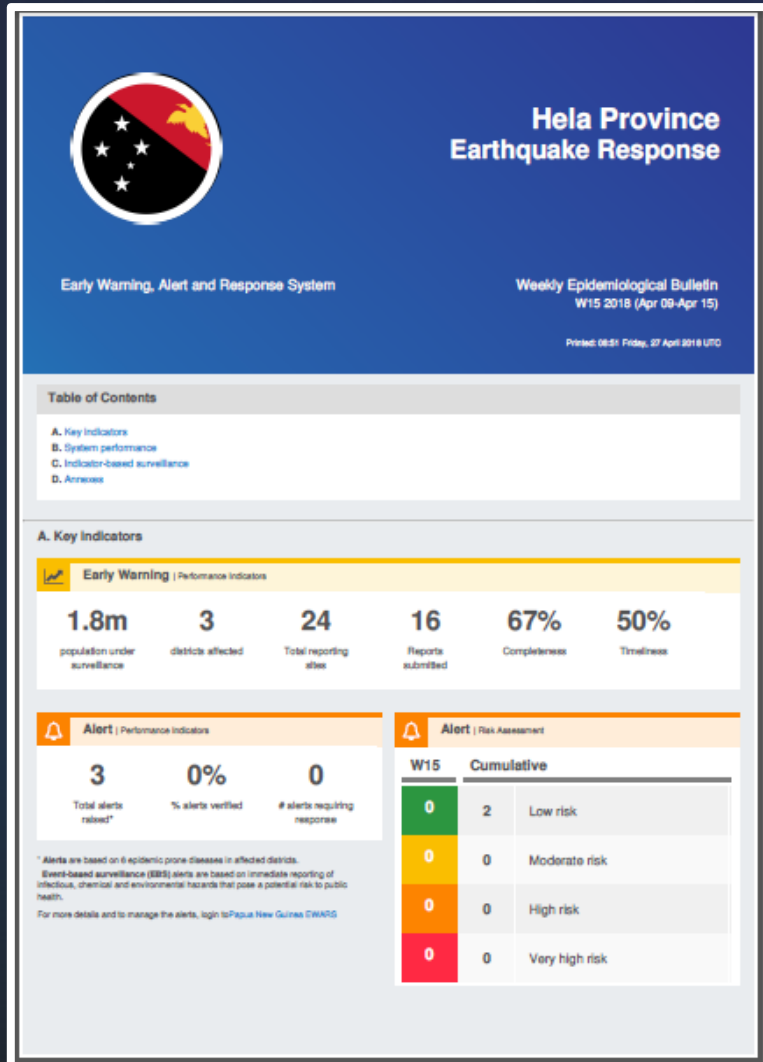
Can the suspected disease cause outbreaks with a high potential for spread (e.g., cholera, measles)? *

None Selected

Is there a higher than expected mortality or morbidity from the suspected disease? *

Connected

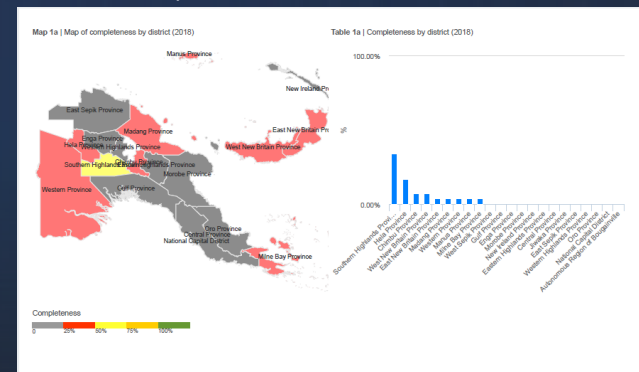
Automated Bulletins (Hela Example)



EWARS Legacy in PNG

- EWARS reporting continued through August in Hela and SHP
- Due to speed and simplicity, implemented for daily APEC surveillance
- Expanded to take over routine UNC data from Provincial Hospitals in remaining 20 provinces (limited success)
- Integrated with PNG Field Epidemiology Training Programme (FETPNG)

National Uptake



Successes and challenges in PNG

Successes

- Quickly implemented
- Acceptable to traumatized population (HCW and community)
- High completeness

Challenges

- Dismal internet even at Provincial EOC
- Required considerable technical backstopping
- Limited resources to investigate alerts

Other General EWARS Successes and challenges

Successes

- Flexible
- Very rapid to implement
- Low usage costs

Challenges

- (Wrongly) seen as competitor to existing systems (e.g., IDSR)
- Not designed to handle contact tracing (see GoData)
- Requires at least periodic access to mobile networks
- Data quality issues – require validation

Next steps for Global EWARS

By end 2018

- Release desktop version (able to work fully offline in remote field sites)
- Revise online user guidance and training materials

In 2019

- Revise interface to allow user customization
- Make project open-source
- Implement roadmap for 2019-2022
 - Readiness for any new graded emergency
 - Rollout to additional 4 new priority countries
 - Strengthen regional capacity

Thank You!

- For questions, please email pavlinb@who.int or info@ewars.ws
- More info on our website at www.ewars-project.org

