



Early Warning, Alert and Response System (EWARS)

Standard Operating Procedure

Disaster and Public Health Emergency Response Division
Department of Public Health
Ministry of Health and Sports (MoHS)
Myanmar
VERSION 1.1 | 18 DEC 2018

Table of contents

Acronyms	2
Background	3
Objectives	4
List of syndromes	4
Data flow	5
Data sources.....	6
Data reporting and transmission methods	7
Alert verification	8
Outbreak investigation and response	8
Data analysis and interpretation	10
Feedback and dissemination	10
Annexes.....	11

Acronyms

ABD	Acute bloody diarrhoea (suspected shigellosis)
AES	Acute encephalitis syndrome
AFP	Acute Flaccid Paralysis
AJS	Acute jaundice syndrome
AWD-MD	Acute watery diarrhea with mild/moderate dehydration
AWD-SC	Acute watery diarrhea with severe dehydration (suspected cholera)
CEU	Central Epidemiology Unit
CM	Confirmed malaria
CSOs	Civil Society Organizations
DD/MM/YYYY	Day/month/year
DHF	Dengue hemorrhagic fever
EWARS	Early Warning, Alert and Response System
FUO	Unexplained fever
FWR	Fever with rash
HA	Health assistant
ILI	Influenza Like Illness
INGO	International non-governmental organization
MoHS	Ministry of Health and Sports
NGO	Non-governmental organization
NNT	Neonatal tetanus
PHS	Public health supervisor
SARI	Severe Acute Respiratory Illness
SMN	Suspected acute meningitis
THA	Township health assistant
TMO	Township public health officer
UCE	Unusual cluster of health events
UED	Unexplained death
UN	United Nations
VHF	Very high frequency
WW/YYYY	Week/year

Background

Under the stewardship of the Ministry of Health and Sports, Department of Public health has been implementing the disease surveillance and response in coordination with the related ministries, UN agencies, NGO and INGO and CSOs. Routine surveillance covers both Indicator Based and Event Based surveillance from sub centre level to the Ministerial level. Monthly reporting of 17 Disease under National Surveillance, weekly reporting of integrated disease surveillance including Vaccine Preventable Diseases and immediate reporting of unusual event are sensitive enough to detect the outbreaks at all levels.

Myanmar has been facing with natural disasters and social disasters in the recent decades. All those disasters have impact on the health care delivery system, environmental and socio-economic determinants which favor the transmission of communicable diseases. After 2008 Cyclone Nargis which is the worst-ever disaster of the country, the Ministry of Health and Sports Myanmar has learnt a lot of lessons from the experiences not only on disaster management but also on disease surveillance, prevention and control.

One of the documented success stories is that there was no large scale outbreak in post Nargis period contrary to the speculation of potential outbreaks by the international experts. This positive outcome could not be achieved by the efforts of the Ministry of Health and Sports alone. It is the outcome of the coordinated efforts of the health partners particularly in implementation of the Early Warning Alert and Response System (EWARS)¹ in post-Nargis period. There were 16 diseases/events under EWARS reporting and it was sensitive enough to detect and respond the outbreaks in timely manner.

Since then the Ministry of Health and Sports has been taking the leading role for EWARS and WHO has been facilitating the coordination with health partners and providing technical support. EWARS is an adjunct, not a substitute for the national disease surveillance system and once the acute emergency phase is over, it should be re-integrated into the national surveillance system. EWARS is also considered in protracted emergency affected areas where primary health service provision is mainly provided by mobile clinic teams of government or non-government partners (i.e. where regular health service provision through fixed health facilities is disrupted).

To adjunct existing surveillance system, the Ministry of Health and Sports piloted EWARS in Rakhine state in collaboration with the health cluster partners on July 2016 after an orientation training. After the review on this pilot EWARS system, EWARS will be upgraded to be used in any disaster affected area in the country.

¹ Humanitarian emergencies increase the risk of transmission of infectious diseases and other health conditions such as severe malnutrition. An effective disease surveillance system is essential to detecting disease outbreaks quickly before they spread, cost lives and become difficult to control. WHO's Early Warning, Alert and Response System (EWARS) is designed to improve disease outbreak detection in emergency settings, such as in countries in conflict or following a natural disaster. WHO website, link here: <https://www.who.int/emergencies/kits/ewars/en/>, last accessed 29 October 2018.

Objectives

General Objective

To reduce morbidity and mortality due to priority communicable diseases of public health importance among emergency or disaster-affected populations

Specific Objectives

1. To rapidly detect and respond to signals that might indicate outbreaks and clusters of epidemic-prone diseases²
2. To monitor completeness of anticipated reports and the response to signals while ensuring endorsement to existing case investigation mechanisms as warranted
3. To monitor the trends in incidence and case-fatality from priority communicable diseases in a regular manner
4. To provide information to the Ministry of Health and Sports and health partners to assist in health program planning, implementation, adaptation, and resource mobilization

List of syndromes

National Surveillance System routinely monitors 17 diseases monthly, vaccine preventable diseases weekly and event- based reporting immediately. In the acute phase of an emergency and post emergency phase, the major diseases/syndromes to be reported are identified as follows:

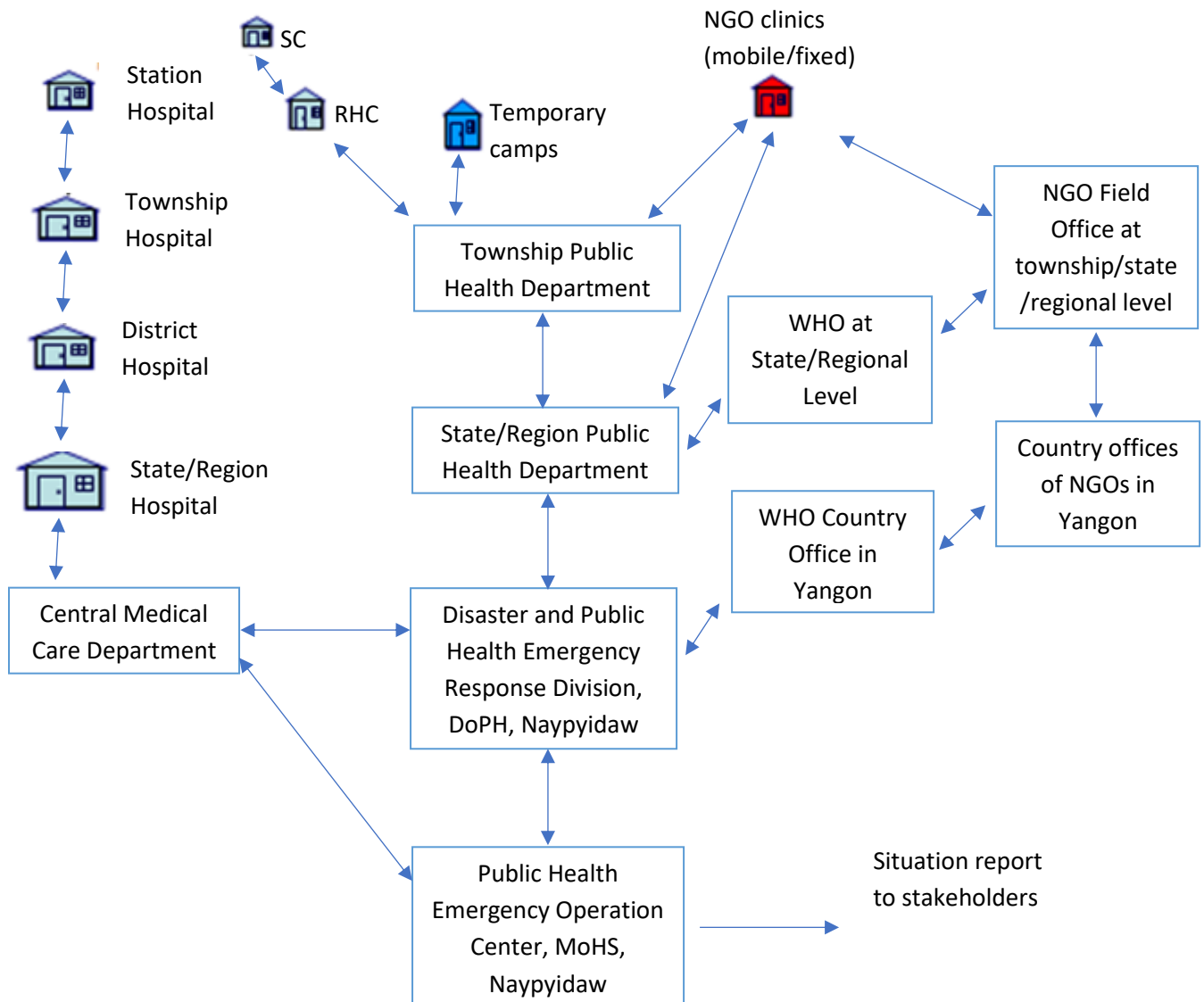
1. Acute bloody diarrhea (Suspected shigellosis)
2. Acute watery diarrhea (suspected cholera)
3. Acute watery diarrhea (mild/moderate diarrhea)
4. Acute jaundice syndrome
5. Severe Acute Respiratory Illness
6. Influenza Like Illness
7. Acute Flaccid Paralysis (Suspected poliomyelitis)
8. Suspected Meningitis
9. Suspected dengue haemorrhagic fever
10. Suspected measles
11. Fevers of unknown origin
12. Confirmed malaria
13. Neonatal tetanus
14. Acute encephalitis syndrome
15. Unusual cluster of health event
16. Unexplained deaths

² <http://www.emro.who.int/syr/publications-other/ewars-weekly-bulletin.html>

Data flow

In *EWARS reporting*, health workers collect data on the number of new cases (incidence rate) and deaths from priority diseases. Data are reported as part of the day-to-day work of the government health facilities or NGOs' clinics within emergency or disaster-affected areas.

Figure 1.1 EWARS Data Flow



EWARS data are usually recorded in a patient register, and are then transferred to summary tally sheets at the end of each week. At the end of the reporting period, the information is sent to DPHERD, the focal unit under Department of Public Health for compilation and analysis.

Outbreaks entail active case-finding and in-depth investigation, whereby attempts are made to identify the cause of an unusual number of deaths or cases of communicable diseases and to subsequently implement control measures.

Data sources

The main sources of data for EWARS are EWARS report forms (immediate, daily, or weekly) submitted by government and non-government health teams. The community member and non-health sector partners cannot submit EWARS report but the alert for suspected outbreak received from community members will be verified by the investigation and response team of MoHS.

Under routine surveillance, the minimum data like **case-based data** are needed for each health event/disease for reporting and investigation. Within the context of EWARS, this case-based data should be provided for each alert threshold.

Case-based data for routine surveillance

- Name
- Date of birth (or age, approximate if necessary if date of birth is not known)
- Sex (female and male)
- Camp district/area
- Date of onset
- Treatment
- Outcome

In a major emergency, this is not necessary for all events and often a tally may suffice as health personnel will not have the time to record case-based information.

Disaggregated data for EWARS

- Number of cases (less than 5 years old, 5 years old and over) and number of deaths.
- Sex (female and male)

Important Points for reporting

- avoid double counting:
 - if a patient comes to the health centre for a follow-up visit for the same condition, he/she should be counted only once; only the new cases should be counted (i.e. incidence rate)
 - If the patient was referred by a mobile clinic to a health facility which also reports EWARS, the same case must only be counted once
- only count those cases diagnosed by a professional health worker, unless well motivated community workers trained in specific program areas can be identified as reliable sources of information
- Zero reporting is important for EWARS. This avoids the confusion of equating “no report” with “no cases”.

Data reporting and transmission methods

Alert information, irrespective of its source, should be reported through the quickest means possible for verification and (if an outbreak is suspected) for outbreak investigation. The aggregated EWARS data should be reported through the most predictable and appropriate methods available. The reporting focal person will be assigned in each government health facility or NGOs' clinic and he/she will be responsible to submit the EWARS report focal unit in a timely manner.

Level	Focal Unit	Mode of Reporting
Township	Township Public Health Department	Hand delivery/email/SMS/telephone
State/Region	Special Disease Control Unit/ Other assigned unit	Email/fax/telephone
Central level	Disaster and Public Health Emergency Response Division	Email/fax/telephone

REPORTING FREQUENCY

The Special Disease Control Unit Team Leader of State or Regional Health Directorate is the focal point to decide in consultation with the Disaster and Public Health Emergency Response Division, if daily or weekly report will be applied. The frequency of reporting different kinds of data is outlined below.

Immediate reporting

Alerts generated from epidemic-prone diseases must be reported immediately using the fastest means possible. This also applies to any deaths or rumors of deaths from such conditions. In most situations, this will be via mobile phone calls or SMS text messages. In areas where mobile phone networks are non-existent, not well established or disrupted, other means of communication may be used (e.g. very high frequency [VHF] radios). Immediate reporting cases are suspected cholera, acute flaccid paralysis (suspected poliomyelitis), suspected dengue haemorrhagic fever and "fever with rash".

Daily reporting

Once an outbreak has started, daily reporting of the specific disease by all health facilities (government and NGOs) in the affected area is expected.

Weekly reporting

Weekly reporting frequency for weekly aggregate EWARS surveillance data is recommended in humanitarian emergencies. Reporting of weekly aggregated data should include "zero reporting" (i.e. placement of "0" against the condition) for conditions in which there were no cases; zero reporting avoids misinterpretation of the missing number. Summary data are important for analysis once an initial case (or alert) has been detected, and to monitor progression of a possible outbreak. Weekly submissions can be paper-based or electronic (e.g. fax or e-mail).

REPORTING DEADLINE

Respective State or Regional Health Directorate will decide the reporting deadline in consultation with central level and township level.

Reporting from non-health partners

See annex 6.

Alert verification

Once an alert has been received by the EWARS focal point (Special Disease Control Unit) or higher levels, a systematic verification process starting at the field level would be initiated within 24 hours. A standardized procedure would be used to verify the alert and, if an outbreak is confirmed, an on-site investigation would be started.

Outbreak investigation and response

An outbreak investigation involves determining the cause of an outbreak and who is at risk, so that control measures can be implemented, thus reducing morbidity and mortality. It should begin as soon as an alert detected by surveillance has been verified. In the initial stage of an outbreak, the causative agent may not be known, and general control measures must be taken, based on the best available data. Once the cause has been confirmed, specific measures to control the disease can be undertaken.

The outbreak response will follow national surveillance guideline of MoHS.

Constitution of Outbreak Control Team

Outbreak Control Team includes a range of skills and expertise for an effective outbreak response. A typical composition is outlined below, but this may need to be expanded or modified depending on the suspected disease, available resources and required control measures.

Table 1.2: Constitution of Outbreak Control Team at various levels

Township Level	State/Regional Level	Central Level (Outbreak Control Team)
Township Public Health Officer (TMO)	Special Diseases Control Unit Team Leader and/or Regional Surveillance Officer	Epidemiologists (Director/Deputy Director/Assistant Director of CEU); depending on the situation
Township Health Assistant (THA)	Medical Officer	Medical Officers
Health Assistant-1/ Township Health Nurse	Health Assistant (HA)	Health Assistants
Health Assistant (HA)	Public Health Supervisor (PHS)	Public Health Supervisor(PHS)
Public Health Supervisor (PHS) and/or Midwife	Relevant clinical specialist (if required)	Relevant clinical specialist (if required)
Relevant clinical specialist (if required)	Laboratory Technician (if required)	Laboratory Technician (if required)
Laboratory Technician (if required)	Vector borne diseases control staff (if required)	Vector borne diseases control staff (if required)
Vector borne diseases control staff (if required)	Health Assistant-1/Township Head Nurse (if required)	Health Assistant-1/Township Head Nurse (if required)

Other department staff (if required)	Other department staff (if required)	Other department staff (if required)
---	---	--------------------------------------

DESIGNATED LABORATORY FOR CONFIRMING DISEASES

National Health Laboratory in Yangon is the designated laboratory for confirming diseases while state/regional laboratory provides confirmation on some diseases.

Data analysis and interpretation

The data from EWARS must be analyzed, interpreted and used to inform public health interventions. Whether the reporting frequency is daily or weekly, analysis and feedback of the outcome are critical for continuity of information flow and to maintain the reporting process.

Feedback and dissemination

Feedback is critical for ensuring full engagement of the stakeholders. Simplified language and graphs would be used to convey complex data and trends in a user-friendly format and, when possible, clear recommendations would be made to implementing organizations, highlighting priority areas and needs.

In consideration of the surveillance options described above, it has been directed by the MoHS to implement a collection of EWARS data as described in the DAILY EWARS REPORT and the WEEKLY EWARS REPORT described in Annexes 1 and 2. Case definitions and alert thresholds for the diseases/syndromes can be found in Annex 3.

Annexes

Annex .1 Daily EWARS report

Report submission date: (____/____/____)
DD MM YYYY

Daily Early Warning, Alert and Response (EWARS) Report

Department of Public Health, Ministry of Health and Sports, Myanmar

Reporting organization		Reporting date		<div style="display: flex; justify-content: space-between;"> (/ /) DD MM YYYY </div>							
Name of reporter		Job title									
State/Region		Township									
Name of location		Type of location		<input type="checkbox"/> Temporary shelter <input type="checkbox"/> School <input type="checkbox"/> Monastery <input type="checkbox"/> IDP camp <input type="checkbox"/> Village <input type="checkbox"/> Ward <input type="checkbox"/> Other:							
Sr.	DISEASE	Code	Cases				Deaths				
			Male		Female		Male		Female		
			<5	>=5	<5	>=5	<5	>=5	<5	>=5	
1.	Acute bloody diarrhea (suspected shigellosis)	ABD									
2.	Acute watery diarrhea with severe dehydration (suspected cholera) *	AWD-SC									
3.	Acute watery diarrhea with mild/moderate dehydration	AWD-MD									
4.	Acute jaundice syndrome	AJS									
5.	Severe Acute Respiratory Illness	SARI									
6.	Influenza Like Illness	ILI									
7.	Acute Flaccid Paralysis *	AFP									
8.	Suspected Acute Meningitis*	MEN									
9.	Suspected dengue hemorrhagic fever	SDHF									
10.	Suspected measles*	MSL									
11.	Confirmed malaria	CM									
12.	Neonatal tetanus	NNT									
13.	Acute encephalitis syndrome	AES									
14.	Unusual cluster of health event *	UCE									
15.	Unexplained deaths*	UED									
16.	Unexplained fevers (e.g. Typhoid)	FUO									
Total consultations (1-16 PLUS other consultations not reported in EWARS, e.g. SRH Not 000, etc)		C									
Please explain any unusual cluster of health event, or unexplained deaths or unexplained fevers: Please explain syndromes of patients referred.											
Please note: <ul style="list-style-type: none"> Immediately notifiable diseases* should be reported immediately. HOTLINE CONTACT: xxxxx, SHOC room, xxx State/Regional Public Health Department Report new cases only (first visit). Write '0' (zero) if no case has been reported for any of the above listed diseases. Do not leave any spaces blank. 											

Annex.2 Weekly EWARS report


 Report submission date: (____/____/____)
 DD MM YYYY

Weekly Early Warning, Alert and Response (EWARS) Report

Department of Public Health, Ministry of Health and Sports, Myanmar



Reporting organization		Epidemiological week number		(____/____/____) WW YYYY							
Name of reporter		Job title									
State/Region		Township									
Name of location		Type of location		<input type="checkbox"/> Temporary shelter <input type="checkbox"/> School <input type="checkbox"/> Monastery <input type="checkbox"/> IDP camp <input type="checkbox"/> Village <input type="checkbox"/> Ward <input type="checkbox"/> Other: _____							
Sr.	DISEASE	Code	Cases				Deaths				
			Male		Female		Male		Female		
			<5	>=5	<5	>=5	<5	>=5	<5	>=5	
1.	Acute bloody diarrhea (suspected shigellosis)	ABD									
2.	Acute watery diarrhea with severe dehydration (suspected cholera) *	AWD-SC									
3.	Acute watery diarrhea with mild/moderate dehydration	AWD-MD									
4.	Acute jaundice syndrome	AJS									
5.	Severe Acute Respiratory Illness	SARI									
6.	Influenza Like Illness	ILI									
7.	Acute Flaccid Paralysis *	AFP									
8.	Suspected Acute Meningitis*	MEN									
9.	Suspected dengue hemorrhagic fever	SDHF									
10.	Suspected measles*	MSL									
11.	Confirmed malaria	CM									
12.	Neonatal tetanus	NNT									
13.	Acute encephalitis syndrome	AES									
14.	Unusual cluster of health event *	UCE									
15.	Unexplained deaths*	UED									
16.	Unexplained fevers (e.g. Typhoid)	FUD									
Total consultations (1-16 PLUS other consultations not reported in EWARS, e.g., SRH, Nutrition, etc.)		C									
Please explain any unusual cluster of health event, or unexplained deaths or unexplained fevers: Please explain syndromes of patients referred.											
Please note: <ul style="list-style-type: none"> Immediately notifiable diseases* should be reported immediately. HOTLINE CONTACT: XXXXXX SHOC room, xxx State/Regional Public Health Department Report new cases only (first visit). Write '0' (zero) if no case has been reported for any of the above listed diseases. Do not leave any spaces blank. 											

Annex.3 Case definitions and alert thresholds

No	DISEASE / SYNDROME	CODE	DEFINITION ³	Differential diagnoses/ Possible causes	Alert threshold ⁴
1	Acute bloody diarrhoea (suspected shigellosis)	ABD	A person with diarrhoea (three or more abnormally loose or fluid stools in the past 24 hours) with visible blood in stool (preferably observed by the clinician)	Shigellosis, amoebiasis or salmonellosis	Five or more cases in one location in 1 day or double the weekly average number of cases
2	Acute watery diarrhoea with severe dehydration (suspected cholera)*	AWD-SC	Any person 5 years or older with severe dehydration or death caused by acute diarrhoea (three or more abnormally loose or fluid stools in the past 24 hours) During a cholera epidemic, any person 2 years or older with acute diarrhoea (three or more abnormally loose or fluid stools in the past 24 hours), with or without dehydration	Cholera, viral/bacterial gastroenteritis	1 case
3	Acute watery diarrhea with mild/moderate dehydration	AWD-MD	Sudden onset of acute watery diarrhoea with mild or moderate dehydration with or without vomiting.		
4	Acute jaundice syndrome	AJS	Acute onset of jaundice (yellowing of whites of eyes or skin or dark urine), AND Severe illness with or without fever AND ;The absence of any known precipitating factors.	Viral hepatitis, leptospirosis, chemical toxins	Five or more cases in one location or double the weekly average number of cases seen in the previous 3 weeks for a particular location
5	Severe Acute Respiratory Illness	SARI	Person with a severe acute illness onset within the last 7 days with <ul style="list-style-type: none"> ◆ History of fever or measured fever (>38.0°C) ◆ Cough, AND ◆ <i>Requires</i> hospitalization 		
6	Influenza Like Illness	ILI	Sudden onset of symptoms <i>And</i> at least one of the following four systemic symptoms: (1)Fever (2)Malaise (3)Headache (4)Myalgia <i>And</i> at least one of the following three respiratory symptoms: (1) Cough (2)Sore throat (3)Shortness of breath		
7	Acute Flaccid Paralysis *	AFP	Any child < 15 years with acute flaccid paralysis, OR ;Any paralytic illness in a person of any age if poliomyelitis is suspected	Poliomyelitis, Guillain-Barre syndrome, Traumatic Neuritis, Acute Transverse Myelitis, neurologic disorders, electrolyte imbalance, vitamin deficiency	1 case
8	Suspected acute meningitis *	SMN	Any person with sudden onset of fever (>38.0 °C axillary) AND ONE of the following signs: <ul style="list-style-type: none"> • neck stiffness • altered consciousness • petechial or purpurial rash • Other meningeal signs (severe neck stiffness causing the patient's hip and knees to flex when the neck is flexed, severe stiffness of the hamstrings causing inability to straighten the leg when the hip is flexed 90 degrees) In children < 1 year, meningitis is suspected when fever is accompanied by a bulging fontanel	Bacterial meningitis, viral meningitis, encephalitis	One case in a crowded camp setting or ≥30,000 people: five cases per 100,000 people per week

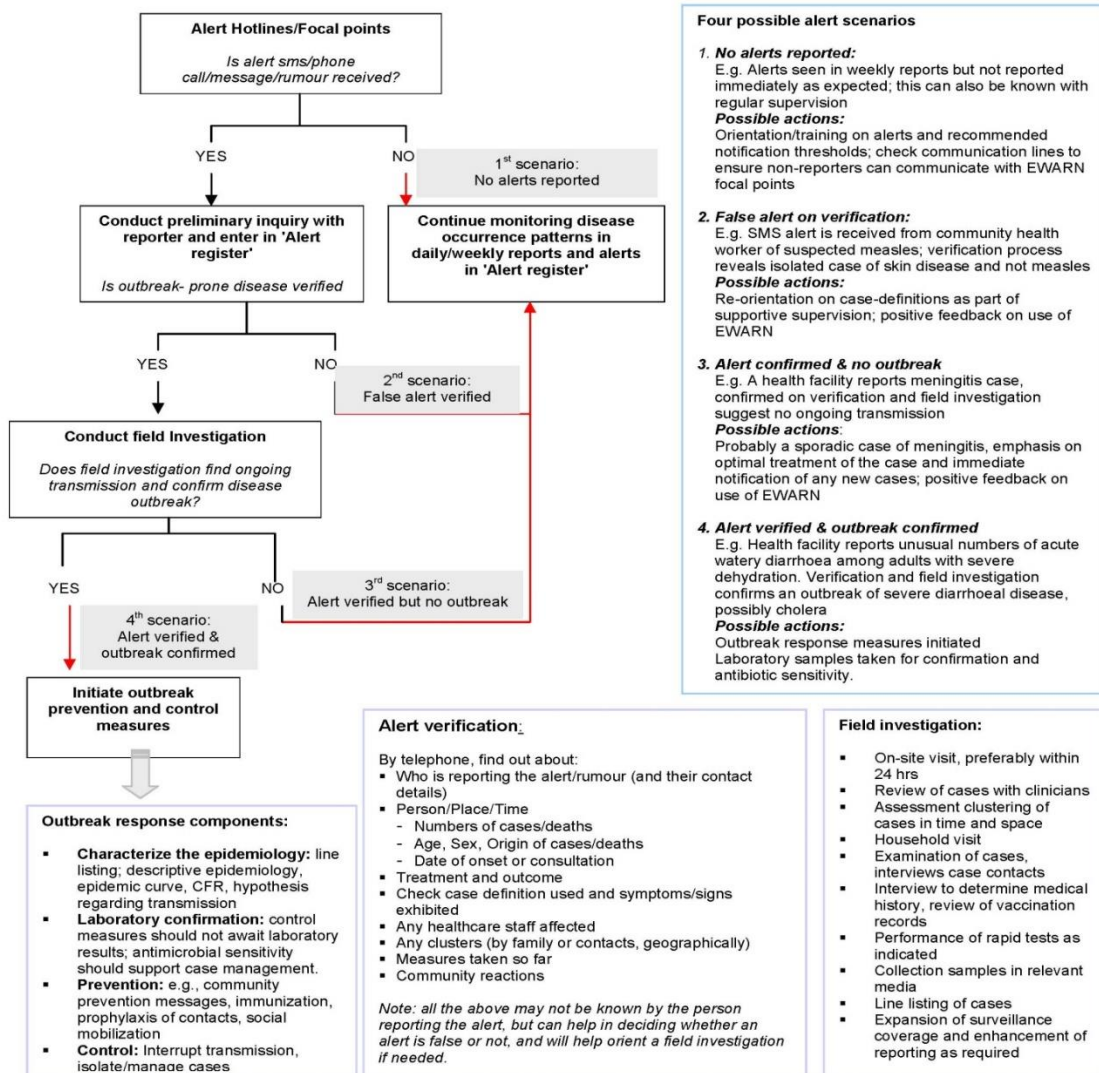
³ WHO guidelines for EWARN implementation, 2012⁴ WHO guidelines for EWARN implementation, 2012

9	Dengue haemorrhagic fever	DHF	Acute onset of fever with nonspecific symptoms. This is followed by hemorrhagic manifestations that may include a positive tourniquet test and/or minor or major bleeding phenomena, thrombocytopenia (less than or equal to 100,000/mm superscript 3), and hemoconcentration (hematocrit increased by greater than or equal to 20%), or other objective evidence of increasing capillary permeability; or decreasing hematocrit after severe frank hemorrhage, such as upper gastro- intestinal bleeding.		
10	Suspected measles*	FWR	Any person with fever AND maculopapular (nonvesicular) generalized rash AND ONE of the following: cough, runny nose (coryza) or red eyes (conjunctivitis)		1 case
11	Confirmed malaria	CM	Positive laboratory confirmation by blood smear or rapid diagnostic test for malaria		Twice the average number of cases seen in the previous 3 weeks
12	Neonatal tetanus	NNT	Any neonate with normal ability to suck and cry during the first 2 days of life, and who between 3 and 28 days of age cannot suck normally and becomes stiff or has convulsions (i.e. jerking of the muscles) or both.		
13	Acute encephalitis syndrome	AES	Acute onset of fever and a change in mental status (including symptoms such as confusion, disorientation, coma, or inability to talk) AND/OR new onset of seizures (excluding simple febrile seizures	Bacterial meningitis, viral meningitis, encephalitis	
14	Unusual cluster of health events *	UCE	Any emerging disease or event of an unknown cause that is of public health concern or any communicable disease with an increased number from the expected particularly if clustered (cases that are closely grouped in time and/or place: two or more cases from the same family, school or workplace...).		
15	Unexplained death *	UED	Any deaths due to unknown or unidentifiable causes		
16	Unexplained fever	FUO	fever $\geq 38^{\circ}\text{C}$ for > 48 hours AND without known etiology		

Annex.4 Alert monitoring log

Alert update as of (date and time)	Reporter	Reported alert	Alert details Who is affected? Where is the affected area? When was the initial occurrence? How many are affected? Are deaths reported?	Actions taken (including name of who has taken action, time and date, and specify action taken)	Status of the alert (Ongoing /Closed)

Annex.5 Algorithm for alert verification and outbreak investigation



Annex.6 Algorithm for reporting from non-health partners

For **non-health colleagues**, upon receiving community information of a **suspected communicable disease case** or **death due to a suspected communicable disease**:

