Introduction to Early Warning, Alert and Response

1. What is EWAR?

To protect the health and lives of its population, a health system must be able to *rapidly detect and respond* to outbreaks and other public health emergencies. This role is performed by the early warning, alert and response (EWAR) function of a surveillance system.

The objective of EWAR is to support the early detection and rapid response to acute public health events of any origin.

EWAR supports early detection, alert and response across a continuum. See Fig 1 for the continuum of routine surveillance, EWAR, and enhanced surveillance for public health response.

Fig 1: Continuum of public health surveillance

Notes: IBS = indicator-based surveillance; EBS = event-based surveillance; EWAR = early warning, alert, and response.

2. EWAR and Health Security

The 2005 International Health Regulations state that countries must strengthen their frontline capacity to detect, assess, notify, and report events involving disease or death above expected levels for the particular time and place in all areas of the country.

The EWAR function of the surveillance system forms the backbone for achieving this core capacity. EWAR emphasizes direct links between communities and all levels of the health system to provide the earliest detection, reporting and response to outbreaks and other public health emergencies.

3. EWAR and Emergencies

An EWAR system is particularly important in an emergency, when existing systems may be underperforming, disrupted or non-existent.

Emergencies also create risk factors for the transmission of communicable diseases which can result in high levels of excess morbidity and mortality. One of the first priorities in an emergency is, therefore, to establish an EWAR system to rapidly detect and respond to outbreaks.

The WHO's Emergency Response Framework (ERF) states that WHO country offices must establish or strengthen EWAR within seven to 14 days after the onset of an acute emergency event.

Note

An emergency may include one or more of the following:

- Complex humanitarian emergencies (situations of war or civil strife affecting large civilian populations with food shortages and population displacement)
- Natural disasters (e.g. floods, tsunamis, earthquakes)
- Food insecurity and famine
- Large-scale disease outbreaks that overwhelm national capacity
- Food contamination, chemical or radio-nuclear spills, and public health emergencies due to other hazards

Table 1 highlights some of the key differences between implementing EWAR in a routine setting and during an emergency.

Table 1 Common differences between EWAR in emergencies and routine settings

	Routine	Emergency
Objective	Support EWAR as part of a comprehensive public health surveillance system.	Support EWAR often as a standalone function, especially during acute onset emergencies where outbreak detection and response takes precedence over other surveillance objectives.
Performance	Existing national EWAR systems may be underperforming, disrupted, or non-existent. They may quickly become too overwhelmed to adequately meet EWAR information needs during an emergency.	Emergency needs demand a well-performing system for outbreak detection and response. EWAR must be designed for and adaptable to rapidly evolving emergency needs.
Coverage	Uses existing network of health facilities involved in surveillance. May be supplemented by other reporting networks (e.g., community health workers, animal health authorities, etc.).	Existing networks of national health facilities may not be able to achieve full coverage amongst displaced population.Displacement and entry of new humanitarian partners will demand new networks of health facilities to be incorporated into an EWAR system (e.g., NGO-supported health facilities and other Health Cluster partners, Emergency Medical Teams).
Epidemiological priorities	Detection of seasonal outbreaks, emerging infectious disease outbreaks, community outbreaks, and non-infectious hazards.	Rapid detection and response to outbreaks to prevent spillover into a large, vulnerable displaced population.
EBS integration	Often not systematic	A core component of early warning
IBS geographic level of reporting	Often uses aggregated units of reporting (e.g. district, county).	Demands health facility-level reporting
IBS frequency of reporting	Requires weekly reporting.	Requires weekly reporting.
Implementation	Capacity building initiatives often phased over weeks or months.	In acute onset emergencies, needs to be functional within seven days.

Two case studies, to compare and contrast experiences in a routine setting (Vietnam) and during an emergency (Syria) are shown in Table 2.

Table 2 Case study to compare and contrast EWAR in a routine setting (Vietnam) and in an emergency (Syria).

Coordination mechanisms and EWAR systems

Emergency responses are coordinated by different mechanisms, depending on the nature of the event, which relate directly to EWAR:

- In a complex humanitarian emergency or natural disaster, the Health Cluster may be activated under the leadership of WHO and the Ministry of Health (MoH) to coordinate the activities of partners;
- In a large-scale outbreak, the MoH and WHO may operationalize the response through an Incident Management System (IMS) and/or a pillar approach (to coordinate across cross-cutting technical issues);
- A combination of both approaches (e.g. large-scale cholera outbreak during a complex humanitarian emergency in Yemen) may necessitate both coordination mechanisms (e.g. Health Cluster and IMS).

Typically, the Health Cluster or IMS, led by the WHO country office with support from the MoH, NGO partners and/or the Centers for Disease Control and Prevention (CDC) leads the development of the EWAR system.

THe EWAR system may remain in place for years after the acute emergency for which is was intended. However, the EWAR system should be integrated into the national surveillance system rather than being used to replace it. Linkages to the surveillance system should be developed. An exit or transition strategy is important to plan from the start.

References

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2. Diggle, Emma, Wilhelmina Welsch, Richard Sullivan, Gerbrand Alkema, Abdihamid Warsame, Mais Wafai, Mohammed Jasem, Abdulkarim Ekzayez, Rachael Cummings, and Preeti Patel. 2017. "The Role of Public Health Information in Assistance to Populations Living in Opposition and Contested Areas of Syria, 2012-2014."*Conflict and Health*11 (December): 33.